Planned burning guidelines in South Australia

Up-skilling private landholders in fire management

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Planned burning guidelines in South Australia

- review of planned burning
 - fuel hazard assessment
 - guidelines for burning
 - fire risk assessment
- Up-skilling private landholders in fire management
- training and mentoring private landholders
 - property fire management plans
 - planned burning and wildfire management
 - fire training
 - rare and/or threatened species

What is planned burning?

- use of fire for pre-determined objectives
 - hazard reduction
 - ecosystem management
 - cultural management
 - weed management



Major issue with planned burning

- reduction in area burnt over last few decades
 - loss of experience and practical skills
 - reduced community support
 - increased scrutiny
 - need to ensure best practices are utilised
 - minimise adverse outcomes
 - escapes, costs, disruptions
 - achieve land management objectives



Revised SA guidelines for planned burning built on a similar review performed in Tasmania



OPERATIONAL GUIDELINES AND REVIEW OF CURRENT KNOWLEDGE Planned burning in Tasmania









http://www.parks.tas.gov.au/ ?base=15944

Revised SA guidelines for planned burning

- previous guidelines developed in 2002
 - planned burning workshop
 - input from fire researchers

Interim Burning Prescriptions for South Australia

A workshop was held in Adelaide, South Australia on Tuesday 8th October and Wednesday 9th October. This workshop was organised by National Parks and Wildlife, South Australia. The purpose of the workshop was to assemble people from across South Australia with some of the best knowledge and experience in bushfires and prescribed burning in order to compile a set of interim burning prescriptions which could be tested in the field over time. There were people from National Parks and Wildlife SA, Forestry SA and the Country Fire Service. This workshop was the first stage of an ongoing process of prescription development.

Issues with previous guidelines

- poor linkage with fire behaviour
 - too restrictive in some areas
 - poor incorporation of risk factors
- not consistent with current fire behaviour theory
 - based on fuel load and not fuel hazard
 - not linked to current fire behaviour models



Revised SA guidelines for planned burningreview performed in 2011

PRESCRIBED BURNING IN SOUTH AUSTRALIA:

Review of Operational Prescriptions



Department of Environment and Natural Resources



http://www.environment.sa.gov.au/ files/57d834b7-5c0b-43ec-8c1e-9f8900a7b3ef/fm-genprescribedburningreview ofoperationalprescriptions. pdf

Revised SA guidelines for planned burning

- literature review
 - guidelines used elsewhere
 - fire behaviour and ecology research
- assessment of previous guidelines
- workshops with experienced practitioners
 - identification of where revision was required
 - omissions from previous guidelines
 - unnecessary components
- development of fire risk assessment systems



Revised guidelines developed for

- semi arid mallee woodland and heath
- spinifex grassland
- dry eucalypt forest and woodland
- native grassland and grassy woodland
- coastal mallee and heath
- non-eucalypt woodland
- woody weeds

Change-over to using fuel hazard rating

- previous guidelines: fuel load
 - revised guidelines: fuel hazard rating

OVERALL FUEL HAZARD GUIDE for South Australia



Second Edition February 2011

Amendment - Feb 2012



http://www.environment.sa.gov. au/files/f0d6607e-53de-417c-879c-9e3300b31b22/fm-genoverallfuelhazardguide2012.pdf

Fuel hazard rating

- fuel-hazard
 - much better linkage with fire behaviour than fuel load
- stratums
 - surface and near-surface
 - elevated
 - bark



Estimating fuel hazard rating

- surface fuel hazard
 - litter fuel depth
 - dead fuel only
- near surface fuel hazard
 - live and dead fuels
 - grass, bracken, small shrubs, wiregrass
 - typically up to ~30 to 60 cm tall
 - major influence on fire spread rate
- combined surface and near surface fuel hazard
- elevated fuel hazard
 - taller shrubs, heath, suspended material
 - major influence on flame height
- bark fuel hazard
 - bark type, attachment, quantity
 - major influence on spotting

Example: estimating near surface fuel hazard



Low Near-Surface Near-Surface Fuel abse Near-Surface Fuel plays

Moderate Near-Sur High Near-Surface Fuel Hazar

burning conditions, mc

Rus

Tussock Grasses

Enough Near-Surface Fi Patches of Near-Surface Fuel that box conditions, only these patches will connected to permit fire to spread

Very High Near-St

Almost continuous Ne and flame height. A f (given wind or slope).



Extreme Near-Surface Fuel Hazard

Continuous Near Surface Fuel continuous and contributes significantly 3 to fire spread. Burning under marginal conditions will spread readily in this laver without having to consume the surface laver.

a	Tussock Grasses	Low Sedges/ Rushes	Hummock Grasses	Low Shrubs	
os b	>60% cover with >50% dead grass or other leaf and bark litter	>60% cover with >50% dead grass or other leaf and bark litter	>60% cover	>60% cover	

Very small gaps between fuel patches.

Balancing influences of different factors

- targeted to safe and effective burning
 - explicitly link
 - ignition strategy
 - level of fuel hazard
 - weather and site parameters
- SA guidelines for planned burning are the only system currently utilised in Australia that do this



Wind speed versus rate of fire spread

- effect of variation in fuel hazard in dry forest
 - surface and near surface



predicted rate of spread using Project Vesta model
temperature: 25°, relative humidity: 40%

Wind speed versus rate of fire spread

- effect of variation ignition strategy in dry forest
 - head, flank and back fires



- predicted rate of spread using Project Vesta model
 - temperature: 25°, relative humidity: 40%
 - high fuel hazard

Wind speed versus rate of fire spread

- effect of variation in slope in dry forest
 - burning up, across or down slope



- predicted rate of spread using Project Vesta model
 - temperature: 25°, relative humidity: 40%
 - high fuel hazard, slope: ±10°

Balancing influences of different factors lighting off fire breaks allowed to burn back into block



Balancing influences of different factors ridgeline ignition allowed to back downhill

Edge burning along ridge top



Balancing influences of different factors

- Low to Moderate fuel hazard
- moist fuels
- low wind speeds
- very safe boundaries
 - head fires, burn up-slope, lines of fire
 - maximise rate of spread and intensity



Balancing influences of different factors

- High to Extreme fuel hazard
- dry fuels
- high wind speeds
- insecure boundaries
- adjacent to assets
 - back fires, burn down slope, spots of fire
 - minimise rate of spread and intensity



Guidelines for planned burningLow or Moderate fuel hazard

		Vegetation types for prescribed burning				
		Semi-arid mallee woodland and mallee	Spinifex	Eucalypt heathy open forest and	Native grasslands and grassy eucalypt	Coastal mallee and mallee heathland, non- eucalypt woodland and heathland and woody
Parameter	Units	heath ¹	grassland ¹	woodland ²	woodlands ¹ *	weeds ³
Adjusted surface fuel hazard rating: L or Overall fuel hazard rating ² Elevated fuel height 0–0.5 m ³	. WI					
Maximum forward rate of spread	km/h	1.5	1	-	1.5	0.9
Wind speed at 10 m	km/h	25 to 50	20 to 50	20 to 40	10 to 40	15 to 40
Relative humidity	%	10 to 60	-	10 to 60	20 to 80	10 to 70
Temperature	°C	20 to 40	-	20 to 40	15 to 40	20 to 40
Fuel moisture content, near-surface fuel	%	5 to 10	12 to 30	5 to 15	-	7 to 10
Fire Danger Index			-	7 to 15	≤5	-
Curing (percentage dead fuel)	%	-	-	-	90 to 100	-

Guidelines for planned burningHigh fuel hazard

		Vegetation types for prescribed burning				3
Parameter	Units	Semi-arid mallee woodland and mallee heath ¹	Spinifex grassland ¹	Eucalypt heathy open forest and woodland ²	Native grasslands and grassy eucalypt woodlands ¹ *	Coastal mallee and mallee heathland, non- eucalypt woodland and heathland and woody weeds ³
Adjusted surface fuel hazard rating: H ¹						
Overall fuel hazard rating ²						
Elevated fuel height 1–2 m ³						
Maximum forward rate of spread	km/h	1.5	0.9	-	1.5	1.5
Wind speed at 10 m	km/h	20 to 45	10 to 40	10 to 35	5 to 20	5 to 30
Relative humidity	%	20 to 70	-	20 to 60	20 to 80	25 to 75
Temperature	°C	20 to 40	-	15 to 40	15 to 40	15 to 40
Fuel moisture content, near-surface fuel	%	7 to 12	12 to 30	7 to 15	-	10 to 15
Fire Danger Index		-	-	5 to 12	≤5	
Curing (percentage dead fuel)	%	-	-	-	80 to 90	-

Guidelines for planned burningVery high or Extreme fuel hazard

		Vegetation types for prescribed burning				
Parameter	Units	Semi-arid mallee woodland and mallee heath ¹	Spinifex grassland ¹	Eucalypt heathy open forest and woodland ²	Native grasslands and grassy eucalypt woodlands ¹ *	Coastal mallee and mallee heathland, non- eucalypt woodland and heathland and woody weeds ³
Adjusted surface fuel hazard rating: VH Overall fuel hazard rating ² Elevated fuel height >2 m ³	or E ¹					
Maximum forward rate of spread	km/h	1.5	1.3	-	1.2	1.5
Wind speed at 10 m	km/h	15 to 35	10 to 30	5 to 20	0 to 10	0 to 15
Relative humidity	%	20 to 70	-	20 to 80	20 to 80	25 to 75
Temperature	°C	20 to 40	-	15 to 40	15 to 40	15 to 40
Fuel moisture content, near-surface fuel	%	8 to 13	12 to 30	10 to 15	-	10 to 20
Fire Danger Index		-	-	4 to 10	≤5	-
Curing (percentage dead fuel)	%	-	-	-	60 to 80	-

Guidelines for planned burningovernight conditions following burn

		Vegetation types for prescribed burning				1
Parameter	Units	Semi-arid mallee woodland and mallee heath ¹	Spinifex arassland ¹	Eucalypt heathy open forest and woodland ²	Native grasslands and grassy eucalypt woodlands ¹ *	Coastal mallee and mallee heathland, non- eucalypt woodland and heathland and woody weeds ³
Overnight weather conditions required: I	bounded	d burns	g			
(surrounded by tracks or areas with L or	M fuel h	azard ratin	g)			
Wind speed at 10 m	km/h	<25	<15	-	-	-
Relative humidity	%	>60	>60	-	-	-
Fuel moisture content, near-surface fuel	%	>15	>15	-	-	-
Overnight weather conditions: unbounded	ed burns	;				
(no surrounding tracks or surrounded by	areas w	vith L or M f	uel hazard r	ating)		
Wind speed at 10 m	km/h	<15	<15	-	-	-
Relative humidity	%	>85	>85 for 5+h	rs -	-	-
Fuel moisture content, near-surface fuel	%	>15	>15	-	-	-

Risk assessment: BRAT SA

- Burn Risk Assessment Tool
 - structured risk assessment system
 - based on
 - Australian and NZ Risk Management Standard 2009

	Likelihood									
Consequences	1	2	3	4	5	6				
Consequences	Practically impossible	Conceivable	Remotely possible	Unusual but possible	Quite possible	Almost certain				
1 Moderate	Noticeable	Low	Low	Low	Moderate	Significant				
2 Important	Low	Low	Moderate	Moderate	Significant	High				
3 Serious	Low	Moderate	Significant	High	High	High				
4 Very serious	Moderate	Significant	High	High	Extreme	Extreme				
5 Disaster	Significant	High	High	Extreme	Extreme	Extreme				
6 Catastrophic	High	High	Extreme	Extreme	Extreme	Extreme				

Risk assessment: BRAT SA

- developed from BRAT Tas
 - risk factors
 - vegetation
 - fuel hazard
 - weather
 - block characteristics
 - resources
 - fire behaviour
 - during burn
 - if fire escapes
 - benefits and consequences
 - risk ratings
 - low to extreme

Planned burning in Tasmania. II. Fire risk assessment and the development of a standardised Burn **Risk Assessment Tool (BRAT)**

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Abstract

Fire risk assessment is a standardised process used to identify whether or not a planned burn will achieve its stated aims, whilst also determining the potential consequences should the fire escape. As such, it is a critical component of the planning and approval process for planned burning. Fire risk assessment can also be used to predict the impacts (positive and negative) of different fire management strategies, including changes in the amount and location of planned burns, or changes in resource level and location. An important aspect of fire risk assessment is the requirement for practitioners to explicitly consider all of the major components of the burn, and in doing so identify what part of the burn is having the greatest influence on the risk profile. The Burn Risk Assessment Tool (BRAT), originally developed by Slijepcevic et al. 2007), is used to perform this assessment and provides a standardised, objective, consistent and repeatable framework for assessing planned burn risks. The BRAT provides information on the risk of fires escaping (i.e. likelihood of impact), potential of escapes to do damage (i.e. consequence), effect of strategies used to reduce the probability of escapes, and potential for the burn to meet fire management objectives. The BRAT assesses these impacts, consequences and benefits both categorically and numerically. The BRAT also predicts fire behaviour during the planned burn along with the likely behaviour in surrounding vegetation should the fire escape.

Introduction

This paper is the second in a series reviewing the systems used for conducting planned burning in Tasmania. The first paper covers the supporting information for conducting planned burning in Tasmania and reviews the available literature (Marsden-Smedley 2011a). The current paper covers fire risk assessment for planned burning and the development of a revised Burn Risk Assessment Tool (BRAT). The third paper covers the revised guidelines for conducting the burning (Marsden-Smedley 2011b).

Land management activities always contain some level of inherent risk. These risks are the result of a wide range of factors including (but not limited to) incomplete knowledge, incomplete, uncertain or inaccurate information, inappropriate actions by practitioners, and changing conditions. As an example, weather forecasts always have a degree of uncertainty due to issues associated with forecast accuracy and the requirement to extrapolate the forecast from the site for which it is made to the fire ground. Risk assessment can provide a structured, robust and repeatable methodology for addressing these issues and, in doing so, can minimise adverse impacts whilst maximising the probability of achieving target outcomes.

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BRAT SA: data inputparameters used

SOUTH AUSTRALIAN PRESCRIBED BURN RISK ASSESSMENT TOOL Burn Name and Number Name of person completeing form Date of form completion Risk Factors - Likelihood. What is being burnt? **BURN OBJECTIVES** Main objective for performing the planned burn Fuel management: buffer zones VEGETATION TYPE side burning unit Vegetation type Eucalypt heathy forest Outside or adjacent to unit Grassy woodland FUEL CHARACTERISTICS, FUEL + HAZARD RATING AND TIME SINCE FIRE Time since fire Age (years): inside burning unit 25+ years 25+ years Age (years): outside or adjacent to unit Fuel hazard: inside burning unit inface hazard Surface depth (mm 35 to <50 mm Note: in costal mallee and heathland, Near-surface hazard Very high non eucalypt woodland and heathland. Near-surface depth (cm) 51 to 100 cm and woody weed vegetation type include Elevated hazard Extreme values for elevated fuel height Elevated fuel height (m) 1 to 2 m Bark hazard Extreme Fuel bazard: adjacent to burning unit Extreme Surface hazard Surface depth (mm) 35 to <50 mm Note: in costal mallee and heathland. Near-surface hazard Very high 51 to 100 cm Near-surface depth (cm) non eucalypt woodland and heathland, and woody weed vegetation type include levated hazard Extreme levated fuel height (m) values for elevated fuel height 1 to 2 m Bark hazard Extreme Risk Factors - Likelihood. How secure are my boundaries? BLOCK & BOUNDARY TYPE Risk Factors - Likelihood. How secure are my boundaries? BLOCK & BOUNDARY TYPE Shape and size Block shape Irregular shape with slopes >10 deg 51 to 100 ha lock size Slope and aspect - inside unit 6 to 10 deg Steepness of block Mid-slope osition of block in landscape Variable spect Slope and aspect - adjacent to unit 0 to 5 deg Steepness of surrounds lope position Flat Flat spect Planned boundary type Boundary Mineral earth, road or water: <5 m wide Accessibility of planned boundary Standard fire track (GALFC standard allback boundary type Mineral earth, road or water: 5 to <25 m wide 501 to 1000 m Distance to fallback boundary Preparation works completed Yes Risk Factors - Likelihood, What are the appropriate conditions to burn under WEATHER PARAMETERS, FUEL MOISTURE AND FIRE DANGER RATING During the burn Wind speed in the open at 10 m (km/h)

	Relative humidity (%)	30
	Temperature (*C)	30
	Days since rain	22
	Amount of last rain event (mm)	1
	Month of burn	Nov
uel Moisture	Fine fuel moisture (meter) - internal	16 to 20%
	Fine fuel moisture (meter) - external	Not available
tmospheric instability - Haines Index	Day of burn	L + 4
and a second sec	Maximum over preceding 2 days	1.4
ire behaviour potential:	Maximum FDI next day	6 to 12
ucalvot heathy forest and woodland ONLY	Maximum FDI over following 3 days	6 to 12
F: Eucalynt heathy forest and woodland ONLY	Drought Factor: day of hum	10
rassland curing: Grasslands/ grassy woodlands	Curring (%)	80
ire behaviour potential:	Maximum average wind speed next day	15
or all other prescription vegetation types	Maximum average wind speed over following 3 days	20
Contraction and the second	Minimum relative humidity next day (%)	35
anditions required for the next day of the burn	Minimum relative humidity over following 3 days (%)	30
nd the following 3 days after the burn	Maximum temperature next day ("C)	20
and the second second second second	Maximum temperature over following 3 days (°C)	22
Vernight fire risk:	Minimum overnight wind speed in the open at 10 m (km/h)	12
lequired for ALL prescription vegetation types	Minimum wind speed over following 3 nights at 10 m (km/h	8
	Maximum overnight relative humidity (%)	73
xpected overnight conditions for the	Maximum relative humidity over following 3 nights (%)	86
ight of the burn and the following	Minumum overnight temperature (°C)	12
nights after the burn	Minumum temperature over following 3 nights ("C)	8
	Rain and/or dewfall overnight following burn day (mm)	0
	Rain and/or dewfall over following 3 nights (mm)	0
lisk Factors - Likelihood. What is the burning stra	itegy?	
GNITION STRATEGY		
	Lighting pattern	Lines or spots <50 m apart
	Lighting technique	Aerial incendiary capsule
	Ignition duration	<1 day
lisk Factors - Likelihood. What resources are req	uired and where are they?	
	Personnel	5 to 10 people per km of boundary requiring lighting or support
	Vehicles	1 to 5 fire vehicles per 1000 m of boundary
	Aircraft	Helicopter with 400I bambi bucket
	Resources on standby	Tractors or dozers on standby
	Response time for the resources on standby	6 to 24 hours

burn consequences

Potential Impact - Consequences. What are the potential negative impacts of this fire?							
Inside Burning Unit	Cultural	No cultural assets known					
	Ecological	No ecological assets					
	Recreational	No visitor facilities or walking tracks					
	Economic	Other infrastructure present					
Potential Impact - Consequences. What could hap	ppen if the fire escapes?						
Outside - adjacent to unit	Distance to asset	<100 m					
	Cultural	No cultural assets known					
	Ecological	Mature fire dependant community (refer to EFMG)					
	Recreational	No visitor facilities or walking tracks					
	Economic	Regrowth production forest					

burn benefits

Potential Impact - Benefits. What are the positive impacts of this burn?	
Distance to asset	501 to 1000 m
Cultural: reduced risk to	Rock paintings
Ecological: reduced risk to	Old growth or mature fire sensitive community (refer to EFMG)
Recreational: reduced risk to	Minor visitor site or walking track
Economic: reduced risk to	Urban interface

BRAT SA: data output

- risk profile
- potential benefits
- predicted fire behaviour

	SOUTH A	USTRALIA	N PLANNE	D BURNING RISK	ASSESS	MENT TOOL			
	Burn Name and Number		0	P	REDICTE	D FIRE BEHAVIOUR	DURING TH	E BURN	
N		0	Fire behaviour inside burn block			Values			
	Date of Risk Assessment	0/01	/1900	Vegetation type insid	le burning bl	ock	Eucalypt heathy	/ forest	
RISK FACTORS: PER	RFORMING THE PLANNED BURN	Category	% of rating	Rate of fire spread	head fire	km/hr			3.42
Fuel hazard	Inside block	Extreme	30.0		flank fire	km/hr			0.08
	Adjacent to block	Low	2.5		back fire	km/hr			0.02
Weather	Fire behaviour potential: day of the burn	Very high	9.0	Flame height	head fire	m			18.1
	Fire behaviour potential: next day	Low	0.5		flank fire	m			10.9
	Fire behaviour potential: following 3 days	Low	0.3		back fire	m			9.1
	Stability: day of the burn	Low	0.5	Fire intensity	head fire	kW/m			70394
	Stability: max over preceding 2 days	Low	0.3		flank fire	kW/m			28157
	Fuel moisture	Low	1.8		back fire	kW/m			7039
Site factors	Inside block	Moderate	1.8	Fuel moisture	Meter	%			18.0
	Adjacent to block	Low	0.4	Fire Danger Index		dimensionless			54
	Boundary factors	High	5.0	Fire behaviour in a	adjacent ve	getation if fire escapes			
Ignition strategy	Lighting pattern, technique and duration	Low	0.9	Vegetation adjacent	to burning bl	lock	Grassy woodla	nd	
Resources	Personnel and equipment	High	4.1	Rate of fire spread	head fire	km/hr			6.72
	Standby resources	Moderate	1.1		flank fire	km/hr			0.16
Preparation works con	npleted prior to burn ignition	Low	0.0		back fire	km/hr			0.04
	BURN OVERALL RISK RATING	Very high	58.0	Flame height	head fire	m	Not available		
					flank fire	m	Not available		
RISK FACTORS: OVI	ERNIGHT FIRE RISK	Category	% of rating		back fire	m	Not available		
Overnight fire risk	Night following day of ignition	High	75.0	Fire intensity	head fire	kW/m	Not available		
	Following 3 nights after day of ignition	Moderate	50.0		flank fire	kW/m	Not available		
					back fire	kW/m	Not available		
CONSEQUENCES		Category	Rating	Fuel moisture	Predicted	%			7.4
Inside burning block	Cultural	Low	0	Fire Danger Index		dimensionless	Not available		
	Ecological	Low	0						
	Recreational	Low	0					Vory high	
	Economic	Low	0	BORNOVER		SKRAIING		verynign	
Outside burning block	Cultural	Low	0					High	
	Ecological	Low	0	OVERNIGHT	FIRE R	ISK KATING		nign	
	Recreational	Low	0	CONSEQUE		TINC		Lligh	
	Economic	Moderate	50	CONSEQUE		TING		пign	
POTENTIAL BENEFI	TS FROM PERFORMING THE BURN	Category	Rating	BENEEIT RA	TING			Moderate	
	Cultural	Low	18.75					modorato	
	Ecological	Low	0						
	Recreational	Low	18.75						

BRAT SA: effect of varying data inputs

- users can look at the block's characteristics
 - boundary types
 - fuel hazards
 - assets at risk
 - potential consequence of escapes
 - predict
 - rates of fire spread
 - intensities
 - resources required

users can input a range of potential parameters

- effect on risk profile and fire behaviour
 - whether they need to modify burn plan

Risk assessment: selection of burn parameters

- OK to "push" 1 or 2 factors but NOT all factors
 - if burn has low risks
 - use less conservative parameters
 - increase burn intensity
 - increase fuel removal
 - reduce fire control resources
 - if burn has elevated risks
 - use more conservative parameters
 - decrease burn intensity
 - increase resources
 - decrease risk of escapes

Risk assessment: burn approval process

- assists managers with burn approval
 - fire may be minor component of workload
 - managers may have limited fire experience
 - approval dependent on burn risk profile
 - Low to High incident controller

• Extreme

 Very High incident controller & state fire coordinator not approved for burning

Up-skilling private landholders in fire management: Tasmanian project

- training and up-skilling private landholders
 - fire management manual
 - fire training
 - fire management planning
 - planned burning and wildfire control
 - rare and/or threatened species
- part of Interstate Fire Alliance
 - similar projects running in Victoria, NSW, Queensland
 - planned for South Australia















Up-skilling private landholders in fire management

- stage 1
 - funded by NRM North
 - development of manual, training fire management planning template
 completed November 2013
- stage 2
 - funded by Tasmanian government
 - 3 year project
 - December 2013 to June 2016
 - roll out program state-wide















Up-skilling private landholders in fire management: cost to private landholders

- program is free of charge to private landholders
 - priority given to
 - working farms
 - extensive areas of native vegetation
 - conservation covenants
 - rare and/or threatened species















- in a perfect world...
 - highly variable fire regime
 - different intensities, frequencies, seasons
- in the real world...
 - private land holders have
 - very few resources
 - very little time
 - only practical to do low intensity burning















- targeted to landholder's requirements
 - plain language
 - easily understood

http://www.macquariefranklin. com.au/red-hot-tips.html

Planned Burning Manual

Guidelines to enable safe and effective planned burning on private land





Up-skilling private landholders in fire management: note sheets

- what happed during actual burns
 - burn objectives
 - parameters used
 - changes to what was planned

The planne	d burning p	oilot project
Planned burning on private lan	d to achieve ecological, fuel reduc	tion and weed control autcomes
Background A fee side pleases a sense provide the call properties identifying the memory server, great in a data proceeding a sector of backward to a diperties on a well can be it a sense the protection, potential fire identia, method senses and recording an addrete for the more greater.	"Steve and I want to use fire as a tool to on Dorset Downs. The planned burning undertake burning on our property. It f fire—such as the back burning we under	belo regenerate our native vegetation project has given us the confidence to as shown us that it is possible to control mock to se our boundarie. ⁴ Ane Williame
The bars contacted F May 2010 of • Maria R and Carat Dana (Marintana) • Maria R and Carat Dana (Marintana) • Maria R and Carat Dana (Marintana) Maria R and Carat Dana (Maria) Maria R and A State Maria Maria Maria para R and A State Maria para R and A State Maria para R and A State Maria M		Key learnings • The phong point raise will deterry it can be taken the can be arrived as the phong point of the set of the based of the phong point of the set of the the can be arrived of the based of the set of the the can be arrived of the based of the set of the the can be arrived of the based of the set of the the can be arrived of the based of the set of the the can be arrived of the based of the set of the the can be arrived of the based of the set of the reacting the the time set of the based of the reacting the set of the based of the set of the reacting the set of the based of the set of the reacting the set of the based of the set of the reacting the set of the based of the set of the the base of the time set of the based of the set of the set of the set of the based of the set of the the set of the set of the set of the based of the set of the based of the set of the set of the based of the set of the based of the set of the set of the based of the set of the based of the set of the set of the based of the set of the set of the set of the based of the set of the set of the set of the set of the based of the set of the set of the set of the set of the set of the set of the set of the set of the set of the set of the set of the set
Dente		 By manipung the weather conducts for high pressure extents does wheat you so impate a satable wintee

Lead up to the burn

The day of the burn

Water tonks filed and pumps checked.

Put a same phata manatoring paints (neel chappent) and take photos.

Designate tasks to people & peers. The revene designated the lighters (sang drop torches) and patrat teams, oil able to communicate with each other using UHF radius.

Sip on tanks and trailer mounted tank untravers used, dependent proving instruments and proving the

- Lefting also decided and drawn on the map are Faure 1.

ch was put into o and in the bash which in 2005 Vanable ander

- Ensure of measuresy permits and permusions have been obtained (Threaternol Species Permits and permusionwhere and a under a conservation covenant). Monitor the weather forecast for periods of stable high pressure patients Fegure finibacia Amongewith TF mscoress(bbcs medic), Nobly mighbours Double check the Rancostwind speed, humdley and spe

On the ground preparation for the burn is the key to a successful burn—having good reaks in place which can be driven, wortching the weather, easy and class access to rater and remaring hazards before lighting." Carth ternet, Farts and Widthe Service, DPPWs

Recommended planned burn conditions for all 3 case study burns Mout and conditi · Sobe high pressure av derre

Member 2 designs rate - Wind speed of the top _30 km/h Hundity 40 to 751



TRS parmel in unplementation plan and a rak assessment Evening held and all personnel driven around the black to After the burn The barry wave of monitored for smouthering logs and trees for a level days a thereards. Log helps were turned to encourage them to burn through completesk

"Initially, landholders should plan to undertake burns on their properties of a size that they can manage mining characteristication particular take control take properties of size and control take with thair own secures. Fit is evident that they connot them control their TFS District Officer for essistance. TFS copolating to exist will vary form one to one and day-to-day, however if there is enough notification creates can subject to essential "segmences (rise).



400ho

Basef corrile

Rainfall - 730mm

· 1 x full time lobour units

· Altitude - <10m above sea level

Steve and I want to use fire as a tool to help rependente our notive vegetation

on Dorset Downs. The planned burning project has given us the confidence to undertake burning on our property. It has shown us that it is possible to control

Dorset Downs - facts & figures

 109hp of notive vegetation, iblack peppermint, cobboos gum woodland and heathland) with an average patch size of 8ha.

Fire fighting equipment - 1 x 1000L tonk, looder, disc sloshe

Conditions

Moist sel condition

Humidity 40 to 60%.

every 10-15 years.

Stoble high pressure system

Wind speed at tree top #20 km/hr

Lead up to the burn

· More than 2 days since rain

Recommended Planned Burn

vended burn interval for this type of vegetation is

Anne and Stephen buildazed fired breaks around the northern

eastern and the majority of the western boundary 2 months before

the burn leaving a 100m strip on the western boundary to be back burnt on the day of the burn. The southern boundary is a farm

track which follows the property boundary. The weather forecast

leading up to the burn the weather conditions had persistenth

been dry with strong SW winds and low humidity. On the day of the burn 10-15km/ hr winds, humidity 55% and no rain were forecast.

itored for periods of stable high pressure. In the few doys



A fire action plan was developed for Darset Downs identifying fire management goals including ecological and fuel reductio objectives, built assets, fire breaks, natural assets and resources available for fire management.

Aim of the burn

Encouroging gross tree and shrub regeneration.

Background

The 9ho coastal heathland is dominated by sogg and sword sedge with a low diversity of other species. The block has not been burnt in over 20 years and has an overall fuel hazard rating of high. Threatened sandy gross trees (Xanthomhoed arenaria) are common throughout the block. Phytophthoro root rot is also present. Some thread animals which may be found in the area include the wedge-tailed



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Due to threatened sandy grass trees within the block. Anne and Stephen obtained a permit from the DPIPWE Threatened Species and Marine sectio before burning. This permit is based on their property Fire Management Plan, and doesn't need to be re-applied for every time they want to burn.

Teamartan (Trigat)

Planned burning for fuel hazard reduction, biodiversity management and weed control - John and Isabelle Atkinson, Maitland



A fire action plan was developed for Maitland identifying fire management goals including ecological and fuel reduction abjectives, asset protection, patential fire breaks, threats and threatened species, and resources available for fire management. Due to threatened species occurring within the block and his existing covenant John had to obtain 2 separate permissions before the burn could go ahead: 1, permit far permissions becaus the barn could ge anoual 1, permit har threatened species from Threatened Species and Marine section (DPIPWE). 2 permission to burn the covenant from the private land conservation program (DPIPWE). These permissions are volid for the life of the Fire Management Plan.

Aim of the burn

1. encouraging biodiversity, 2. reducing fuel hazard, and 3. controlling garse.

Background

Block peppermint inland forest on conozoic deposits (DAZ) is a threatened vegetation community. This 49ho patch was put into a 12 year covenant in 2006. 36ha of the total block was planned to be burnt. The patch also has white gums, and a variable understorey grass, bracken or sedge/sagg dominated. It has not been burnt in over 30 years & has an overall fuel hazard rating of high. Threatened plants found include knotty spear grass (Austrastipa nodosa), propeller plant (Stenanthemum pimeleoides) and chocolate 31y (Arthropodium striction). Threatened animals may include the wedge-tailed eagle asmanian devil, spotted tailed gual, masked owl and the eastern barred bandicoot. Gorse is scattered on the boundaries of the bush block. The block boundaries were secure all the way around, with the ast vulnerable boundary along the eastern side.



The planned burning project gave me the logistical support I needed to dertake burning an my property. My father and I have wanted to burn the bush block to encourage biodiversity for quite some time. Before the project the overall risks of lighting a fire such as fire escaping to a ne was areater than the potential benefits of burning

Maitland - facts & figures Property size #50ho Marino wool production

- krighted cropping poppies & cereals (120ha)
- 180ha of notive vegetation (mainly grassy block per in one large block, the remaining native vegetation patch size overages 5ha.
- · Altitude 220m Average rainfall - 560mm
- 1.5 x full time lobour unit

· Fire fighting equipment: 1200L trailer mounted tank, tractor, looder and dia



Recommended Planned Burn Conditions

- Moist sol conditi
- Stoble high pressure system
- More than 2 days since rain
 Wind speed #20 km/hr
- Humidity 50 to 75%
- Aim to burn < 20% total area each burn The recommended burn interval for this type of bush and its range of species is every 20-30 years.

Lead up to the burn

The weather forecast was monitored for long periods of stable high pressure. In the few days leading up to the burn the weather conditions had persistently been dry with strong SW winds and low humidity. On the day of the burn 15km/hr winds, humidity 65% and no rain were forecast. The TFS district officer was app to provide additional resources in the days leading up to the burn. with the burn confirmed the day prior. Neighbours were also notified once the hurn date was confirmed.

Initially landholders should plan to undertake burns on their properties of a size that they can manage with their own resources. If it is evident that they cannot then contact their TFS District Officer for assistance. TFS capability to assist will vary from area to area and day to-day, however if there is enough natification crews can usually be assembled." Stephen Lowe (TFS)

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It is possible for private londholders to burn actes and effects when they have confidence in their state and



Where boundaries and highly formable carao have new been secured of Mosiond and Manu ia Paris, the error registress can be burnt in outputs 2014. Mandar all burns for expensions & ecosery, to ear from the exuits of these burns have burns to burn other areas for expensionan and ecological benefits. Use th Falow-up spraying of gotae in outcome 2018.

* 5

Up-skilling private landholders in fire management: fire training

- classroom based theory
- on the ground practical
 - assistance performing planned burns





- field assessments
- discussions with land owner
 - fire management objectives
 - fire exclusion areas
 - planned burning
 - wildfire management strategy



Up-skilling private landholders in fire management planning

- property fire management plans
 - map based
 - location of burn units
 - assets
 - rare and/or threatened species
 - fire breaks
 - water sources
 - plans current for 5 years

- property fire management plans
 - rare and/or threatened species mapping
 - effects of fire on species
 - assistance with permits to burn



Plassey

Fire Management Plan

Leanne Sherriff (Macquarie Franklin) and Jon Marsden-Smedley

September 2012



Management Plan

Patch ID	Goals for fire management	Description	Years since last fire	Fuel hazard rating	Actions & timing
House area.	Fire exclusion.	Area around house and sheds.	NA	NA	 Crash graze to keep grass along drive and around house and sheds very short in summer
1 Auburn bush.	Promote biodiversity & improve bush health - stimulate shrub and tree regeneration.	 Dry grassy white gum vegetation community (DVG), with scattered cabbage gum and black peppermint. Unique bush type for <u>Plassey</u>. Understorey dominated by bracken, <u>sagg</u> and sword sedge, with patches of native grass. Fenced, with pasture surrounding. 	>25	Bracken S: H-VH NS: M E: L B: L-M Overall: H Grass S: M NS: L E: L B: VH Overall: VH	 Easy to trickle burn as many open patches. Need to monitor and manage game impacts on burnt patches Protect fences Recommend burning every 20-30 years Burn conditions: moist soils, season between April and October, stable high pressure, >2 days since rain, wind speed at tree top ≤20 km/br and humidity 50 to 75%.
5.1	Targeted control of gorse.	 Open areas of native grassland and grassy woodland with patches of gorse throughout. 	>25	S: M NS: E Overall: E Summer if grass is cured: Overall: E	 Burn conditions: moist soils, season between April and October, stable high pressure, >2 days since rain, grass curing <60%, wind speed at surface ≤20 km/hr and humidity 50 to 75%. Ensure resources are available to spray gorse regeneration prior to flowering (6 to 12 months post fire).



