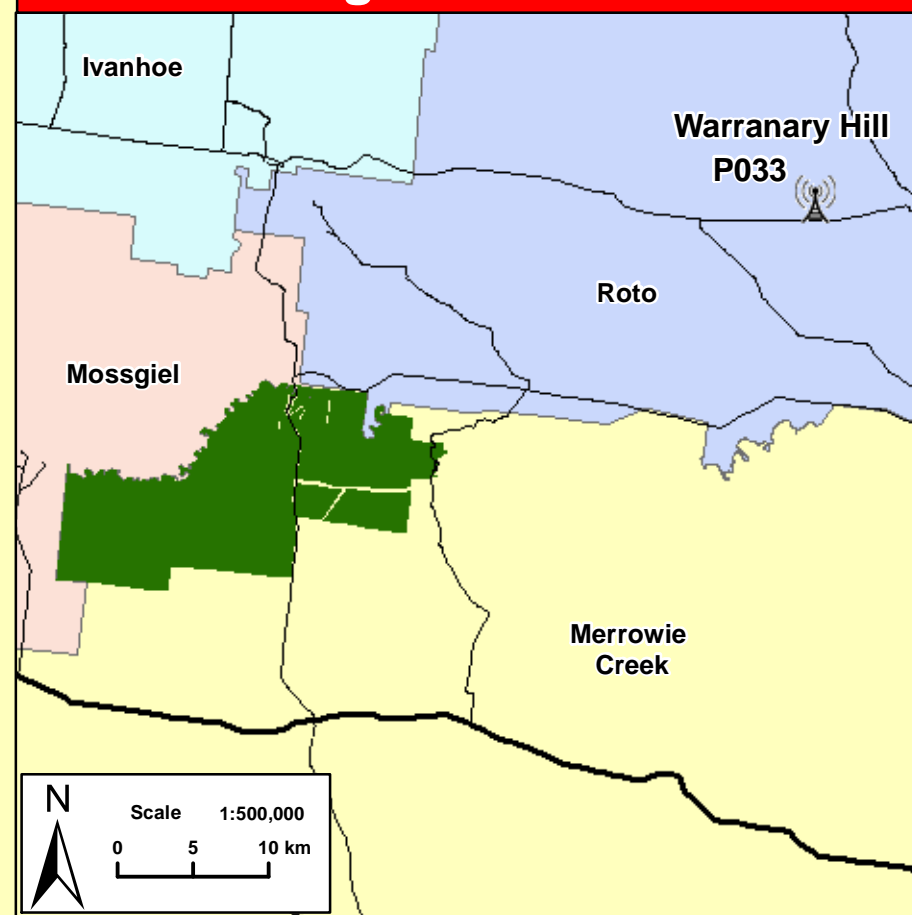


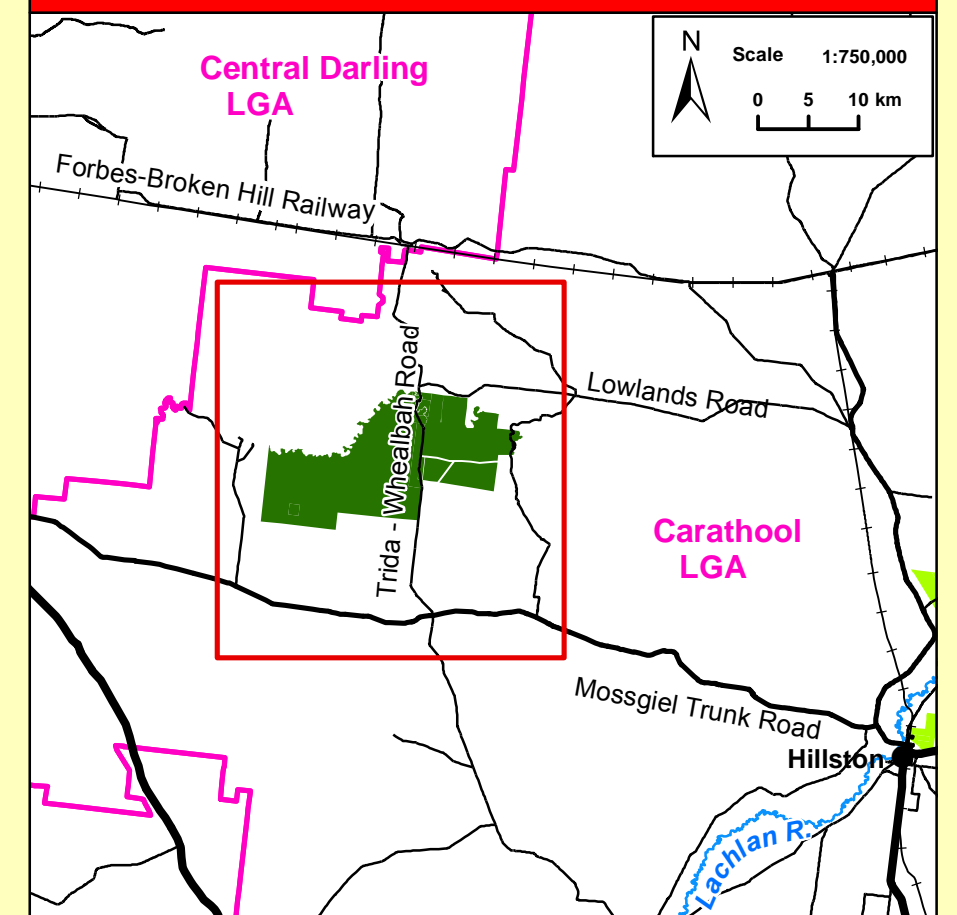
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 Contact: OEH PWG Regional Office: 200 Yambil St. Griffith NSW 2680 P.O. Box 1049 Griffith NSW 2680 ph: 02 6966 8100

ISBN 978 1 74359 093 5	OEH 2013/0333	Date: July 2014	Version No: 1
Map Details		Related Documents	
Datum: Geocentric Datum of Australia (GDA) 1994		OEH Fire Management Manual 2013 - 2014.	
Projection: Map Grid of Australia (MGA) Zone 55		1:100k Topographic Maps: Willandra 7931 & Mossgiel 7831 (AGD 66)	
Data: Spot Satellite Imagery: 2005.		Scale: Noted scales are true when printed on A1 size paper	

RFS Fire Brigade Areas & Towers



Locality



Contact Information

Agency	Position / Location	Phone
National Parks & Wildlife Service	Duty Officer	02 6332 6350
	Mid West area & Regional Office - 200 Yambil St Griffith	02 6966 8100
NSW Rural Fire Service MIA District	Fire Control Centre	02 6966 7800
	Duty Officer	02 6966 7887
Fire and Rescue NSW	Hillston Fire Station	02 6967 2610
Emergency Services		000
SES		13 2500
Police Station (not open 24 hrs)	Hillston	02 6967 2544
Police - Local Area Command	Griffith	02 6969 4310
Hospital	Hillston	02 6967 2502
Council	Central Darling Shire Council	08 8083 8900
	Carathool Shire Council	02 6965 1900
Local Aboriginal Land Council	Griffith	02 6962 6711

Communications Information

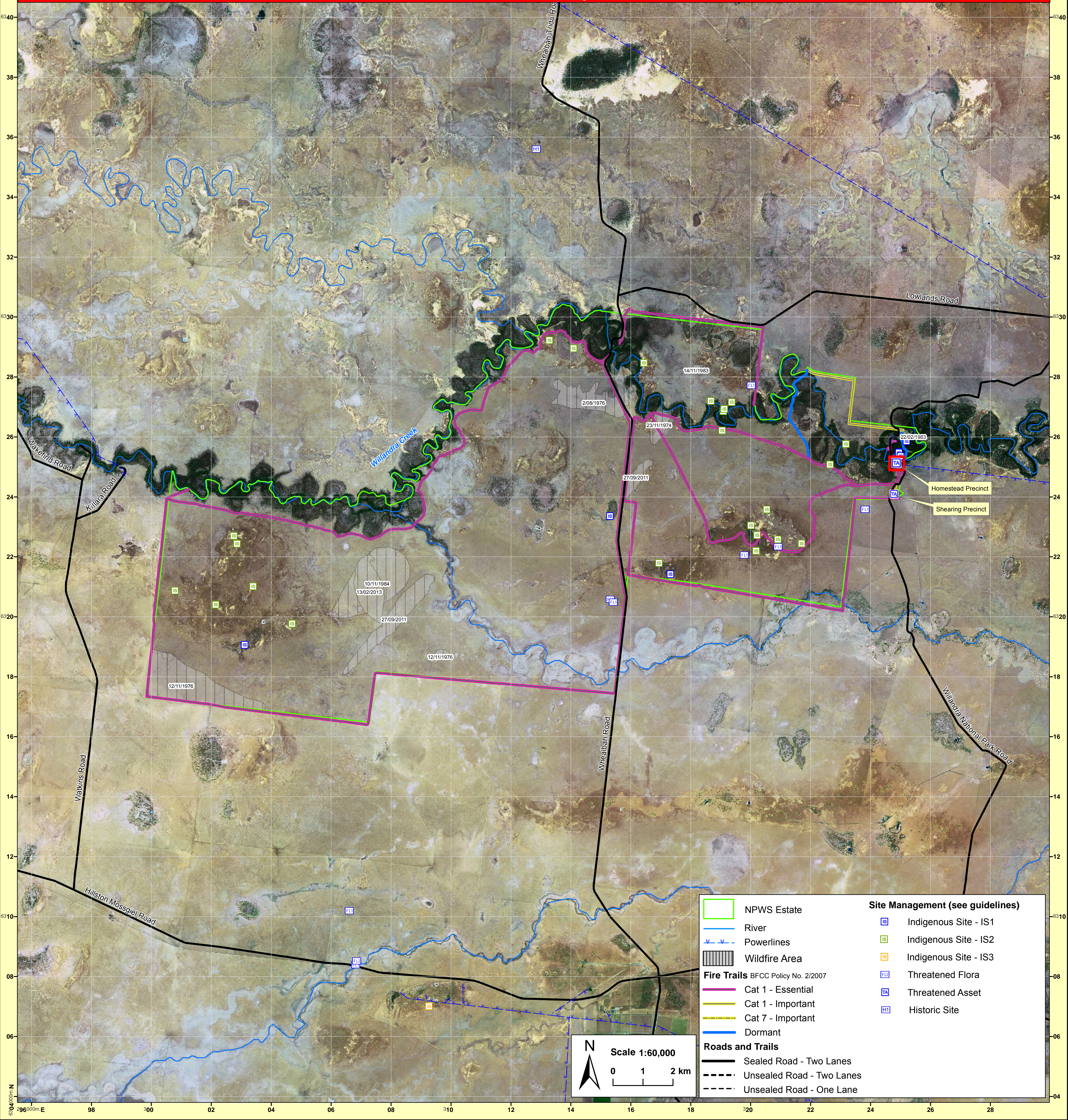
Service	Channel	Location and Comments
NPWS	11 10	•VHF Fire Ground 1 •UHF
RFS Carrathool	P033	•Warranary Hill
RFS UHF	20 26	•Merrowie Creek •Mossgiel

Mobile phone coverage unlikely to be reliable throughout whole reserve area.

Fire Season Information

Wildfires	<ul style="list-style-type: none"> The critical wildfire season generally occurs from October to April. Dry lightning storms frequently occur and typical fire weather conditions are winds from the west to the north, high day time temperatures and low humidity. Particular care is required following periods of effective rain (any season) and after periods of negative Southern Oscillation Indices.
Prescribed Burning	<ul style="list-style-type: none"> Prescribed burning should generally be undertaken during autumn and winter. Care should be taken to ensure a low intensity burn over most of the area treated.

Incident Map



Site Management (see guidelines)

- IS Indigenous Site - IS1
- IS Indigenous Site - IS2
- IS Indigenous Site - IS3
- TF Threatened Flora
- TA Threatened Asset
- HS Historic Site

Fire Trails BFCC Policy No. 2/2007

- Cat 1 - Essential
- Cat 1 - Important
- Cat 7 - Important
- Dormant

Roads and Trails

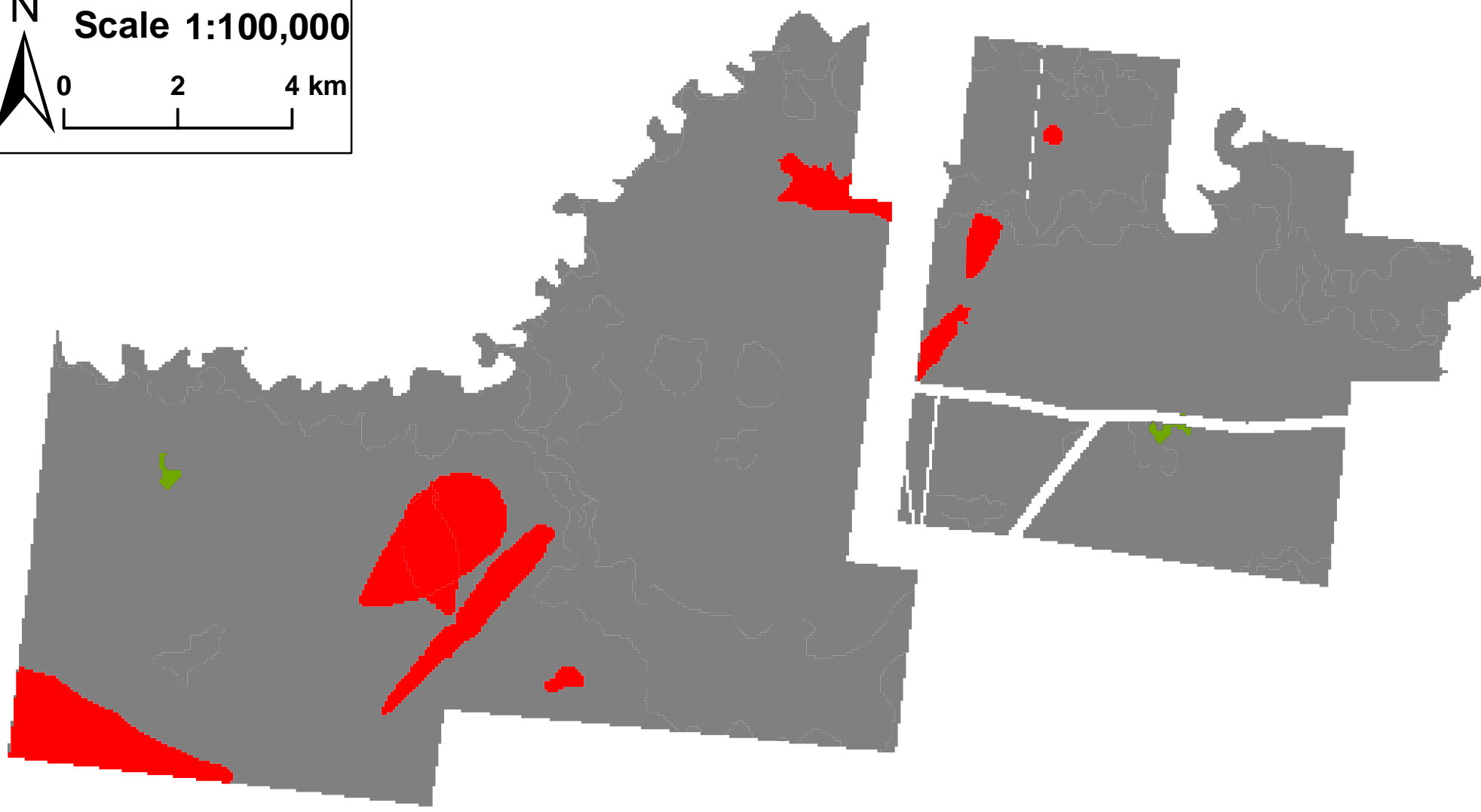
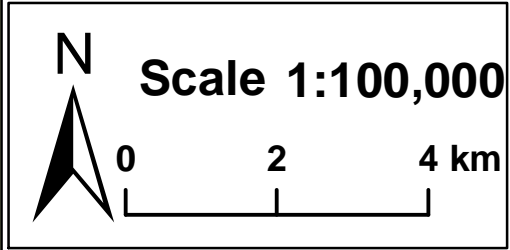
- Sealed Road - Two Lanes
- Unsealed Road - Two Lanes
- Unsealed Road - One Lane

**Willandra National Park
Fire Management Strategy 2014
Mapsheet 2 of 2**



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Status of Biodiversity Thresholds



Evaluation of Biodiversity Thresholds

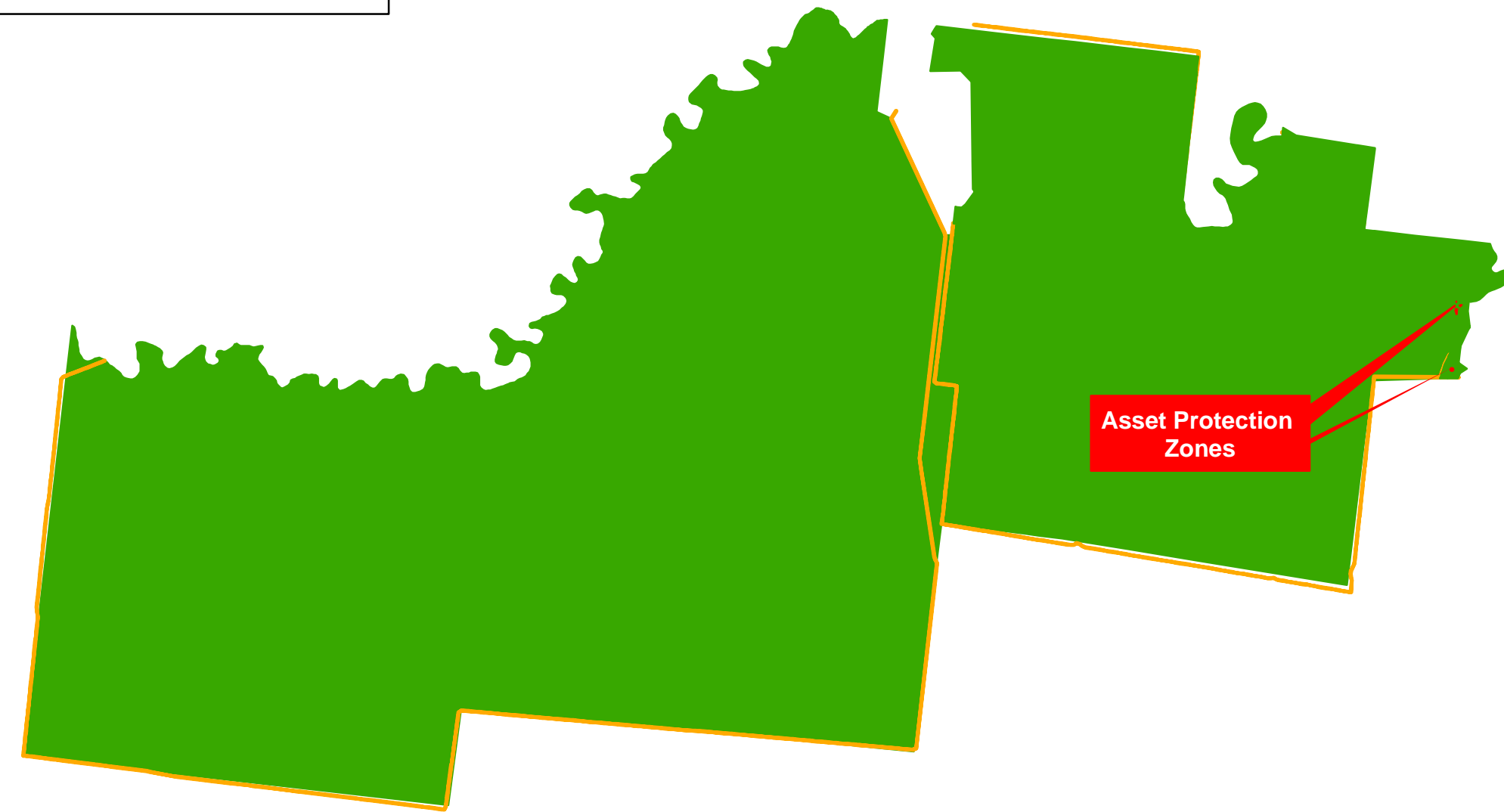
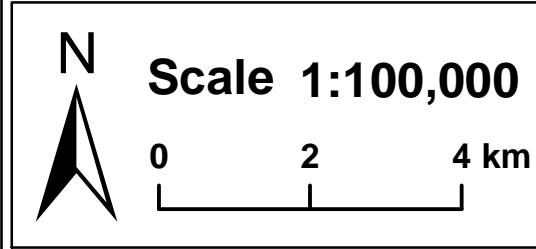
Too Frequently Burnt	Fire thresholds have been exceeded. Species may become extinct due to insufficient time to mature and reproduce. • <i>Protect from fire as far as possible.</i>
Within Threshold	Within the threshold for vegetation in this area. Species have had sufficient time to mature and reproduce, and for habitats to develop. • <i>A fire event is not required and due to the presence of Chenopod spp would most likely not be advantageous.</i>
No Fire Regime	Areas which do not have thresholds assigned to them, e.g. cleared land, rock, water bodies.

NB: Fire thresholds are defined for vegetation communities to conserve biodiversity

Threatened Sites Guidelines

Site	Guidelines
Aboriginal Cultural Heritage Site Management	
IS1	<ul style="list-style-type: none"> Do not cut down trees As far as possible protect the site from fire Use of foams, wetting agents & retardant is acceptable.
IS2	<ul style="list-style-type: none"> Avoid all ground disturbance including the use of earthmoving machinery, handline construction and driving over sites Sites may be burnt by bushfire, backburn or prescribed burn without damage.
IS3	<ul style="list-style-type: none"> Avoid all ground disturbance including the use of earthmoving machinery, handline construction and driving over sites Avoid water bombing which may cause ground disturbance Permission required from Aboriginal Heritage Environment Officer and Aboriginal community.
Historic Heritage Site Management	
H1	<ul style="list-style-type: none"> As far as possible protect the site from fire Avoid all ground disturbance including the use of earthmoving machinery, handline construction and driving over sites Avoid water bombing which may cause ground disturbance Use of foams, wetting agents & retardant is acceptable.
Threatened Fauna Management	
Although not shown on this map there are a range of threatened species that have been sighted on the reserve.	
Vulnerable - White-fronted Chat, Blue-billed Duck, Freckled Duck, Spotted Harrier, Little Eagle, Major Mitchell's Cockatoo, Barking Owl, Brown Treecreeper, Grey-crowned Babbler, Hooded Robin, Flame robin, Little Pied Bat and the Diamond firetail. Endangered - Australasian Bittern, Australian Bustard, Plains-wanderer and the Southern Bell Frog.	
Consideration of these when planning prescribed burn activities is essential, for more detailed information contact NPWS.	
Threatened Flora Management	
FL2	Utilise mosaic burning (Mossiel Daisy, Slender Darling Pea, Red Darling Pea)

Bushfire Risk Management Strategies



Fire Management Zones

Asset Protection Zones	The objective of APZs is the protection of human life and property. This will have precedence over guidelines for the management of biodiversity. Maintain Overall Fuel Hazard at Moderate or below.
Strategic Fire Advantage Zones	The objective of SFAZs is to reduce fire intensity across larger areas. Maintain Overall Fuel Hazard at High or below, however adherence to guidelines for biodiversity will take precedence where practical.
Land Management Zones	The objective of LMZs is to conserve biodiversity and protect cultural and historic heritage. Manage fire consistent with fire thresholds.

Typical Conditions

- Current Fire Danger Rating (FDR) of **Very High or Greater**.
- Short and medium range forecasts suggest conditions typical to a FDR of **Very High or Greater**.
- A risk to life and/or property exists in the short – medium term.
- A broad area risk to biodiversity exists.
- FDR of **High or below**
- Short – medium term forecast indicate a continuing FDR of **High or below**
- No risk to life or property exists in the short-medium term.
- Only small area risk to biodiversity exists.

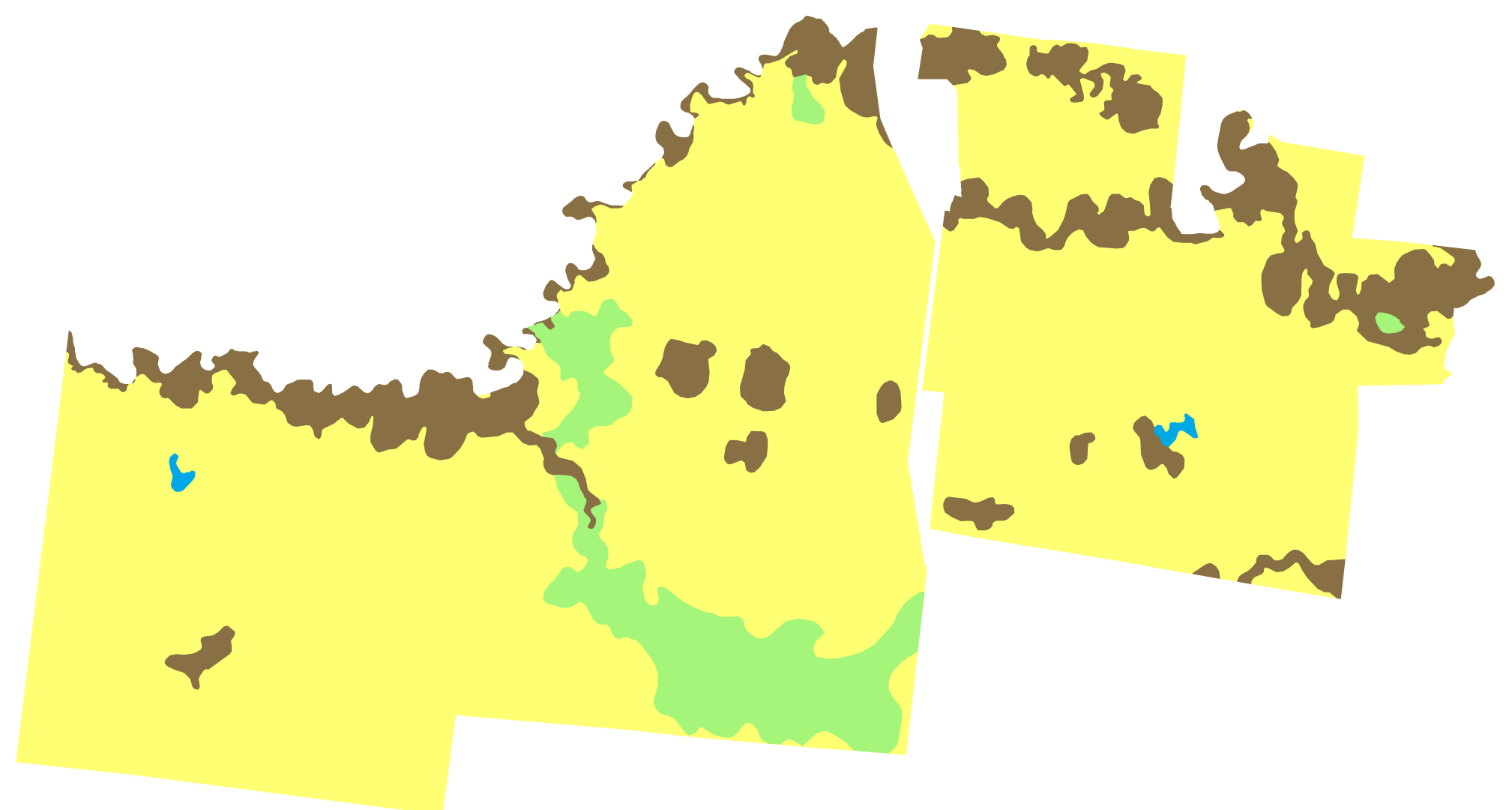
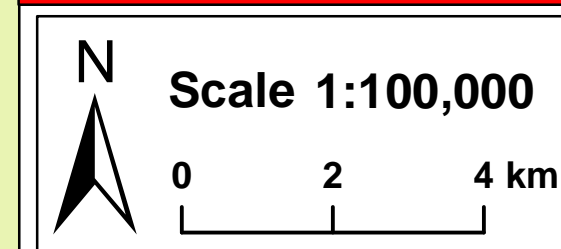
Indicative Suppression Strategies

- Direct**
Initial attacks should try to extinguish or to contain fire to the smallest possible area.
- Indirect**
Develop a suppression plan using existing and/or potential containment lines. If possible take into account biodiversity requirements but never to the detriment of life and property.
- Direct**
Evaluate the biodiversity thresholds and use direct attack methods to extinguish if required.
- Indirect**
Develop a fire suppression plan to the maximum allowable perimeter based on Biodiversity thresholds.

Operational Guidelines

Brief all personnel involved in suppression operations on the following issues using the SMEACS format:	
General	Guidelines
Aerial Water Bombing	<ul style="list-style-type: none"> The use of bombing aircraft should support containment operations by aggressively attacking hotspots and spot-overs The use of bombing aircraft without the support of ground based suppression crews should be limited to very specific circumstances Where practicable foam should be used to increase the effectiveness of the water Ground crews must be alerted to water bombing operations.
Aerial Ignition	<ul style="list-style-type: none"> Aerial ignition may be used during back-burning or fuel reduction operations where practicable, but only with the prior consent of NPWS Senior Officer, Section 44 delegate or as prescribed in an operational burn plan. The use of aerial ignition as a fire suppression tool should be specified in the IAP or within the prescribed burn plan. Aerial ignition will only be undertaken by qualified and competent navigators and bombardiers. Utilise aerial ignition to rapidly burn out large areas.
Back-burning	<ul style="list-style-type: none"> Temperature and humidity trends must be monitored carefully to determine the safest times to implement back-burns. Generally, when the FDI is Very High or greater, back-burning should commence when the humidity begins to rise in the late afternoon or early evening, with a lower FDI back-burning may be safely undertaken during the day Where practicable, clear a 1m radius around dead and hollow bearing trees adjacent to containment lines prior to back-burning, or wet down these trees as part of the back-burn ignition Use parallel containment lines when applicable All personnel must be fully briefed before back-burning operations begin.
Command & Control	<ul style="list-style-type: none"> Standard Incident Management Systems are to be applied. 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 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"> Construction of new containment lines should be avoided, where practicable, except where they can be constructed with minimal environmental impact For new containment lines IMT to liaise with and receive consent from a Senior NPWS officer prior to construction Use parallel containment lines when applicable All containment lines not required for other purposes should be closed and rehabilitated at the cessation of the incident All personnel involved in containment line construction should be briefed on both natural and cultural heritage sites in the location Containment line construction using earthmoving equipment must be in accordance with the earthmoving guidelines contained within the RFMS.
Rehabilitation	<ul style="list-style-type: none"> Where practicable, containment lines should be stabilised and rehabilitated as part of the wildfire suppression operation.
Earthmoving Equipment	<ul style="list-style-type: none"> Earthmoving equipment may only be used with the prior consent of a senior NPWS officer, and then only if the probability of its success is high Earthmoving equipment must always be guided and supervised by an appropriately experienced person, and accompanied by a support vehicle. When engaged in direct or parallel attack this vehicle must be a fire fighting vehicle Containment lines constructed by earthmoving equipment should consider the protection of drainage features, observe the Threatened Species and Cultural Heritage Operational Guidelines, and be surveyed, where possible, to identify unknown cultural heritage sites Grading will be the preferred method of constructing containment lines. Ploughing will not be permitted under any circumstances. Earthmoving equipment must be washed down, where practicable, prior to it entering NPWS estate and again on exiting NPWS estate Where multiple items of earthmoving equipment are being used, the IMT should consider the establishment of a Plant Operations Manager Where practical, advice should be sought from a local Cultural Sites Officer, contacted via the Local Aboriginal Land Council
Fire Advantage Recording	<ul style="list-style-type: none"> All fire advantages used during wildfire suppression operations must be mapped and where relevant added to the database.
Fire Suppression Chemicals	<ul style="list-style-type: none"> Use of wetting and foaming agents (surfactants) is permitted on the reserve The use of fire retardants are only permitted with the prior consent of the senior NPWS officer and should be avoided where reasonable alternatives are available Exclude the use of surfactants and retardants within 50m of watercourses, dams and swamps Areas where fire suppression chemicals are used must be mapped and the used product's name recorded The Threatened Species Operational Guidelines are to be observed.
Smoke Management	<ul style="list-style-type: none"> The potential impacts of smoke and possible mitigation tactics must be considered when planning for wildfire suppression and prescribed burning operations If smoke becomes a hazard on local roads or highways, the police and relevant media must be notified Smoke management must be in accordance with relevant RTA traffic management guidelines.
Structural Fire Fighting	<ul style="list-style-type: none"> OEH personnel are not trained in structural fire fighting and must not enter a structure in order to undertake structural fire fighting Fire suppression activities may be undertaken from outside a structure in accordance with the policies in the NPWS FMM, in order to protect a built asset.
Visitor Management	<ul style="list-style-type: none"> The reserve may be closed to the public during periods of extreme or catastrophic fire danger, during prescribed burning or wildfire suppression operations, as outlined in the Western Rivers Region Incident Procedures.
Warnings	<ul style="list-style-type: none"> Beware of overhead powerlines around the homestead and woolshed precincts. Beware of fires around buildings and workshop, due to LPG gas bottles, fuel drums and any dangerous goods storage areas. Trails will become untrafficable after flood events or rainfall.
Water Points	<ul style="list-style-type: none"> Willandra Creek is a non-permanent water source. Some water is available from the Homestead. Bring water cart from Hillston (60km SE).

Vegetation



Vegetation Map Legend

Broad Vegetation Class	Vegetation Type	Biodiversity Thresholds	Fire Behaviour
Freshwater Wetlands	Inland Floodplain Shrublands Lignum <i>Duma florulenta</i> and Nitre Goosefoot <i>Chenopodium nitraceum</i> shrubland in shallow depressions and floodways	An interval between fire events less than 10 years and greater than 35 years should be avoided. Fires should be avoided where chenopod species occur.	These vegetation communities will generally not carry fire unless there are high ephemeral fuel loads, which generally occur after flooding events and effective rainfall. In years of high ephemeral fuels, landscape fires are possible as fire potential will be very high to extreme, characterised by spotting from Black Box communities and fast moving fires in other communities. In more open areas fire behaviour as for grassland areas described below.
Semi-arid Woodlands (Grassy sub-formation)	Inland Floodplain Woodlands Black Box <i>Eucalypt largiflorens</i> woodland (with River cooba <i>Acacia stenophylla</i> along Willandra Creek), with an understorey of Nitre Goosefoot and Thorny Saltbush <i>Rhagodia spinescens</i> .	An interval between fire events less than 9 years should be avoided. There is no maximum interval between fire events specified for this vegetation type as there was insufficient data to give definite intervals. Fire should be avoided where Chenopod species occur. Two fires in the same area in a period of less than 10 years apart may remove younger Black Box trees.	High intensity fast moving fire once grasses have cured. Fire behaviour is dominated by winds, both speed and direction. Even in very low fuel, grass fires can erratic and fast moving. In ephemeral years intensity will be higher and in drought years minimal growth will result in moderate fire behaviour but potentially still fast moving depending on weather conditions at the time.
Arid Shrublands (Chenopod sub formation)	Riverine Chenopod Shrublands Open cottonbush <i>Mairsana aphylla</i> shrubland, with seasonal grasses including <i>Panicum</i> spp., <i>Astrelba</i> spp., <i>Rytidosperma</i> spp.	Fire should generally be avoided where Chenopod species occur.	
Other (No Veg)	Barren Land	n/a	n/a
Fire History	Wildfires are corresponding with periods of high levels of cured, ephemeral grass fuel and are generally ignited by lightning strikes during storms. 9 wildfires have been recorded for the reserve occurring since 1974 and have ranged in area from 50Ha up to nearly 400Ha.		
Ephemeral Conditions	High ephemeral fuels occur after consecutive years of effective rainfall. This in turn leads to the growth and build up of fine surface fuels such as grasses and herbs, which can create a continuous fuel load and higher fire intensities across all of the above vegetation communities.		
Drought Conditions	During drought conditions and when vegetation communities are visibly stressed or experiencing dieback no prescribed burning will be permitted and wildfire areas will be minimised.		