

Part 2 - Operational Guidelines for Northern Plains Reserves 2014 - 15

Vegetation

Broad vegetation types

- Slaty woodlands
- Oakly Oak woodlands
- Oakly Grey woodlands
- Grand oak

Status of Biodiversity Thresholds

Topologically based

Threatened species

Wildlife dependent

Conservation

Bushfire Risk Management Strategies

Highly flammable

Low flammability

Prescribed burn availability

Available for burning

Not available for burning

Operational Guidelines

General

Objectives

Operational Guidelines - Heritage

Operational Guidelines - Heritage Objectives

Vegetation management guidelines

Suppression strategies

Localities map

Map details

Communities & Information

Carroll's Information

Fire Season Information

Incident Map

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INTRODUCTION

PREAMBLE

Part 2 lists the operational and suppression guidelines for all the reserves managed by the Northern Plains Region. These guidelines are contained in the Reserve Fire Management Strategies (RFMS).

RFMSs have been prepared for each reserve.

The reserve RFMS should be consulted during the planning of all fire operations.

Copies are available in each Area Office managing the reserve and on the Regional Share Drive.

The guidelines have been reproduced as a quick reference. The format for reproducing the guidelines is as follows:

1. the guidelines common to all reserves are contained in Section 2 – *General Operational Guidelines*
2. guidelines unique to a reserve are contained in a reserve specific section
3. reserve guidelines are grouped by Area

FIRE SEASON INFORMATION

The fire information listed below is contained in the reserve fire management strategy for the Pilliga East reserves. This information may be applied to most reserves within the region.

Wildfires	<ul style="list-style-type: none">• The critical wildfire season generally occurs during November and December.• During periods of strong negative Southern Oscillation Indices (El Nino events), or an intense dry period, this period may commence late September and extend into the first half of January.• It may also extend into January during the first dry summer after ephemeral seasons.• The end of the critical fire season is often marked by wet storm activity.
Prescribed Burning	<p><i>Areas with LOW - MODERATE Overall Fuel Hazard</i></p> <ul style="list-style-type: none">• Effective prescribed burning may need to be conducted once the “critical fire season” and thunderstorm season is over.• Open-ended burning may be undertaken in early spring (August – September), except during an El Nino event. <p><i>Areas with HIGH - VERY HIGH Overall Fuel Hazard</i></p> <ul style="list-style-type: none">• Prescribed burning should be undertaken before the late autumn rainfall to maximise effectiveness.• During or leading up to an El Nino event, burning may be conducted during winter. Containment strategies should be in place for any dry south-westerly changes that may occur weeks after an open-ended burn.• Spring burning must be fully contained. <p><i>Areas with mixed Overall Fuel Hazard rating</i></p> <ul style="list-style-type: none">• Consider multi-phase operations, targeting higher OFH areas under LOW-MODERATE Fire Danger conditions, with follow-up burning in lower OFH areas during HIGH Fire Danger Conditions <p><i>Prevailing winds</i></p> <ul style="list-style-type: none">• Easterly winds are likely to dominate during autumn.• Westerly winds are likely to dominate during early spring. A warm dry period often occurs late August, associated with north-westerly conditions, which may provide for an opportunity to conduct effective burning.

GENERAL GUIDELINES

GENERAL GUIDELINES - Operations

The general operational guidelines apply for all reserves, unless stated otherwise in the reserve specific operational guidelines.

Area / resource	Operational guidelines
Aerial operations	<ul style="list-style-type: none"> Aerial operations will be managed by trained and competent personnel. This includes directing aerial bombing and aerial ignition operations The use of bombing aircraft without the support of ground based suppression crews should be limited to very specific circumstances. All aerial ignition operations require the consent of the NPWS Regional Manager or the Section 44 Appointee.
Backburning	<ul style="list-style-type: none"> All personnel must be fully briefed before back burning operations begin. Backburning in areas of Low – Moderate OFH will require the use of wind, slope, or low humidity to maximise effectiveness. Where practicable to mop-up efforts, clear a 1m radius around dead and fibrous barked trees adjacent to containment lines prior to backburning, or wet down these trees during the ignition.
Command & Control	<ul style="list-style-type: none"> 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.
Containment Lines	<ul style="list-style-type: none"> New containment lines require the prior consent of a senior NPWS officer. Construction of new containment lines should be avoided, where practicable, except where they can be constructed with minimal environmental impact. Containment lines running along valley areas should be constructed at 20 – 50 metres from the gullyline to avoid severe erosion. All personal involved in containment line construction should be briefed on, and must consider both natural and cultural heritage sites in the location.
Earthmoving Equipment	<ul style="list-style-type: none"> Earthmoving equipment may only be used with the prior consent of a senior NPWS Officer. Earthmoving equipment must always be 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 fire fighting vehicle. Earthmoving equipment must be washed down, where practicable, prior to it entering NPWS estate and again on exiting NPWS estate.
Fire Suppression Chemicals	<ul style="list-style-type: none"> The use of foam, wetting agents and retardants will be permitted on the reserve Fire suppression chemicals are not to be applied within 50m of water courses and dams. The use of retardants requires the approval of the Regional Manager or delegate
Rehabilitation	<ul style="list-style-type: none"> Where practicable, containment lines should be stabilised and rehabilitated as part of the wildfire suppression operation.
Remote area fire fighting operations	<ul style="list-style-type: none"> Operations should be postponed, or abandoned, if there is: <ul style="list-style-type: none"> a high risk of a storm moving through the area; or a forecast significant wind change. Severe+ FDI forecast
Smoke Management	<ul style="list-style-type: none"> Potential smoke impacts and mitigation tactics will be assessed during the planning of fire operations.
Visitor Management	<ul style="list-style-type: none"> The reserve may be closed to the public during periods of extreme fire danger or during fire operations.

Fire behaviour calculations should consider both Surface and 1500 metre wind forecasts
Seek advice from Fire Behaviour Analysts wherever necessary

GENERAL GUIDELINES

GENERAL GUIDELINES - SUPPRESSION

The general suppression guidelines will apply to most smaller reserves. Where strategy guidelines are specified for reserves, these should be adhered to. It is important to refer to the RFMS as **different strategies** may apply for **different vegetation types**.

Conditions & forecast	Guidelines
BKDI < 100, or BKDI >100+ and outside critical fire season Stable conditions forecast	<ul style="list-style-type: none"> Consider a broad containment strategy using existing tracks, low fuel areas, open areas and recently burnt areas.
BKDI >100 & within critical fire season, or Severe+ FDI forecast	<ul style="list-style-type: none"> Consider a strategy containing the fire to the smallest area practicable, using a combination of ground crews, fire units, machinery and aircraft. Secure flank as soon as possible on the next predicted downwind side. Any proposed backburning must be assessed on the required resources, their capacity and the time required to mop-up and secure proposed burn edges prior to the onset of Severe + conditions, and then hold.
Fire behaviour calculations should consider both <i>Surface</i> and <i>1500 metres</i> wind forecasts	

GENERAL HERITAGE GUIDELINES FOR ABORIGINAL AND HISTORIC SITES

Area / resource	Operational guidelines
Aboriginal Cultural Heritage Site Management	<p><i>Modified trees</i></p> <ul style="list-style-type: none"> As far as possible, protect the site from fire, and do not cut trees where possible, clear fuels with hand tools from tree base and/or foam base to 3m up tree trunk Use of foams & retardant is acceptable <p>Habitation, artefact, grinding groove and midden sites</p> <ul style="list-style-type: none"> Exclude control line construction from sites. Consider a buffer zone of 30 - 50 metres from the sites. <p><i>Identified cultural areas</i></p> <ul style="list-style-type: none"> Exclude use of machinery within these areas <p><i>Grave sites and cemeteries</i></p> <ul style="list-style-type: none"> Exclude control line construction from sites. Consider a buffer zone of about 50 metres from the sites.
Historic Site Site Management	<p><i>Identified structures, including buildings and fences</i></p> <ul style="list-style-type: none"> As far as possible, protect structure from fire Use of foams & retardant is acceptable. <p><i>Survey trees</i></p> <ul style="list-style-type: none"> As far as possible, protect the site from fire, and do not cut trees Use of foams & retardant is acceptable. <p><i>Historic precincts</i></p> <ul style="list-style-type: none"> As far as possible, protect the precinct from fire Exclude control line construction from the precinct Use of foams & retardant is acceptable. <p><i>Non-flammable sites and ruins</i></p> <ul style="list-style-type: none"> Protect the sites from control line construction <p><i>Grave sites and cemeteries</i></p> <ul style="list-style-type: none"> Exclude control line construction from sites. Consider a buffer zone of about 50 metres from the sites.

GUIDELINES – SEVERE + conditions

The Pilliga landscape suppression guidelines may be applied to the following reserves:

Baradine Area

Dandry Gorge AA
Merriwindi SCA
Pilliga East SCA
Pilliga NP & SCA
Pilliga West NP & SCA
Timmallallie NP
Willala AA
Yarrigan NP

Coonabarabran Area

Adelyne SCA
Biddon SCA
Bingah Wingal SCA
Binnaway NR
Breelong NP
Cobbora SCA
Cooleburba SCA
Garrawilla NP
Goonoo NP & SCA
Pilliga NR (south)
Rocky Glen NP
Tinkrameanah NP
Ukerbarley AA
Weetalibah NR

Benchmarks for extreme fire behaviour

The Pilliga Scrub is characterised by large fire events which rapidly escalate to a landscape scale. Fires have exceeded 100,000 hectares on a number of occasions. An aim of the reserve fire management strategy is to prevent large fire events exceeding 20,000 hectares.

The potential fire behaviour in the eastern Pilliga is indicated by the following incidents:

- day-time runs of 20+ kilometres
(30 kms – 1982 Pilliga east fire, 25 kms – 1997 Timmallallie Creek fire & 2 separate ignitions from the 2006 Pilliga No. 4 fire)
- increases of the fire area greater than 50,000 hectares in one day
(63,000 ha - 1982 Pilliga east fire, 75,000 ha - 2006 Pilliga No. 4 fire)
- significant fire runs of different directions over successive days
(1965 Southern Pilliga fire & 1997 Timmallallie Creek fire)
- significant night-time runs with easterly winds after very dry south-westerly conditions
(20 kms – 2006 Pilliga No. 4 fire , 15 kms – 2006 Kerringle fire, 10 kms - 2002 Jerrys fire)

Fire behaviour under potentially *Catastrophic* conditions may exceed these benchmarks
Refer to GUIDELINES - Severe + conditions

Suppression strategies

Conditions	Guidelines
All vegetation types	
Years with saturated soils and sub-soils	<ul style="list-style-type: none"> • Consider a broad containment strategy using existing trails and roads, recently burnt areas, creeklines or vegetation with LOW OFH. (This is necessary due to the high risk of vehicles and machines bogging)
Ridge top vegetation Sandstone shrubby woodlands Smooth-barked Apple / Scribbly Gum woodlands	
Fire danger rating LOW - HIGH	<ul style="list-style-type: none"> • Consider a broad containment strategy using existing roads, allowing long-term management requirements for biodiversity • Direct and parallel attack may be applied with earthmoving machinery and fire units. <i>In dissected country – control line construction may only be possible along ridge tops and spurs.</i> <i>In undulating sandstone country, control line construction may be more rapid along or parallel to ridge tops</i>
Fire danger rating VERY HIGH - SEVERE	<ul style="list-style-type: none"> • Fallback to existing trails and roads and recently burnt areas when fire runs exceed control line construction rates • Secure and deepen control lines on the next predicted downwind side of the fire • Target backburning operations when the humidity rises in late afternoon and early evening. Backburning effectiveness will drop significantly with rising humidity. <p><i>Fire runs under extreme conditions may travel at 4 – 6 kms/hr.</i> <i>Burn areas with LOW OFH may hold fire head, if deep enough</i> <i>Burn areas with MODERATE OFH will reduce intensity.</i></p>

GUIDELINES – SEVERE + conditions

Valley and Creekside vegetation Valley woodlands	
Fire danger rating LOW - HIGH	<ul style="list-style-type: none"> Consider a broad containment strategy using existing roads, allowing long-term management requirements for biodiversity Direct and parallel attack may be applied with earthmoving machinery and fire units. Construct a control line across vegetation to avoid rapid spread
Fire danger rating VERY HIGH - SEVERE	<ul style="list-style-type: none"> Fallback to existing trails and roads and recently burnt areas when fire runs exceed control line construction rates <p style="color: red;">Areas with grassy understorey may carry fire 1+ years after fire.</p>

Mallee, Broombush and shrublands	
Fire danger rating LOW - HIGH	<ul style="list-style-type: none"> Consider a broad containment strategy using existing roads, allowing long-term management requirements for biodiversity Direct and parallel attack may be applied with earthmoving machinery and fire units <u>only on dead edges, or in vegetation with LOW OFH.</u>
Fire danger rating VERY HIGH - SEVERE	<ul style="list-style-type: none"> <li style="color: red;">Fallback to existing trails and roads, recently burnt areas or vegetation with LOW OFH. <li style="color: red;">Do not attempt backburning in the predicted path of running fire in this vegetation. <li style="color: red;">Backburning must be carefully timed and planned to avoid adding to fire runs. <li style="color: red;">Backburning effectiveness will drop significantly in the after humidity starts to rise, and wind drops, in the early evening. <li style="color: red;">Parallel attack may be applied with earthmoving machinery and fire units <u>only on dead edges, or in vegetation with LOW OFH.</u> <p style="color: red;">WARNING: FIRE RUNS SHOULD BE ANTICIPATED WITH WINDS FROM ANY DIRECTION. ENTRAPMENT RISK IS VERY HIGH.</p>

Ironbark / White Pine / Bullock woodlands Pilliga Box / Poplar Box / White Box / White Pine woodlands	
Fire danger rating LOW - HIGH	<ul style="list-style-type: none"> Consider a broad containment strategy using existing roads, allowing long-term management requirements for biodiversity Direct and parallel attack may be applied with earthmoving machinery and fire units.
Fire danger rating VERY HIGH - SEVERE	<ul style="list-style-type: none"> Close parallel attack, moving around the head only when the fire stops running Distance between the flank and machinery and fire units should be kept to a minimum <li style="color: blue;">If fire is running, it will slow considerably when it reaches Pilliga Box, Poplar Box or White Box country Fallback to existing trails and roads when burning on a broad front

WARNING	<p style="color: red;">WESTERLY FIRE RUNS MAY OCCUR FROM UNSECURED WESTERN FLANKS WITH NIGHT-TIME EASTERLY CHANGES.</p> <p style="color: red;">This is a particular concern after fires running with dry south westerly conditions.</p> <p style="color: red;">Bureau of Meteorology must be consulted specifically on potential night-time easterly winds.</p>
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GUIDELINES – SEVERE + conditions

Benchmarks

The January 2013 fire in the Warrumbungles demonstrated the following:

- fire fronts recorded moving at 4 kms in 30 minutes during event build-up phase
- rapid development of a pyro-convective event
- deep flaming ignition, with almost immediate extreme fire behaviour occurring +10 kms downwind
- a southerly change causing a broad fire front moving northwards
- total eastward initial movement was 23 kms, and northwards 14 kms

Pilliga landscape fires could exceed 4 – 6 km/hr Grass fires could reach 20+ km/hr

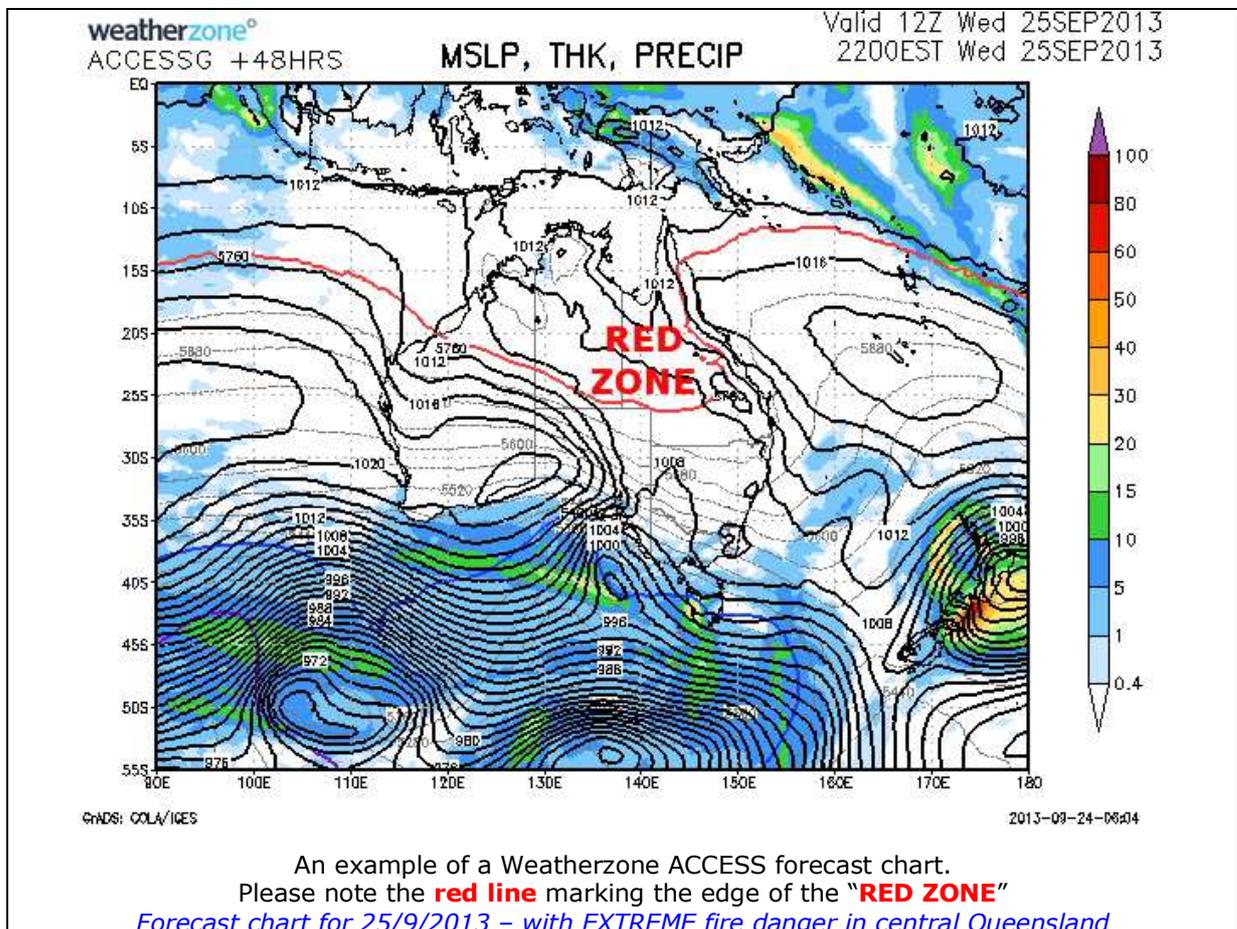
Weather / Seasonal Indicators for escalating preparedness

- within the locally defined “Critical Fire Season” range
- strong negative SOI values and / or intense dry period
- inside the “**RED ZONE**” in Weatherzone surface forecast charts (ACCESS model charts)
this is the red line which translates into unstable hot continental air in summer (see example chart)
link address: <http://www.weatherzone.com.au/models/index.jsp?lt=wzcountry&lc=aus&mt=gasp>
- forecast C-Haines Index >10
- passage of a “**Complex Continental Low**”

Weather rated as SEVERE can immediately change to CATASTROPHIC conditions when a fire is causing atmospheric mixing.

Fire behaviour calculations should consider both Surface and 1500 metre wind forecasts

Seek advice from Fire Behaviour Analysts wherever necessary



GUIDELINES – SEVERE + conditions

Terrain considerations

Potentially CATASTROPHIC fires will become independent of fuel levels.

Woodlands with LOW /MODERATE OFH are included.

Terrain will be critical to the development of a pyro-convective event. Especially a when fire is running towards steep terrain, and steep gullies in moderate terrain.

These areas become “ember launch zones”, with intense spotting igniting both sides of “ramps”.

The “ember drop zones” may extend 10 – 15 kms downwind , with “deep flaming” in the landscape.

Reserves with obvious ramps are:

Boonalla AA	Goodiman SCA	Warrumbungle NP
Campbell – Montrose AA	Mount Kaputar NP	Wondoba SCA
Courallie AA	Somerton NP	Yarrobil NP

Suppression considerations

Scenario	Guidelines
GENERAL PRINCIPLES	<ul style="list-style-type: none"> Minimise the fire area or length of fire lines to be patrolled and held during the passage of SEVERE + conditions. <p style="text-align: center;">KEEP THE FIRE AS SMALL AS POSSIBLE</p> <ul style="list-style-type: none"> Backburns require time to settle before the passage of SEVERE + conditions. This may be up to 48 hours in forest and woodland areas. <p style="text-align: center;">SHUT DOWN BURNING OPERATIONS EARLY</p> <ul style="list-style-type: none"> Changes in fire danger and behaviour can be instantaneous <p style="text-align: center;">A HIGH LEVEL OF RESOURCING MUST BE CONSIDERED, INCLUDING AVIATION</p> <p style="text-align: center;">GROUND CREWS MUST BE ABLE TO EXIT ALL AREAS, UNASSISTED</p> <p style="text-align: center;">ESCAPE ROUTES MUST NOT CROSS POTENTIAL FIRE PATHS</p> <p style="text-align: center;">SHUT DOWN RART / RAFT OPERATIONS</p> <ul style="list-style-type: none"> Changes in fire behaviour can be instantaneous, and may entrap fire-fighters <p style="text-align: center;">GROUND CREWS MUST BE ABLE TO EXIT ALL AREAS, UNASSISTED</p>
EXISTING FIRE	<ul style="list-style-type: none"> Recommend S.44 declaration Develop potential fire spread predictions Identify assets and community at risk. <p style="text-align: center;">PROPOSE COMMUNITY EMERGENCY MANAGEMENT EARLY</p>
FIRE RUNNING TOWARDS A RAMP, OR THE POTENTIAL PREDICTED	<ul style="list-style-type: none"> Identify “ember launch zones” and “ember drop zones” for both “pre-frontal” and “post-frontal” conditions. Implement, via S.44 Controller, emergency management procedures for the predicted “ember drop zones” <p style="text-align: center;">PROPOSE COMMUNITY EMERGENCY MANAGEMENT EARLY</p>

STRATEGY OPTIONS	<ul style="list-style-type: none"> Aggressive aerial attack, to delay running fire as long as possible. Partial containment, securing downwind sectors for both “pre-frontal” and “post-frontal” conditions. The <i>Pilliga Blue Line</i> – containment lines constructed in open country, involving parallel grader lines up to 50 metres apart and burnt-out in between. This provides for rapid construction and a safe zone for fire crews and units.
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RUNNING EVENTS: WARNING : EXTREMELY UNSAFE AREAS

- 10 + kms downwind of ramps and terrain**
- 1 km from flanks due to potential for “fire channelling”**
- left hand side of fire run & its drop zones, due to likely flank spread after wind change**

RESERVE GUIDELINES – BARADINE AREA

SUMMARY TABLE OF RESERVE SPECIFIC GUIDELINES

Specific guidelines	Carrabear NR	Gilwarney NR	Ginghet NR	Dandry Gorge AA	Macquarie Marshes	Merriwindi SCA	Pilliga NR	Pilliga NP & SCA	Pilliga East SCA
Backburning				✓	✓	✓	✓	✓	✓
Command				✓			✓	✓	✓
Bulk water carriers		✓	✓	✓			✓	✓	✓
Smoke Mgt required							✓	✓	✓
Traffic mgt required							✓	✓	✓
Visitor mgt required				✓					
Apiarists								✓	✓
Machinery exclusion areas		✓	✓	✓	✓				
Chemical restrictions									
Aboriginal sites	✓	✓	✓	✓	✓	✓	✓	✓	✓
Historic sites		✓	✓		✓	✓		✓	✓
Fauna / Flora sites								✓	
SUPPRESSION guidelines				✓			✓	✓	✓
WARNINGS & HAZARDS									
Fire behaviour					✓		✓	✓	✓
Bogging risks		✓	✓	✓	✓		✓	✓	✓
Terrain / Wind						✓			
Aviation hazard									
Other hazards									

RESERVE GUIDELINES – BARADINE AREA

SUMMARY TABLE OF RESERVE SPECIFIC GUIDELINES

Specific guidelines	Pilliga West SCA	Timmallalie NP	Willala AA	Wingadee NR	Yarrigan NP				
Backburning		✓	✓		✓				
Command		✓	✓						
Bulk water carriers	✓	✓	✓	✓					
Smoke Mgt required									
Traffic mgt required									
Visitor mgt required									
Apiarists	✓								
Machinery exclusion areas				✓					
Chemical restrictions									
Aboriginal sites	✓	✓	✓	✓	✓				
Historic sites	✓	✓	✓	✓	✓				
Fauna / Flora sites			✓						
SUPPRESSION guidelines		✓	✓						
WARNINGS & HAZARDS									
Fire behaviour		✓	✓						
Bogging risks	✓	✓	✓	✓	✓				
Terrain / Wind		✓							
Aviation hazard									
Other hazards									

RESERVE GUIDELINES – BARADINE AREA

CARRABEAR NR

Aboriginal sites	Sites types include: modified trees
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GILWARNEY NR

Machinery exclusion	Black Box swamps Sandy country perched on higher ground (see RFMS)
Aboriginal sites	Sites types include: high potential for modified trees, artefacts and camp sites
Historic sites	Sites include: coupe trees
Additional hazards	Bogging hazards

GINGHET NR

Aboriginal sites	Sites types include: modified trees and artefacts
Historic sites	Sites include: Wyninebah shearing shed, Brewon Bore No 2 bathhouse
Flora / Fauna	EEC – <i>Myall open woodlands</i>
Additional hazards	Check the location of bore drains when conducting direct or parallel attack. There is a danger of entrapment for fire units Check the condition of trails crossing the Ginghet Creek to ensure trafficability.
Suppression	<i>Floodplain woodlands</i> Use existing trails and construct control lines on the edge of floodplain woodlands when the rate of spread exceeds or will exceed fireline construction

MACQUARIE MARSHES RESERVES

Machinery exclusion	Wet grasslands Adjacent to Aboriginal hearths and mounds Historic precincts Scalded areas Rehabilitation areas
Aboriginal sites	Sites types include: modified trees, artefacts, hearths and mounds
Historic sites	Sites include: Hunts well, Bora well crossing, Ninia homestead, Cresswell cottage and various yards, grave site near Mathaguy Creek
Flora / Fauna	RAMSAR wetland of international significance EEC – <i>Poplar Box – Coolibah woodlands</i> EEC – <i>Myall woodlands</i> EEC – <i>Riparian open woodlands</i>
Additional hazards	EXTREME FIRE BEHAVIOUR IN REED BEDS Fire suppression crews and equipment should not enter reed beds for suppression. (Exception 1: areas of low density reed cover as a result of prolonged droughts and wetland retreat) (Exception 2: dry conditions, short distance and safe egress) DEAD STANDING TIMBER in riverine forests and woodlands with recent dieback. Gilgais and melonholes Bogging in wet black soil
Prescribed burning	Strict guidelines apply

Suppression Strategies	
Conditions & forecast	Guidelines
Wetland grasslands – Reed Beds and Cumbungi	
All conditions	<ul style="list-style-type: none"> Control lines should be established outside reeds, using existing trails, channels, moist vegetation and low fuel areas Allow reed beds to burn out
All other vegetation types – General suppression guidelines apply	

RESERVE GUIDELINES – BARADINE AREA

PILLIGA EAST RESERVES Dandry Gorge AA, Pilliga NR, Pilliga East SCA Timmallallie NP & Willala AA

Command & Control	Recommend activation of the Pilliga Sub-plan of Operations when running fire is rapidly escalating, or when extreme conditions are forecast to impact a fireground.
Machinery exclusion	Slopes greater than 20 degrees Steep sandstone country Willala Knobs Dandry Gorge AA Sandstone Caves
Aboriginal sites	Sites types include: modified trees, artefacts, shelters and significant cultural areas
Historic sites	Sites include: Dog proof fence, grave sites, historic precincts at Salt Caves, Yamborah, Airlands, Wattle Park and Creaghs Crossing
Visitation areas	Sandstone Caves Dandry Gorge – <i>Sculptures in the Scrub</i> Salt Caves
Flora / Fauna	EEC – <i>Dry rainforests – Willala Knobs</i> EEC – <i>Grassy Box woodlands</i> EEC – <i>Carex sedgeland</i> s <i>Significant fauna site – Large Pied Bat maternity site</i>
Apiary Management	Advise apiarists of fire threats, and the restrictions in place for entry.
Smoke Management	Potential severe impacts on the Newell Highway
Traffic Management	Immediately request closure of the Newell Highway when fire is running towards the highway, and is within 5 kilometres.
Visitor management	Apply <i>Emergency management plan</i> for the Dandry Gorge visitor precinct during periods forecast for Catastrophic Fire danger.
Additional hazards	Severe risk of bogging hazards during wetter seasons
Suppression	Apply Pilliga landscape guidelines – all vegetation types

PILLIGA NORTH RESERVES Pilliga NP & Pilliga SCA

Machinery exclusion	Gilgai area lagoons Brigalow woodland
Aboriginal sites	Sites types include: modified trees, habitation sites
Historic sites	Sites include: Squires Lane dog proof fence and phone line, Ironbark Crossing historic precinct, grave sites
Flora / Fauna	EEC – <i>Brigalow woodlands</i>
Soil Erosion Management	The soils within the reserve are generally highly dispersive and very susceptible to erosion after disturbance. The construction of control lines aligned to the direction of water flow will be particularly vulnerable. <ul style="list-style-type: none"> • Light blading must be employed during control line construction • Bar drains or roll-overs must be constructed as soon as possible.
Apiary Management	Advise apiarists of fire threats, and the restrictions in place for entry.
Additional hazards	Severe risk of bogging hazards during wetter seasons
Suppression	Pilliga landscape guidelines. Key vegetation types include: Broombush and shrublands Ironbark / White Pine / Bullock woodlands Pilliga Box / Poplar Box / White Box / White Pine woodlands

RESERVE GUIDELINES – BARADINE AREA

PILLIGA WEST RESERVES Merriwindi SCA, Pilliga West NP & Pilliga West SCA

Machinery exclusion	Brigalow woodland
Aboriginal sites	Sites types include: modified trees, habitation sites, artefacts and waterholes
Historic sites	Sites include: mill sites, dog proof fence and phone line, survey trees and
Flora / Fauna	EEC – <i>Brigalow woodlands</i>
Additional hazards	Severe risk of bogging hazards during wetter seasons
Suppression	Pilliga landscape guidelines. Key vegetation types include: Broombush and shrublands Pilliga Box / Poplar Box / White Box / White Pine woodlands

WINGADEE NR

Machinery exclusion	Sandy country perched on higher ground (see RFMS)
Aboriginal sites	Sites types include: high potential for modified trees, artefacts and camp sites
Historic sites	Sites include: coupe trees

YARRIGAN NP

Machinery exclusion	
Aboriginal sites	Sites types include: modified trees
Historic sites	Sites include: fire tower area, coupe trees, <i>Yarrigan Bore, Yarrigan Dam and Yarrigan picnic area</i>
Additional hazards	Severe risk of bogging hazards during wetter seasons
Suppression	Pilliga landscape guidelines. Key vegetation types include: Sandstone shrubby woodlands Pilliga Box / Poplar Box / White Box / White Pine woodlands

RESERVE GUIDELINES – COONABARABRAN AREA

SUMMARY TABLE OF RESERVE SPECIFIC GUIDELINES

Specific guidelines	Adelyne SCA	Beni SCA	Biddon SCA	Breelong NP	Cobbora SCA	Binnaway NR	Boonalla AA	Coolbaggie NR	Dapper NR
Backburning									
Command									
Bulk water carriers	✓					✓			
Smoke Mgt required		✓							
Traffic mgt required	✓							✓	
Visitor mgt required		✓							
Apiarists			✓						
Machinery exclusion areas			✓		✓			✓	
Chemical restrictions									
Aboriginal sites		✓			✓	✓	✓	✓	✓
Historic sites									
Fauna / Flora sites					✓			✓	
SUPPRESSION guidelines						✓	✓		
WARNINGS & HAZARDS									
Fire behaviour								✓	
High bogging risks						✓			
Terrain / Wind							✓		✓
Aviation hazard							✓		
Other hazards									

RESERVE GUIDELINES – COONABARABRAN AREA

SUMMARY TABLE OF RESERVE SPECIFIC GUIDELINES

Specific guidelines	Drillwarrina NP	Garrawilla NP	Goodiman SCA	Goonoo reserves	Mogriguy NP	Pilliga South	Rocky Glen NP	Sappa Bulga NP	Somerton NP
Backburning									
Command						✓			
Bulk water carriers		✓		✓	✓	✓	✓		✓
Smoke Mgt required								✓	
Traffic mgt required				✓					
Visitor mgt required									
Apiarists									✓
Machinery exclusion areas				✓					✓
Chemical restrictions									
Aboriginal sites	✓		✓	✓	✓	✓			✓
Historic sites	✓			✓	✓	✓		✓	
Fauna / Flora sites			✓	✓					
SUPPRESSION guidelines				✓		✓	✓		
WARNINGS & HAZARDS									
Fire behaviour				✓					
High bogging risks		✓		✓		✓			✓
Terrain / Wind			✓				✓		
Aviation hazard									
Other hazards									

RESERVE GUIDELINES – COONABARABRAN AREA

SUMMARY TABLE OF RESERVE SPECIFIC GUIDELINES

Specific guidelines	Tinkrameannah NP	Trinkey SCA	Warrumbungle NP	Weetalibah NR	Wongarbon NR	Wondoba SCA	Yarrobil NP		
Backburning									
Command									
Bulk water carriers	✓			✓					
Smoke Mgt required					✓	✓			
Traffic mgt required					✓	✓	✓		
Visitor mgt required			✓		✓	✓			
Apiarists						✓			
Machinery exclusion areas	✓	✓		✓	✓	✓			
Chemical restrictions									
Aboriginal sites		✓	✓			✓	✓		
Historic sites		✓	✓			✓			
Fauna / Flora sites				✓			✓		
SUPPRESSION guidelines			✓		✓				
WARNINGS & HAZARDS									
Fire behaviour									
High bogging risks	✓	✓							
Terrain / Wind			✓				✓		
Aviation hazard			✓		✓				
Other hazards									

RESERVE GUIDELINES – COONABARABRAN AREA

ADELYNE SCA

Suppression	Liaise with neighbouring landholders on feasibility of a broad containment strategy using existing tracks and open areas. Apply Pilliga landscape guidelines
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BENI SCA

Aboriginal sites	Sites types include: artefacts
Historic sites	Sites include: fencelines
Visitor management	Apply Emergency management plan during periods forecast for Catastrophic Fire danger.
Suppression	Apply Pilliga landscape guidelines

BIDDON SCA

Machinery exclusion	Mallee / Broombush shrublands Old forestry camp 50 metres within creeklines Forestry research plots Grassy Box woodlands
Aboriginal sites	Sites types include: modified trees and artefacts
Historic sites	Sites include: wooden bridges, forestry camp site, coupe trees and charcoal production sites
Flora / Fauna	EEC – <i>Grassy Box woodlands</i> Significant vegetation – <i>Yarran shrubland</i>
Additional hazards	Extreme fire behaviour potential in Broombush / Hook-leaved Wattle shrublands
Suppression	Apply Pilliga landscape guidelines

BINNAWAY NR

Machinery exclusion	Rocky ridges
Aboriginal sites	Sites types include: modified trees and artefacts
Historic sites	Sites include: old phone lines
Additional hazards	Bogging hazards
Suppression	Apply Pilliga landscape guidelines

BOONALLA AA

Machinery exclusion	Steep slopes (see RFMS) NE area bounded by fire trails
Aboriginal sites	Sites types include: modified trees, artefacts, grinding grooves, stone arrangements and habitation sites
Historic sites	Sites include: Chinese wooden fence
Fire chemicals	Retardant use excluded from deep valleys and rocky areas (see RFMS)
Additional hazards	Winds from the NW to SW can produce severe turbulence along the Boonalla Range. The turbulence may extend some distance. The risk of turbulence must be assessed on the lee-side of steep terrain. Aerial operations should be suspended during periods of high turbulence.

RESERVE GUIDELINES – COONABARABRAN AREA

BOONALLA AA (continued)

Suppression Strategies	
Conditions & forecast	Guidelines
NOTE: The steep terrain and geology will act to limit the downslope spread of wildfires.	
BKDI < 100, or BKDI >100+ and outside critical fire season Stable conditions forecast	LOWER LEVELS <ul style="list-style-type: none"> A broad containment strategy using existing tracks, low fuel areas, open areas and recently burnt areas. STEEP TERRAIN <ul style="list-style-type: none"> Monitor fire spread Prepare control lines at base of steep terrain (usually existing roads). These may be supported by handtool lines on spurs. Backburn upslope only when fire fronts are close to containment lines
BKDI >100 & within critical fire season	LOWER LEVELS <ul style="list-style-type: none"> Contain fire to the smallest area practical. STEEP TERRAIN <ul style="list-style-type: none"> Consider deployment of RAFT crews as a first response in steep terrain. Backburn upslope only when fire fronts are close to containment lines, to avoid spotting. Use aerial incendiaries to remove unburnt areas that may cause upslope runs. <p style="color: red; margin-top: 10px;">CAUTION should be exercised during RAFT operations when an evening easterly change is forecast.</p>
Severe+ FDI forecast	<ul style="list-style-type: none"> Consider a strategy containing the fire to the smallest area practicable, using a combination of ground crews, fire units, machinery and aircraft.

BREELONG NP

Machinery exclusion	Banks of the Castlereagh River Fuzzy Box woodlands Areas with <i>Tylophora linearis</i>
Aboriginal sites	Sites types include: modified trees, artefacts, grinding grooves and burial sites
Historic sites	Sites include: wooden cattle grids, forestry huts, survey trees, coupe trees and charcoal production sites
Flora / Fauna	EEC – <i>Fuzzy Box woodlands</i> Endangered species – <i>Tylophora linearis</i>
Additional hazards	Extreme fire behaviour potential in Broombush / Hook-leaved Wattle shrublands
Suppression	Apply Pilliga landscape guidelines

COBBORA SCA

Machinery exclusion	The creekline area running parallel to the Boomley Road South-west area of the reserve
Aboriginal sites	Sites types include: high potential along creek corridor, Boomley Road
Flora / Fauna	<i>Endangered species – Mallee fowl</i> <i>Endangered species – Zieria ingramii</i> <i>Endangered ecological community – Grey Box woodlands</i>

COOLBAGGIE NR (WEST)

Machinery exclusion	Creek corridor between Hains Road crossing and Coolbaggie Forest way <i>Fuzzy Box woodlands</i>
Aboriginal sites	Sites types include: modified trees, artefacts and burial area
Historic sites	Sites include: wooden bridges
Flora / Fauna	EEC – <i>Fuzzy Box woodlands</i> Endangered species – <i>Tylophora linearis</i> Endangered species – <i>Mallee Fowl</i>
Additional hazards	Extreme fire behaviour potential in Broombush / Hook-leaved Wattle shrublands

RESERVE GUIDELINES – COONABARABRAN AREA

DAPPER NR

Aboriginal sites	Sites types include: artefacts
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DRILLWARRINA NP

Aboriginal sites	Sites types include: potential for modified trees and artefacts
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GARRAWILLA NP

Machinery exclusion	Rocky ridge areas (see RFMS)
Aboriginal sites	Sites types include: modified trees and artefacts
Flora / Fauna	EEC – <i>Depaurate dry rainforest</i> (outside reserve, but adjacent to fire trail)
Additional hazards	Bogging hazards
Suppression	Apply Pilliga landscape guidelines

GOODIMAN SCA

Machinery exclusion	Slopes greater than 20 degrees
Aboriginal sites	Sites types include: modified trees

GOONOO RESERVES

Coolbaggie NR (East), Goonoo NP & Goonoo SCA

Benchmarks for extreme fire behaviour

The Goonoo Forest was subject to a large fire event in January 2007, which escalated to a landscape scale.

Landscape scale fires in the Goonoo may be a rare event, but fire fighters need to be aware of the potential fire behaviour. Characteristics of this fire were:

- day-time run of about 15 kilometres with south-westerly winds
- a significant broad front night-time run of about 15 kilometres with easterly winds
- extreme drought conditions

No benchmark has been observed for extreme fire behaviour under north-westerly conditions. However, it could exceed the fire behaviour observed in 2007.

Machinery exclusion	EEC – <i>Fuzzy Box woodlands</i> Mallee fowl areas
Aboriginal sites	Sites types include: modified trees, artefacts, grinding grooves, quarries and burial sites
Historic sites	Sites include: wooden fire tower
Flora / Fauna	EEC – <i>Western Box woodlands</i> Endangered species – <i>Mallee fowl</i> Endangered species – <i>Zieria ingramii</i> Endangered species – <i>Tylophora linearis</i> Endangered species – <i>Pomaderris queenslandica</i>
Additional hazards	Extreme fire behaviour potential in Broombush / Hook-leaved Wattle shrublands
Suppression	Apply Pilliga landscape guidelines

MOGRIGUY NP

Aboriginal sites	Sites types include: artefacts
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RESERVE GUIDELINES – COONABARABRAN AREA

PILLIGA SOUTH reserves Bingah Wingal SCA, Cooleburba SCA, Pilliga NR & Ukerbarley AA

Machinery exclusion (see RFMS)	Steep sandstone country Wetlands Within 100 metres of Aboriginal sites, except within existing fire trails Valley areas when sub-soils are saturated Phytophthora affected areas
Aboriginal sites	Sites types include: modified trees, artefacts, grinding grooves, art sites and burials An Aboriginal Heritage Officer should be consulted during the planning of operations.
Historic sites	Sites include: Ukerbarley homestead, yards and sheds, brick kilns remnants.
Flora / Fauna	EEC – <i>Carex sedgelandis</i> Significant fauna site - <i>Large-eared Pied Bat maternity site</i>
Additional hazards	Bogging hazards during wetter seasons
Suppression	Apply Pilliga landscape guidelines
Phytophthora hygiene protocols must be implemented for Ukerbarley & Bingah Wingal	

ROCKY GLEN NP

Suppression	Apply Pilliga landscape guidelines Containment may require inclusion of vacant Crown lands and uncleared private land
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SAPPA BULGA NP

Historic sites	Sites include: old residence site
Flora / Fauna	EEC – <i>Western Box woodlands</i>
Suppression	Small reserve easily damaged by aggressive plant use.

SOMERTON NP

Machinery exclusion	Steep areas
Aboriginal sites	Sites types include: modified trees, artefacts, grinding grooves and stone arrangements
AVIATION HAZARDS	East – west running transmission lines located north and south of the reserve
Suppression Strategies	
Conditions & forecast	Guidelines
NOTES: The steep terrain has LOW OFH will act to limit the spread of wildfires. It may take a long time for a fire to burn downslope. The chance of fire self-extinguishing in moderate seasons is high.	
BKDI < 100, or BKDI >100+ and outside critical fire season Stable conditions forecast	LOWER LEVELS <ul style="list-style-type: none"> A broad containment strategy using existing tracks, low fuel areas, open areas and recently burnt areas. STEEP TERRAIN <ul style="list-style-type: none"> Monitor fire spread Prepare control lines at base of steep terrain (usually existing roads). These may be supported by handtool lines on spurs. Backburn upslope only when fire fronts are close to containment lines
BKDI >100 & within critical fire season	LOWER LEVELS <ul style="list-style-type: none"> Contain fire to the smallest area practical, as a first response. STEEP TERRAIN <ul style="list-style-type: none"> Consider deployment of RAFT crews as a first response in steep terrain. Backburn upslope only when fire fronts are close to containment lines, to avoid spotting. Use aerial incendiaries to remove unburnt areas that may cause upslope runs. <p style="text-align: center;">NOTE: Upslope runs could cause long distance spotting.</p>
Severe+ FDI forecast	<ul style="list-style-type: none"> Consider a strategy containing the fire to the smallest area practicable, using a combination of ground crews, fire units, machinery and aircraft.

RESERVE GUIDELINES – COONABARABRAN AREA

TINKRAMEANAH NP

Machinery exclusion	Steep areas
Equipment capacity	Maximum dozer – D6 equivalent
Aboriginal sites	Sites types include: artefacts
Additional hazards	Bogging
Suppression	Apply Pilliga landscape guidelines

TRINKEY SCA

Machinery exclusion	Steep areas
Aboriginal sites	Sites types include: modified trees, artefacts, grinding grooves, stone arrangements and burial sites
Historic sites	Sites include: coupe trees
Flora / Fauna	EEC – <i>Grassy Box woodlands</i>
Additional hazards	Bogging
Suppression	Apply Pilliga landscape guidelines. Key vegetation types include: Ironbark / White Pine / Bullock woodlands Pilliga Box / Poplar Box / White Box / White Pine woodlands Sandstone shrubby woodlands

WARRUMBUNGLE NP

Machinery exclusion	Slopes greater than 20 degrees Open valley areas
Aboriginal sites	Sites types include: Tara Cave, modified trees, resource (food and medicine) sites, artefacts, shelters, grinding grooves, waterholes and quarries
Historic sites	Sites include: Woolshed, Balor Hut, Pincham Camp structures, Tara homestead precinct
Flora / Fauna	EEC - <i>Dry rainforests</i> . EEC – <i>Grassy Box woodlands</i> Endangered population – <i>Brush-tailed Rock-wallaby</i>
Fire chemicals	Grey water from the storage ponds for helicopter bombing is permitted, subject to conditions: not used near ground crews and standing / flowing water, loads do not pass over any visitor use areas, and buckets washed down before drawing from other sources.
Visitor management	Apply <i>Emergency management plan</i> during periods forecast for Catastrophic Fire danger. Close facilities and trails during fire operations, where required.
AVIATION HAZARDS	Power lines with long spans are located at: <ul style="list-style-type: none"> ◆ east of Needle Mountain communications facilities ◆ north side of Siding Spring saddle Winds from the NW to SW can produce severe turbulence, and may extend some distance. Operations should be suspended during these conditions.
Suppression Strategies	
Conditions & forecast	Guidelines
BKDI < 100, or BKDI >100+ and outside critical fire season, Stable conditions forecast	<ul style="list-style-type: none"> • A broad containment strategy using existing roads, tracks, rocky areas, low fuel areas and recently burnt areas. • Monitor during periods of lower KBDI.
BKDI >100 & within critical fire season	<ul style="list-style-type: none"> • Consider deployment of RAFT crews as a first response. • Consider a strategy that uses a combination of ground crews, machinery and fire units to contain the fire.
Severe+ FDI forecast	<ul style="list-style-type: none"> • Consider a strategy containing the fire to the smallest area practicable, using a combination of ground crews, fire units, machinery and aircraft.
NOTES	
<ol style="list-style-type: none"> 1. Volcanic land units are characterised by steep terrain and lower Overall Fuel Hazards. This will act to limit the potential downslope spread of wildfires. The OFH is also lower on northern aspects. (Check <i>Vegetation communities and biodiversity thresholds</i>) 2. Potential rates of spread are higher in Sandstone woodlands. 3. Upslope backburning should be avoided in steep terrain until fire fronts are within proximity of control lines. The aim is to time backburning to minimise length of fire run and spotting potential. 	

RESERVE GUIDELINES – COONABARABRAN AREA

WONGARBON NR

Machinery exclusion	Heavy machinery excluded
Equipment capacity	Light plant only – Positraks or Bobcats
Suppression	Small reserves easily damaged by aggressive plant use. Ground crews for close containment, otherwise Broad containment.
Additional hazards	Electrical transmission line located on southern corner of the reserve. Bogging risk along the western boundary (Woodleys Road) during wetter seasons.
AVIATION HAZARD	Transmission line located at southern point of reserve, running east-west.

WEETALIBAH NR

Machinery exclusion	Slopes greater than 20 degrees
Aboriginal sites	Sites types include: Tara Cave, modified trees, resource (food and medicine) sites, artefacts, shelters, grinding grooves, waterholes and quarries
Historic sites	Sites include: Woolshed, Balor Hut, Pincham Camp structures, Tara homestead precinct
Prescribed burning	<i>Potential Regent Honey-eater habitat</i> Avoid prescribed burning operations when Mugga Ironbark is flowering
Additional hazards	Bogging Hazards: Markers for high risk areas are Red Gum, Bulloak, Mugga Ironbark, and Teatree. Steep pinches on Southern Firebreak. Implement downslope traffic only east of Johnson Lane
Suppression	Apply Pilliga landscape guidelines

WONDOBA SCA

Machinery exclusion	Steep areas
Equipment capacity	Light plant only – Positraks or Bobcats
Aboriginal sites	Sites types include: modified trees, resource (food and medicine) sites, artefacts, shelters, grinding grooves, and quarries
Historic sites	Sites types include: quarry loading structures
Flora / Fauna	EEC – <i>Grassy Box woodlands</i>
Suppression	Small reserves easily damaged by aggressive plant use. Ground crews for close containment, otherwise Broad containment.

YARROBIL NP

Machinery exclusion	Slopes greater than 20 degrees
Aboriginal sites	Sites types include: modified trees

RESERVE GUIDELINES – NARRABRI AREA

SUMMARY TABLE OF RESERVE SPECIFIC GUIDELINES

Specific guidelines	Barwon reserves	Berrygill AA	Bobbiwaa SCA	Boomi NR	Boomi West NR	Borongong NR	Brigalow Park reserves	Budelah NR	Bullala NP	Bullawa Creek SCA
Backburning										
Command										
Bulk water carriers				✓	✓	✓		✓	✓	
Smoke Mgt required										
Traffic mgt required										
Visitor mgt required										
Apiarists										
Machinery exclusion areas		✓	✓	✓	✓	✓	✓	✓	✓	
Chemical restrictions							✓			
Aboriginal sites	✓	✓		✓	✓	✓		✓	✓	
Historic sites	✓									✓
Fauna / Flora sites			✓	✓	✓	✓	✓	✓	✓	
SUPPRESSION guidelines							✓		✓	
WARNINGS & HAZARDS										
Fire behaviour									✓	
High bogging risks	✓			✓	✓	✓	✓	✓		
Terrain / Wind										
Aviation hazard								✓		
Other hazards								✓		

RESERVE GUIDELINES – NARRABRI AREA

SUMMARY TABLE OF RESERVE SPECIFIC GUIDELINES

Specific guidelines	Campbell – Montrose AA	Carerunga NR	Couradda NP	Courallie AA	Deriah AA	Gamilaroi NR	Gunyaerwaridi NP	Gwydir Wetlands	Irrigappa AA	Killarney SCA
Backburning										
Command										
Bulk water carriers	✓	✓			✓		✓			
Smoke Mgt required										
Traffic mgt required										
Visitor mgt required										
Apiarists										
Machinery exclusion areas		✓	✓		✓	✓	✓	✓		
Chemical restrictions										
Aboriginal sites	✓			✓	✓	✓		✓	✓	✓
Historic sites								✓		
Fauna / Flora sites		✓			✓	✓		✓		
SUPPRESSION guidelines	✓			✓		✓		✓		
WARNINGS & HAZARDS										
Fire behaviour								✓		✓
High bogging risks		✓						✓		
Terrain / Wind	✓			✓	✓					
Aviation hazard										
Other hazards		✓								

RESERVE GUIDELINES – NARRABRI AREA

SUMMARY TABLE OF RESERVE SPECIFIC GUIDELINES

Specific guidelines	Kirramingly NR	Leard SCA	Midkin NR	Mission AA	Moema NP	Mount Kaputar NP	Narran Lake NR	Planchonella NR	Terry Hie Hie AA	Warrambool SCA
Backburning										
Command										
Bulk water carriers			✓		✓	✓	✓	✓		✓
Smoke Mgt required						✓				
Traffic mgt required						✓				
Visitor mgt required						✓				
Apiarists										
Machinery exclusion areas	✓	✓	✓		✓	✓	✓	✓	✓	✓
Chemical restrictions										
Aboriginal sites	✓		✓	✓		✓	✓		✓	✓
Historic sites				✓		✓	✓			✓
Fauna / Flora sites	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SUPPRESSION guidelines	✓		✓			✓		✓		✓
WARNINGS & HAZARDS										
Fire behaviour					✓					
High bogging risks	✓		✓				✓			✓
Terrain / Wind						✓				
Aviation hazard						✓				
Other hazards										✓

RESERVE GUIDELINES – NARRABRI AREA

BARWON RESERVES

Machinery exclusion	Riparian areas
Equipment capacity	Graders preferred. Maximum dozer – D6 equivalent
Aboriginal sites	Sites types potentially include: modified trees and artefacts
Historic sites	Sites include: homestead sites

BERRYGILL AA

Machinery exclusion	Riparian areas Narrow gorges in the south-east EEC - <i>Yellow Box / Red Gum woodland</i>
Equipment capacity	Maximum dozer – D6 equivalent
Aboriginal sites	Sites types include: grinding grooves and rock engravings

Suppression Strategies	
Conditions & forecast	Guidelines
BKDI < 100, or BKDI >100+ and outside critical fire season Stable conditions forecast	<ul style="list-style-type: none"> Maximise fire area in accordance with requirements for biodiversity management and thresholds A broad containment strategy using existing roads, tracks, and recently burnt areas.
BKDI >100 within critical fire season	<ul style="list-style-type: none"> Consider a strategy that uses a combination of ground crews, machinery and fire units to contain the fire. Consider deployment of RAFT crews as first response in the eastern areas to keep the fire to smallest area practical, prior to falling-back to the broad containment strategy RAFT crews may need to be deployed in the south-eastern area due to the terrain that will limit use of earth-moving machinery. Falling-back to cleared country on the eastern side may be required during periods with predicted extreme conditions.
Severe+ FDI forecast	<ul style="list-style-type: none"> Consider a strategy containing the fire to the smallest area practicable, using a combination of ground crews, fire units, machinery and aircraft.

BOBBIWAA SCA

Machinery exclusion	EEC - <i>Myall – Whitewood woodland</i>
Equipment capacity	Maximum dozer – D6 equivalent
Aboriginal sites	Sites types include: modified trees
Historic sites	Sites include: homestead sites

BOOMI NR, BOOMI WEST NR, BORONGA NR

Machinery exclusion	EEC – Sand ridges containing <i>Carbeen woodland</i> Minimise / avoid plant use
Equipment capacity	Light plant only – Positraks or Bobcats
Aboriginal sites	Sites types potentially include: modified trees
Historic sites	Sites include: homestead sites
Additional hazards	Gilgai / melonholes in black soil Dry bogging on sand hills
Suppression	Small reserves easily damaged by aggressive plant use. Broad containment where possible.

RESERVE GUIDELINES – NARRABRI AREA

BRIGALOW PARK RESERVES

Machinery exclusion	Heavy machinery excluded
Equipment capacity	Light plant only – Positraks or Bobcats
Aboriginal sites	Sites types include: modified trees and artefacts
Historic sites	Sites include: fencelines
Flora / Fauna	Brigalow forests and woodlands Spiny Peppercross Black-striped Wallaby
Additional hazards	Gilgai / melonholes in black soil.
Suppression	Small reserves easily damaged by aggressive plant use. Ground crews for close containment, otherwise Broad containment.

BUDELAH NR

Machinery exclusion	EEC – Sand ridges containing <i>Carbeen woodland</i> Floodplain forests and a 50 metre buffer area
Equipment capacity	Graders preferred
Aboriginal sites	Sites types include: modified trees and artefacts
Additional hazards	Bridge load limit – Boomangera Creek – Cat 9 units maximum Gilgai / melonholes in black soil. Tree stumps in open woodlands Dry bogging on sand hills

BULLALA NP

Machinery exclusion	EEC – <i>Carbeen woodland</i> Areas containing Yetman Wattle
Aboriginal sites	Sites types include: modified trees
Additional hazards	Bridge load limit – Boomangera Creek – Cat 9 units maximum Gilgai / melonholes in black soil. Tree stumps in open woodlands Dry bogging on sand hills
Suppression Strategies	
Vegetation community	Guidelines
Grassland	<ul style="list-style-type: none"> Direct attack with fire units, wherever possible.
White Pine / Carbeen Woodland	<ul style="list-style-type: none"> Direct attack and parallel with fire units, wherever possible. Avoid the use of machinery, except during Very High to Extreme Fire Danger
White Pine / Ironbark / White Box Woodland	<p>Low – Moderate fire danger conditions</p> <ul style="list-style-type: none"> Maximise fire area in accordance with requirements for biodiversity management and thresholds Direct and parallel attack with machinery and fire units may be applied <p>High – Very High fire danger conditions</p> <ul style="list-style-type: none"> Construct and secure control lines to prevent the fire entering large continuous areas of Smooth-barked Apple / Pine Woodland Secure and deepen control lines on next predicted downwind side of the fire.
Smooth-barked Apple / Pine Woodland	<p style="color: red;">Fire in this community will spread rapidly during High – Severe Fire Danger. The rate of spread during extreme conditions may reach 4 - 6 kph.</p> <p>Low – moderate fire danger conditions</p> <ul style="list-style-type: none"> Maximise fire area in accordance with requirements for biodiversity management and thresholds Direct and parallel attack with machinery and fire units may be applied Consider locating control lines on the boundary of vegetation communities with lower fuel, such as White Pine / Ironbark / White Box woodlands <p>High – Very High fire danger conditions</p> <ul style="list-style-type: none"> Fallback to existing roads, tracks and recently burnt areas when fire runs exceed, or predicted to exceed, control line construction rates. Secure and deepen control lines on next predicted downwind side of the fire.
Severe+ FDI forecast	<ul style="list-style-type: none"> Consider a strategy containing the fire to the smallest area practicable, using a combination of ground crews, fire units, machinery and aircraft.

RESERVE GUIDELINES – NARRABRI AREA

BULLAWA CREEK SCA

Machinery exclusion	Sandstone ridges
Equipment capacity	Graders preferred
Aboriginal sites	Sites types include: grinding grooves, quarry and artefacts
Historic sites	Timber stock ramp near the entrance to the reserve

CAMPBELL – MONTROSE AA

Machinery exclusion	Slopes greater than 20 degrees
Aboriginal sites	Sites types include: modified trees
Suppression Strategies	
BKDI < 100, or BKDI >100+ and outside critical fire season Stable conditions	<ul style="list-style-type: none"> Maximise fire area in accordance with requirements for biodiversity management and thresholds A broad containment strategy using existing roads, tracks, and recently burnt areas.
BKDI >100 & within critical fire season	<ul style="list-style-type: none"> A broad containment strategy using existing roads, handtool lines, rocky areas and recently burnt areas. Consider deployment of RAFT crews as first response to keep the fire to smallest area practical, prior to falling-back to the broad containment strategy Exclude machinery from slopes greater than 20 degrees.
Severe+ FDI forecast	<ul style="list-style-type: none"> Consider a strategy containing the fire to the smallest area practicable, using a combination of ground crews, fire units, machinery and aircraft.

CARERUNGA NR

Machinery exclusion	EEC – <i>Brigalow forests and woodlands</i> EEC – <i>Myall floodplain woodlands</i> Minimise / avoid plant use
Equipment capacity	Light plant only – Positraks or Bobcats
Additional hazards	Gilgai / melonholes in black soil
Suppression	Small reserves easily damaged by aggressive plant use. Broad containment where possible.

COURADDA NP

Machinery exclusion	EEC – <i>Myall woodlands</i>
Equipment capacity	Maximum dozer – D6 equivalent

COURALLIE AA

Machinery exclusion	Slopes greater than 20 degrees
Equipment capacity	Maximum dozer – D6 equivalent
Aboriginal sites	Sites types include: modified trees
Suppression Strategies	
BKDI < 100, or BKDI >100+ and outside critical fire season Stable conditions forecast	<ul style="list-style-type: none"> Maximise fire area in accordance with requirements for biodiversity management and thresholds Direct and parallel attack with machinery and fire units should be applied in open grass areas A broad containment strategy using existing roads, tracks, rocky areas and recently burnt areas.
BKDI >100 & within critical fire season, or Extreme FDI forecast	<ul style="list-style-type: none"> A broad containment strategy using existing roads, handtool lines, rocky areas and recently burnt areas. Consider deployment of RAFT crews as first response to keep the fire to smallest area practical, prior to falling-back to the broad containment strategy RAFT crews and machinery may be used together to link a valley for a natural control line. Plateau areas and the Ridgeback Trail may be accessed from the north side of the reserve
Severe+ FDI forecast	<ul style="list-style-type: none"> Consider a strategy containing the fire to the smallest area practicable, using a combination of ground crews, fire units, machinery and aircraft.

RESERVE GUIDELINES – NARRABRI AREA

DERIAH AA

Machinery exclusion	Heavy machinery excluded, except along existing roads and tracks and to assist in mop-up.
Aboriginal sites	Sites types include: habitation structure, bush food and medicine sites, artefacts, shelters, grinding grooves and waterholes
Flora / Fauna	EEC – <i>Ooline rainforests and communities</i> Endangered population – <i>Australian Bush Turkey</i>
Suppression Strategies	
Conditions & forecast	Guidelines
BKDI < 100, or BKDI >100+, outside critical fire season Stable conditions forecast	A broad containment strategy using existing roads, tracks, rocky areas, low fuel areas and recently burnt areas. Monitor during periods of lower KBDI.
BKDI >100 & within critical fire season	Consider deployment of RAFT crews as a first response. Consider a strategy that uses a combination of ground crews, machinery and fire units to contain the fire.
Severe+ FDI forecast	<ul style="list-style-type: none"> Consider a strategy containing the fire to the smallest area practicable, using a combination of ground crews, fire units, machinery and aircraft.

GAMILAROI NR

Machinery exclusion	Heavy machinery excluded
Equipment capacity	Light plant only – Positraks or Bobcats
Aboriginal sites	Sites types include: modified trees and artefacts
Flora / Fauna	EEC – <i>Ooline rainforests and communities</i>
Additional hazards	Gilgai / melonholes in black soil.
Suppression	Small reserves easily damaged by aggressive plant use. Ground crews for close containment, otherwise Broad containment.

GUNDERWARIDI NP

Machinery exclusion	Coolatai grass infestations
Equipment capacity	Light plant preferred – Positraks or Bobcats
Aboriginal sites	Sites types include: potential for modified trees and artefacts
Flora / Fauna	EEC – <i>Grassy Box woodlands</i>
Suppression	Small reserves easily damaged by aggressive plant use. Ground crews for close containment, otherwise Broad containment.

GWYDIR WETLANDS SCA

Machinery exclusion	Sedgeland – Big Leather wetlands Floodplain woodland areas, except on existing trails (light plant permitted)
Aboriginal sites	Sites types include: high potential for modified trees
Historic sites	Sites include: Old Dromana sheds and yards
Flora / Fauna	EEC – <i>Club Rush Sedgeland</i> EEC – <i>Poplar Box – Coolibah woodlands</i> EEC – <i>Carbeen woodlands</i> EEC – <i>Brigalow woodlands</i>
Prescribed burning	Strict guidelines apply
Additional hazards	High intensity fire behaviour in <i>Club Rush Sedgeland</i> Gilgai / melonholes in black soil.
Suppression Strategies	
Location	Guidelines
Wetlands	<ul style="list-style-type: none"> Prepare containment lines along the margins of the wetland and on fire trails during running fires. Direct attack permitted only for a small smouldering fire in low wetland vegetation with a clear escape route.

RESERVE GUIDELINES – NARRABRI AREA

IRRIGAPPA AA

Equipment capacity	Maximum dozer – D6 equivalent
Aboriginal sites	Sites types include: modified trees

KILLARNEY SCA

Aboriginal sites	Sites types include: modified trees
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KIRRAMINGLY NR

Machinery exclusion	Nardoo Drainage Basin Floodplain woodlands
Equipment capacity	Graders preferred
Aboriginal sites	Sites types include: modified trees
Flora / Fauna	EEC – <i>Floodplain woodlands</i> Threatened species – <i>Swainsonia murrayana</i> & <i>Desmonium campylocaulon</i>
Additional hazards	Bogging in Nardoo Drainage Basin Bogging after rain

LEARD SCA

Machinery exclusion	Belah woodlands Rocky ridges (mapped in RFMS)
Equipment capacity	Maximum dozer – D6 equivalent
Flora / Fauna	EEC – <i>Floodplain woodlands</i> Threatened species – <i>Spiny Peppergrass</i>

MIDKIN NR

Machinery exclusion	Heavy machinery excluded
Equipment capacity	Light plant only – Positraks or Bobcats
Aboriginal sites	Sites types include: modified trees
Flora / Fauna	EEC – <i>Myall floodplain woodlands</i>
Additional hazards	Bogging after rain Gilgai / melonholes in black soil.
Suppression	Small reserves easily damaged by aggressive plant use. Ground crews for close containment, otherwise Broad containment.

MISSION AA

Machinery exclusion	Floodplain woodlands (Myall and Belah)
Equipment capacity	Maximum dozer – D6 equivalent
Aboriginal sites	Sites types include: modified trees, cemetery area. Old mission historic precinct and associated buildings.
Flora / Fauna	EEC – Myall floodplain woodlands

MOEMA NP

Machinery exclusion	Floodplain woodlands (Myall and Belah)
Equipment capacity	Maximum dozer – D6 equivalent
Flora / Fauna	EEC – Myall floodplain woodlands

RESERVE GUIDELINES – NARRABRI AREA

MOUNT KAPUTAR NP		Deriah AA listed separately
Machinery exclusion	Slopes greater than 20 degrees Rock shelf areas Wilderness areas	
Aboriginal sites	Sites types include: modified trees, artefacts, shelters, grinding grooves and quarries	
Historic sites	Sites include: Scutts Hut, Carinya homestead, Beresford Park homestead, Foggy Dell woolshed, the Chinese fence, livestock troughs, survey trees and geodetic stations	
Flora / Fauna	EEC – <i>Ooline rainforests and communities</i> EEC - <i>Dry rainforests, Ooline communities and Semi-evergreen Vine Thickets.</i> EEC – <i>Grassy Box woodlands</i> EEC – <i>Carex sedgeland</i> Endangered population – <i>Australian Bush Turkey</i> Endangered species – <i>Brush-tailed Rock-wallaby</i>	
Visitor management	Apply <i>Emergency management plan</i> for forecast Catastrophic Fire danger.	
Additional hazards	Aviation hazard – powerlines : east of Bullawa Creek, Bullawa Creek to the The Governor, and thence to Mount Dowe. Aviation hazard – severe wind turbulence.	
Suppression Strategies		
Conditions & forecast	Guidelines	
BKDI < 100, or BKDI >100+ and outside critical fire season, Stable conditions forecast	<ul style="list-style-type: none"> A broad containment strategy using existing roads, tracks, rocky areas, low fuel areas and recently burnt areas. Monitor during periods of lower BKDI. 	
BKDI >100 & within critical fire season	<ul style="list-style-type: none"> Consider deployment of RAFT crews as a first response. Consider a strategy that uses a combination of ground crews, machinery and fire units to contain the fire. 	
Severe+ FDI forecast	<ul style="list-style-type: none"> Consider a strategy containing the fire to the smallest area practicable, using a combination of ground crews, fire units, machinery and aircraft. 	
NOTE		
Backburning should be avoided in steep terrain until fire fronts are within proximity of control lines. The aim is to time backburning to minimise length of fire run and spotting potential.		

NARRAN LAKE NR	
Machinery exclusion	Lake shorelines Mythological site area Riparian woodlands
Aboriginal sites	Sites types include: modified trees, artefacts, grinding grooves, quarries and a mythological site.
Historic sites	Sites include: grave site, Terewah sheds and yards
Flora / Fauna	EEC – <i>Poplar Box – Coolibah woodlands</i> EEC - <i>Riparian woodlands</i> EEC – <i>Woodlands containing Brigalow</i>
Additional hazards	Bogging after rain Gilgai / melonholes in black soil.
Suppression	
Suppression Strategies	
Conditions & forecast	Guidelines
Stable conditions forecast Winds < 15 kph	<ul style="list-style-type: none"> A broad containment strategy using existing roads, tracks, claypans, low OFH fuel types and riparian areas. Where practicable, and with an analysis of short and medium forecasts, consider maximising the fire area, for ecological purposes.
Unstable conditions forecast Winds > 15 kph	<ul style="list-style-type: none"> Direct or parallel attack with plant and fire units. Fallback to perimeter fire trails or open country when fire runs extend capacity to construct containment lines Secure flank as soon as possible on the next predicted downwind side.
Control lines in Lignum Shrubby Thickets	<ul style="list-style-type: none"> In most conditions, fire will not run in lignum Under exceptional conditions, control lines may be constructed Light blading should be used, with overburden back-bladed at end of patrolling There is the potential for underground smouldering to emerge outside a control line. This risk is high during dry soil sub-surface conditions. A shallow trench may be ripped along the control line, and patrolled for underground smouldering. FLIR may be used to assist patrolling.

RESERVE GUIDELINES – NARRABRI AREA

PLANCHONELLA NR

Machinery exclusion	Heavy machinery excluded
Equipment capacity	Light plant only – Positraks or Bobcats, outside dry rainforests and vine thickets
Flora / Fauna	EEC – <i>Semi-evergreen Vine Thickets</i>
Suppression	Small reserves easily damaged by aggressive plant use. Ground crews for close containment, otherwise Broad containment.

TERRY HIE HIE AA

Machinery exclusion	Brigalow woodlands
Equipment capacity	Maximum dozer – D6 equivalent
Aboriginal sites	Sites types include: modified trees
Flora / Fauna	EEC – <i>Brigalow woodland community</i>

WARRAMBOOL SCA

Machinery exclusion	Sand monkey country
Equipment capacity	Graders preferred
Aboriginal sites	Sites types include: high potential for sites in sand monkey country
Flora / Fauna	EEC – <i>Carbeen woodland</i> EEC – <i>Poplar Box – Coolibah woodlands</i>
Additional hazards	Bogging after rain Gilgai / melonholes in black soil.
Suppression Strategies	
Conditions & forecast	Guidelines
Stable conditions forecast Winds < 15 kph	<ul style="list-style-type: none"> A broad containment strategy using existing roads, tracks, red soil areas, low OFH fuel types and riparian areas. Where practicable, and with an analysis of short and medium forecasts, consider maximising the fire area, for ecological purposes.
Unstable conditions forecast Winds > 15 kph	<ul style="list-style-type: none"> Direct or parallel attack with plant and fire units. Fallback to perimeter fire trails or open country when fire runs extend capacity to construct containment lines Secure flank as soon as possible on the next predicted downwind side.
Severe+ FDI forecast	<ul style="list-style-type: none"> Consider a strategy containing the fire to the smallest area practicable, using a combination of ground crews, fire units, machinery and aircraft.