



— Centre of Excellence —  
**PRESCRIBED  
BURNING**

# Prescribed Burning Capability Optimisation Review



A PRODUCT OF THE NATIONAL BURNING PROJECT

APRIL 2018

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between Forest Fire Management Group (FFMG)  
and AFAC, its member agencies and stakeholders. It  
is intended to address matters relevant to fire, land  
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# AGENCY ABBREVIATIONS

Below is a list of AFAC and FFMG member and affiliated agencies that participated in this sub-project and the abbreviation this report uses for these agencies.

**Table 1** Agency abbreviations

Jurisdiction	Agency	Abbreviation
ACT	ACT Emergency Services Agency	ESA
	Parks and Conservation Service	PCS
	ACT Rural Fire Service	ACT RFS
NSW	Fire and Rescue NSW	FRNSW
	Forestry Corporation of New South Wales	FCNSW
	NSW Rural Fire Service	NSW RFS
	Office of Environment and Heritage	OEHS
	NSW National Parks and Wildlife Service	NPWS
NT	Bushfires NT	BNT
	Northern Territory Fire and Rescue Service	FRS
	Department of Conservation	DOC
QLD	Department of National Parks, Sport and Racing, Queensland Parks and Wildlife Service,	QPWS
	Department of Natural Resources and Mines	DNRMS
	Queensland Fire and Emergency Services	QFES
	Hancock Queensland Plantations	HQP
SA	Department of Environment, Water and Natural Resources	DEWNR
	Forestry SA	FSA
	South Australian Country Fire Service	CFS
TAS	Forestry Tasmania	FT
	Parks and Wildlife Service Tasmania	PWS
	Tasmania Fire Service	TFS
	Tasmania Fuel Reduction Unit	FRU
VIC	Country Fire Authority	CFA
	Department of Environment, Land, Water and Planning	DELWP
WA	Department of Fire and Emergency Services	DFES
	Department of Parks and Wildlife	DPAW
	Office of Bushfire Risk Management	OBRM
Australia	Parks Australia	PA
NZ	New Zealand Fire Service	NZFS

## EXECUTIVE SUMMARY

There are many significant prescribed burning programs being conducted across Australia. Generally, those programs are well managed and supported by highly capable and well-trained work forces and equipment designed for burning.

A stocktake of resources and equipment for burning indicates the availability of a large national resource, most of which has been put in place primarily for bushfire suppression. At the time of writing, more work with the agencies is required to accurately determine the level of resourcing and to clearly define resource capability. There is a high level of consistency in definition and function of prescribed burning roles nationally.

Most agencies involved in prescribed burning indicated that in a normal year they are capable of delivering their prescribed burning programs. Interagency support with prescribed burning operations within a jurisdiction is occurring within most states and territories, through both formal and informal agreements.

It has been recognised that there will be a need for agreements to facilitate the movement of resources within and between jurisdictions, including New Zealand, for prescribed burning.

While all agencies support the concept of national resource sharing for prescribed burning, they recognise there are limitations such as the cost for the procurement of resources, concurrent demand for resources and equipment incompatibility. The agencies agreed that cross-border sharing of resources, information and best practice approaches for burning should become part of the 'normal' approach to managing a burn program.

Tankers and bulldozers used in fire suppression are readily available to support interagency and cross-border resource sharing for prescribed burning, with clear national standards in place. Other more specialised equipment has been developed by agencies such as incendiary machines, aerial drip torches and mobile weather stations.

There is significant potential to procure resources through contracting arrangements with the private sector. This can lead to the development of national standards for contracting of prescribed burning services.

Burning programs are becoming increasingly more complex and costly to deliver, requiring intensive project and program management. There is a need to build capacity in this area. It is recommended that a series of national workshops be held to build capacity through sharing knowledge on managing large complex burning programs, conducting landscape and local fire risk analysis and developing planning and engagement skills.

There are a number of non-AFAC member organisations such as Defence, Aboriginal Land Councils, pastoral enterprises, plantation owners and local government that currently deliver prescribed burning programs that should be supported, to improve their capability to plan and conduct burns.

There is a strong case for federal, state government and fire agency funding to support continual improvements in national capability to help mitigate the impact of bushfires on Australian communities. The introduction of the Centre for Excellence for Prescribed Burning is a significant initiative that will lift capability in burning across Australia and New Zealand.

The following table provides an overall summary of the recommendations as described in this report, to improve capability for prescribed burning within AFAC and FFMG.

**Table 2** List of recommendations

Recommendation	Description
<b>Recommendation 1</b>	<ul style="list-style-type: none"> <li>Establish a cooperative approach to the development of equipment and performance standards including working with fire management contractors.</li> <li>A central registry of all designated specialist prescribed burning equipment be developed and maintained by AFAC with information including but not limited to: <ul style="list-style-type: none"> <li>Item of equipment</li> <li>Ownership</li> <li>location</li> <li>Manufacturer make and model</li> <li>Operating specifications and consumable requirements.</li> </ul> </li> </ul>
<b>Recommendation 2</b>	<ul style="list-style-type: none"> <li>A central registry of specialist fire management contractors with prescribed burning skills and equipment be developed and maintained by AFAC with information including but not limited to: <ul style="list-style-type: none"> <li>Contractor business details</li> <li>Nominated operating base</li> <li>Business profile and prescribed burning experience in Australia and New Zealand</li> <li>Profile of personnel trained, accredited, experienced and available to participate in Australia and New Zealand wide prescribed burning activities.</li> <li>List of equipment and other physical resources owned and operated to support delivery of prescribed burning operations.</li> </ul> </li> </ul>
<b>Recommendation 3</b>	Agencies develop an induction program for use in briefing incoming resources on local arrangements so that burning can be conducted safely and effectively.
<b>Recommendation 4</b>	‘Equivalent’ training (that is, where the content of the training is equal to the content of the listed competency) be acceptable, at least in the short term. For the longer term, a framework for transition would need to be developed that includes time frames and methodologies.
<b>Recommendation 5</b>	States and territories develop formal cross-agency arrangements that set out working arrangements includes liabilities, costings, standards, meeting arrangements and engagement required.
<b>Recommendation 6</b>	<ul style="list-style-type: none"> <li>Review existing agreements between agencies in different jurisdictions to determine their value as a template for the development of a national procurement agreement for the supply of prescribed burning resources across jurisdictions.</li> <li>Review existing agreements between agencies in different jurisdictions to determine their ability to support modification of the existing Arrangement for Interstate Assistance to cater for national resource sharing (procurement) for prescribed burning.</li> <li>Assess the capacity of the existing contract fire management industry to augment national prescribed burning programs. Assessment will need to include current training and skills sets within the industry and identification of training and accreditation requirements to meet national standards for prescribed burning.</li> </ul>
<b>Recommendation 7</b>	Federal, state and agency funding be sought to build national capability in burning management as a disaster mitigation measure.
<b>Recommendation 8</b>	The Centre of Excellence for Prescribed Burning be developed quickly and expanded to focus on developing capacity and capability for prescribed burning.
<b>Recommendation 9</b>	Workshops are established to build capability in managing national and jurisdictional large complex burning programs.
<b>Recommendation 10</b>	National workshops be established to develop capability in landscape and local fire risk analysis and planning.
<b>Recommendation 11</b>	Agencies ensure they have sufficient capability to manage effective engagement programs around burning.
<b>Recommendation 12</b>	AFAC and FFMG engage and support, as appropriate, other parties doing significant prescribed burning programs through the Centre of Excellence to build national capability in prescribed burning for all.

# **1 INTRODUCTION**

## **1.1 Purpose**

This document comprises an assessment of the current capability across Australia and reports on options to improve capability for prescribed burning within the member agencies of the Australasian Fire and Emergency Service Authorities Council Ltd (AFAC) and the Forest Fire Management Group (FFMG).

The report has been prepared by Ewan Waller and Associates for AFAC and FFMG and forms part of the National Burning Project, specifically the Prescribed Burning – National Capability Optimisation sub-project 10.

## **1.2 Background**

### **1.2.1 AFAC and FFMG**

AFAC is the national council for fire, land management and emergency service authorities in Australia and New Zealand. It represents 33 member agencies, including agencies that comprise permanent personnel, part-time personnel and volunteer personnel. AFAC engages with member agencies through a collaboration model.

AFAC is also involved in event facilitation, professional development and represents the member agencies to influence change in regulations and standards. AFAC exists to support the fire and emergency service industry, working to make communities safer and more resilient.

The Forest Fire Management Group (FFMG) is a sub-group of the Forestry and Forest Products Committee established under the Commonwealth Agriculture Senior Officials Committee and Agriculture Ministers Forum that reports to the Council of Australian Governments (COAG). FFMG comprises the land management agencies from across Australia and New Zealand; principally the forest, parks and reserve land managers. The emphasis of this group is on forest fire management where prescribed burning is an essential element in managing bushfire fuel loads and maintaining the ecological health of Australia's forests and ecosystems.

### **1.2.2 National Burning Project**

The National Burning Project was jointly commissioned by AFAC and FFMG.

AFAC and FFMG member agencies established the National Burning Project in 2011, with the initial funding provided by the federal government and later the agencies providing internal funding and subsequently additional funding was received from the National Bushfire Mitigation Fund in 2014 to support the delivery of outcomes. The National Burning Project concluded in June 2017 with nearly all of its milestones delivered.

The objective of the National Burning Project was to develop a national approach to the management of prescribed burning in order to reduce bushfire risk to the Australian and New Zealand communities. The intended national approach is at a landscape scale and balances operational, ecological and community health risks.

The National Burning Project comprised a series of sub-projects that can be combined into an enduring framework that can be progressively enhanced, updated or refreshed. The Centre of Excellence for Prescribed Burning will champion and take forth the work of the National Burning Project.

The Prescribed Burning – National Capability Optimisation sub-project is part of the National Burning Project.

### **1.2.3 Resource sharing for fuel reduction burning in context**

The ability to successfully deliver agency and jurisdiction prescribed burning targets can be affected by a broad range of factors including weather, ecological requirements and environmental conditions; in particular, the ability to manage smoke impacts. Being able to manage the potential risks from burning is critical and proper planning and execution with adequate resources is essential. The National Burning Project developed a series of four risk management frameworks for fuel, ecological, operational safety and smoke management risks which should be referred to for further information.

Most agencies involved in prescribed burning have developed the capacity to deliver their programs in a 'normal season' with their own budgeted resources. Those resources may be a mix of agency and contracted resources.

It is apparent that, at the national level, not all jurisdictions will experience a normal season in the same year. This means, in any year, some jurisdictions will under-utilise their resources and potentially have the capacity to assist other jurisdictions to achieve their burn targets.

It should be noted that while there is robust and well-proven acceptance of interagency support for bushfire suppression, the sharing of resources to assist prescribed burning operations is implemented via 'contractual procurement' of resources through the Arrangement for Interstate Assistance (AIA). This means that the cost of the implementing the task or operation is borne by the requesting agencies, generally from within their annual appropriations.

The benefits of promoting interagency and cross-border support should not be understated. The experience to be gained by working in different fuel types and landscapes and being involved in alternative ways to implement prescribed burning would provide participants with immeasurable experience to improve their burning practices and future bushfire suppression deployments. The agencies agreed that the sharing of resources (and knowledge) should become part of the 'normal' approach to managing a burn program.

## **2 PRESCRIBED BURNING – NATIONAL CAPABILITY OPTIMISATION**

### **2.1 Sub-program aims and objectives**

The primary objective of the National Capability Optimisation sub-project is to develop processes and systems that will facilitate greater opportunities for the sharing of prescribed burning resources between agencies and across jurisdictions. It is intended that this will be achieved through:

1. Assessing current prescribed burning capability, both equipment and personnel;
2. Recommending a national classification system for equipment to allow cross-jurisdictional comparison;
3. Establishing a cross-border matrix of personnel competencies;
4. Identifying and report on options for sharing prescribed burning resources to improve state and agency capacity to meet fuel management targets and identify the risks and benefits of those options; and
5. Identify and report on strategies to build national capability, including procedures and data systems that will support resource sharing arrangements.

### **2.2 Links to the prescribed burning training competencies and delivery sub-project**

To be able to effectively and safely implement any form of cross agency or jurisdictional capability, a high level of compatibility in human and physical resources between agencies and jurisdictions is essential. With respect to the shared capability of human resources, this sub-project is closely linked to the outcomes of the Prescribed Burning Training Competencies and Delivery sub-project. The two sub-projects were undertaken concurrently by Ewan Waller and Associates to ensure seamless integration of identified requirements and outcomes to facilitate a truly national prescribed burning capability.

### **2.3 Technical Reference Group**

In 2016, New Zealand and each Australian state and territory nominated suitable agency staff to form a Technical Reference Group (TRG) established specifically for the Prescribed Burning Capability Optimisation sub-project. The agencies that participated are listed in Appendix A.

TRG members were the key point of contact for Ewan Waller and Associates to collect information about current agency prescribed burning capability within the respective jurisdiction. TRG members were asked to represent the interests of constituent groups within their jurisdiction, communicate project issues to agencies and seek direction where required.

### 3 PROJECT METHODOLOGY

The methodology for delivering the National Capability Optimisation sub-project comprised:

- An initial meeting/teleconference with nominated members of the TRG;
- Developing and distributing survey materials that would enable capture of information needed to determine current agency and jurisdictional prescribed burning capability;
- Augmenting survey data by visiting each state and territory to meet with agency representatives to discuss survey results and follow-up contact to clarify information as required; and
- The preparation of a report to assess:
  - The resource capacity for prescribed burning across Australia and New Zealand; and
  - The appetite to develop a national approach to sharing prescribed burning resources between agencies and jurisdictions.

TRG members were asked to engage with all other relevant agencies within their jurisdiction in the collection of information regarding the sub-project and were interviewed during the visits.

#### 3.1 Survey distribution and collection

Ewan Waller and Associates developed and distributed the following survey tools to TRG members:

- A data survey which collected data in relation to the number of personnel within each agency and jurisdiction that were trained and accredited to perform the range of individual roles performed in the delivery of prescribed burning programs; and
- A questionnaire addressing more general aspects on their capability and attitude to sharing resources for prescribed burning.

A set of questions were asked to support these surveys and also provide some insight of how agencies and jurisdictions viewed moving toward a national capability and resource sharing environment to support delivery of their prescribed burning programs. Those questions were:

- Please provide a brief overview of how agencies work together to deliver prescribed burning in your jurisdiction;
- Are there any existing resource sharing arrangements in place between agencies in your jurisdiction (legal and non-legal)? Please describe;
- Are there any existing resource sharing arrangements in place between jurisdictions?
- Briefly describe the advantages and disadvantages of any existing arrangements; and
- Identify any issues that may impede effective resource sharing arrangements.

TRG members were asked to distribute the surveys to agencies with an interest in the outcomes of the sub-project and to collect and return completed surveys prior to the visit of representatives of Ewan Waller and Associates.

However, not all surveys were returned by the date of the visit, generally due to the timing of the sub-project which coincided with fire season preparedness and response activity in many jurisdictions. There remains some deficiency in provision of data from some jurisdiction.

## 3.2 Agency visits

Ewan Waller and Associates visited the states and territories according to the following schedule. Each visit covered the two projects (Prescribed Burning National Capability Optimisation sub-project and the Prescribed Burning Training Competencies and Delivery Review sub-project), with half a day allocated to each. The schedule was as follows:

- 5 December 2016 – Victoria;
- 6 December 2016 – Australian Capital Territory;
- 7 December 2016 – New South Wales;
- 9 December 2016 – Tasmania;
- 15 December 2016 – South Australia;
- 10 January 2017 – Western Australia;
- 12 January 2017 – Northern Territory;
- 17 January 2017 – New Zealand (meeting held in Victoria); and
- 18 January 2017 – Queensland.

## 3.3 Indicative prescribed burning roles

As part of the Prescribed Burning Capability Optimisation sub-project, the following indicative roles and their generic descriptors were provided to agencies who were asked to identify any variations or additional roles (see Table 3).

To ensure consistency between the Prescribed Burning Capability Optimisation and the Training Competencies and Delivery sub-projects, these roles were used for both sub-projects. As a result of feedback received, the Prescribed Training Competencies sub-projects may refine these roles.

### 3.3.1 Definitions

The definitions are sourced from the *Public Safety Training Package*, including prescribed burning competencies: PUAFIR412, PUAFIR413, PUAFIR511 and PUAFIR513.

A prescribed burn is the controlled application of fire under specified environmental conditions to a predetermined area and at the time, intensity and rate of spread required to attain planned resource management objectives.

A prescribed burn plan is an approved plan for the conduct of prescribed burning, includes a map identifying the area to be burned and incorporates the specifications and conditions under which the operation is to be conducted.

A simple prescribed burn is characterised by low risk, low intensity, small area, low potential impact on assets, completion in one shift and minimal variation of fuel and terrain.

A complex prescribed burn is characterised by moderate to high risk, a range of fire intensities, medium to large areas, significant potential impact on assets and involves a variety of fuels and terrain. The burn operation may involve a large number of resources requiring the establishment of a formal management and support structure. It may require several separate ignitions (ground and/or aerial), possibly over several days. It may have a number of high value assets requiring complex protection actions.

### 3.3.2 Indicative roles

**Table 3** Prescribed burning roles provided to agencies

Prescribed Burning Role	Descriptor
Burn Crew Member	The person participating in lighting and conducting prescribed burns (PB) under direct supervision.
Burn Crew Leader	The leader of a prescribed burn crew.
Sector Commander	Responsible for the management of all operational aspects and resources allocated to a sector of a prescribed burn.
Burn Manager / Operations Officer - simple burns	Responsible for the management of all operational aspects and resources allocated to a simple prescribed burn, i.e. a burn characterised by low risk, low intensity, small area, low risk to assets, with minimal variation to fuel characteristics and terrain.
Burn Manager / Operations Officer - complex burns	Responsible for the management of all operational aspects and resources allocated to a complex prescribed burn, i.e. a burn characterised by moderate to high risk, a range of fire intensities, medium to large areas, significant potential impact on assets and a variety of fuels and terrain.
Burn Planner – simple burns	Responsible for preparation of approved plan that incorporates the specifications and conditions under which a simple prescribed burn is to be conducted, i.e. a burn characterised by low risk, low intensity, small area, low risk to assets, with minimal variation to fuel characteristics and terrain
Burn Planner – complex burns	Responsible for preparation of approved plan that incorporates the specifications and conditions under which a complex prescribed burn is to be conducted, i.e. a burn characterised by moderate to high risk, a range of fire intensity, medium to large areas, significant potential impact on assets and involve a variety of fuels and terrain.
Incendiary Operator	An authorised agency person responsible for the operation, servicing, handling and storage of the aerial incendiary machine and associated consumables for a prescribed burn.
Incendiary Operations Supervisor	An authorised agency person responsible for the safe, effective and efficient conduct of aerial incendiary operations for a PB to prescription, including direction of the pilot and aerial incendiary machine operator, and liaison with ground crews.
Meteorologist	A qualified person to provide accurate and timely advice of forecast fire weather to assist in planning and implementation of a prescribed burn.
Fire Behaviour Analyst	A qualified person providing advice on fire behaviour, to burn planners and operations personnel, to meet prescribed burn objectives.
Environmental Monitoring	A qualified person or team to assist the planning of prescribed burn, prior to implementation, and develop a process to evaluate outcomes.
Community Engagement	The person who facilitates and make recommendations on community engagement for prescribed burn.
Resources Officer	The person responsible for maintaining information about the location and deployment status of people, vehicles and equipment involved in the prescribed burn program.
Logistics Officer	The person responsible for sourcing and maintaining the human and physical resources to support the prescribed burning program.
Incident Controller (prescribed burns)	Authorised agency person responsible for leading all resources delivering the prescribed burns operations program within a defined geographic area. The program may include a number of prescribed burns being conducted concurrently and the coordination of a large number of resources.
State / Regional/ Agency Strategist	The Person responsible at the for analysing data and recommending long term (10+ years) fuel management strategies (using prescribed burning) at the state/jurisdictional scale, cognisant of state / agency policies and objectives and economic, environmental and social requirements.
State Burn Coordinator	Responsible for prioritising and monitoring the delivery of prescribed burn operations at jurisdictional level. Compiles reports and prepare briefings.
Burn Outcome Evaluation and Monitoring	The person who assesses the outcomes of a prescribed burn.

## 4 PROJECT FINDINGS

### 4.1 Limitations of collected data

Responses received were quite varied, and a number of jurisdictions are yet to respond to the questionnaires. Whilst there was a general consensus with respect to the identification of roles involved in prescribed burning, there were a number of minor variations in role description and nomenclature. The Training Competency and Delivery sub-project report provides a clear overview of the variations in role nomenclature.

Whilst the total number of personnel and equipment appears large in some jurisdictions, the capacity to draw on those numbers at any point in time can be significantly limited. A number of roles, particularly that of a crew member and crew leader, are filled by volunteers who may not be readily available for cross-jurisdictional deployment for prescribed burning.

Table 4 indicates the national resource capability of personnel skills for all agencies.

It is clear that resource numbers provided by land management agencies more accurately reflect the true capacity of resources available to support cross-agency/cross-jurisdictional prescribed burning, as their personnel are full-time employees and engaged for specific purposes. However, the contribution by volunteer firefighters should not be excluded or underestimated. They are an important resource particularly for local burns that are often critical for community protection and support for the public land agencies in mopping up when doing accessible large area burns. Volunteers also have an intimate knowledge of local conditions such as the weather and how certain bush will burn.

Table 5 indicates the national resource capability of personnel skills for land management agencies only.

### 4.2 Jurisdictional overview

The following provides a brief synopsis of prescribed burning activities as conducted within each participating jurisdiction.

#### 4.2.1 Victoria

The vast majority of prescribed burning conducted in Victoria is undertaken by the public land management agencies of the Department of Environment, Land, Water and Planning (DELWP) and Parks Victoria (PV). Whilst each agency is responsible for planning its own burns to meet land management objectives, co-ordination of planned burn delivery is the responsibility of DELWP.

DELWP and its delivery partners Parks Victoria, Melbourne Water and VicForests are part of the newly created Forest Fire Management Victoria. The program is delivered within a framework set out in the DELWP Fuel Management Manual. It is underpinned by the objectives and strategies of the *Code of Practice for Bushfire Management on Public Land*. Burning on public and private land is based on the strategically based Bushfire Risk Landscapes program.

Delivery relies on effective engagement with communities and stakeholders and this occurs in all phases of the program, aligned with State and regional community partnerships and engagement

strategies, the 'community first' principle of *Safer Together* (Victorian Government 2015), and the Department's Community Charter (DELWP 2016).

Historically, the Country Fire Authority (CFA) has conducted simple fuel reduction burns, mostly along road edges and small isolated burns and often provides support to DELWP conducting burns on public land. The CFA is increasingly conducting prescribed burns on forested private property at landholder requests particularly where there is strategic value in protecting communities and assets.

#### **4.2.2 South Australia**

The majority of prescribed burning undertaken in South Australia is facilitated by Department of Environment, Water and Natural Resources (DEWNR), predominantly in parks and reserves. In general, the South Australian government aims to burn 5% of its public land per annum, with a priority to protect communities and assets. Land management agencies have memorandums of understanding in place for the delivery of prescribed burning programs and generally collaborate in both the planning and delivery of prescribed burns.

Following the sale of the State's timber plantation resource, Forestry South Australia (FSA) now has responsibility for fuel management on only small isolated areas of native forest and has subsequently had its prescribed burning targets reduced accordingly.

The South Australian government has no formal arrangements in place with adjoining jurisdictions for mutual resource assistance, although there are verbal agreements with both the Western Australia and Victorian governments to assist where possible in the immediate border regions.

The South Australian government does not have a large annual budget to achieve its prescribed burning targets. The costs associated with engagement of external resources through a procurement process presents an impediment to achieving effective cross-jurisdictional support.

Other impediments to achieving effective cross-jurisdictional resource sharing, identified by the South Australian agencies, include differences in terminology, the incompatibility of radio communications and a lack of confidence in the skillsets of resources dispatched from other jurisdictions.

#### **4.2.3 Western Australia**

The Department of Parks and Wildlife (DPAW) are responsible for prescribed burning on public land in Western Australia managed under the CALM Act and includes state forest, national parks and other reserves. Responsibilities for unallocated Crown Land outside declared townships are the responsibility of Department of Fire and Emergency Services (DFES).

DFES is responsible for managing fire hazard through prevention, preparedness and response activities on and the planning and preparation of prescribed burning on all other lands. DFES does not actively deliver a burning program, unless it is on land specified through memorandums of understanding or is directed by the Commissioner, but supports landowners/land managers with specialist advice and leadership in delivering burns.

There are no existing formal resource sharing arrangements in place between agencies in Western Australia for prescribed burning, nor are there any formal arrangements in place for resource sharing with agencies in other jurisdictions. There is, however, a formal Heads of Agreement

between DPAW and DFES which signals an intent to cooperate and collaborate on a range of fire management matters, including the sharing of resources for prescribed burning.

In recent years there has been a significant increase in prescribed burning activity in the state's rangelands areas spawned by both the emerging carbon economy requirements and improved land and environmental management practices. Both DPAW and DFES are involved in the planning and implementation of such burning programs to support rangeland owners and managers including Aboriginal Lands Council, Native Title groups, pastoral companies, and other non-government organisations (NGO's) such as Australian Wildlife Conservancy.

#### **4.2.4 Northern Territory**

In contrast to the fire agencies in the other states, which focus on fire suppression, the Northern Territory agencies focus mainly on fuel management.

In Northern Territory, fuel management is the responsibility of the landowner and many landowners manage large tracts of land as businesses, supported by professional teams that may include fire managers that lead on prescribed burning. Prescribed burning is fully integrated into all normal land management practices.

Bushfires Northern Territory (BNT) is the lead government agency for rural fire management. BNT role includes helping Territory landowners prepare for bushfires and developing fire education and training programs for school students and Aboriginal communities.

Northern Territory Fire and Rescue Service (FRS) conducts prescribed burning on gazetted land, such as in and around major townships. Fuel management is a major part of the work of career staff, with many of the burn areas being burnt annually with the support of local brigades.

Significant tracts of land are being subject to prescribed burning as part of a national carbon accounting initiative. Burning is conducted by a number of Northern Territory Aboriginal Land Councils (Central, Northern and Tiwi), with support and direction provided by BNT. Similarly, large areas of rangeland are being burnt by large pastoral companies with the express objective of improving the ecological value and productivity of their land. A number of larger companies have engaged specialist fire management personnel to support the planning and implementation of their prescribed burning programs.

#### **4.2.5 Queensland**

Queensland Parks and Wildlife Service (QPWS) are the largest public land managers in Queensland and undertake an extensive burning program with an annual target of 350,000 hectares. The Department of Natural Resources and Mines (DNRM) are responsible for the management of unallocated public land within the state and conduct up to 200 targeted burns per annum predominantly delivered through contractors.

Queensland's commercial timber plantations resource was leased to Hancock Queensland Plantations (HQP) in 2010 on a 100-year lease. HQP undertake extensive prescribed burning within the plantation estate. The skills and experience required for the specialized form of burning in plantations does not support resource sharing arrangements with other Queensland fire agencies. HQP's burning program is delivered by trained and experienced HQP staff and contractors in a tight budgetary environment.

There is generally good interagency resource sharing capability between QPWS, DNRM and Queensland Fire and Emergency Services for fire response through a number of memorandums of understanding and interagency protocols, but the degree to which that interagency support is enacted is limited by the cost of moving resources across the very large state.

As with other states and territories with extensive savannah woodlands and rangelands, there has been a significant increase in prescribed burning associated with the developing carbon economy requirements and improved land and environmental management practices. QPWS work closely with Aboriginal Land Councils and large pastoral businesses in planning and delivering large scale prescribed burns, providing both planning expertise and in many instances resources to help undertake the program.

#### **4.2.6 New South Wales**

NSW National Parks and Wildlife Services (NPWS), as part of the Office of Environment and Heritage (OEH), are the largest land manager in New South Wales and as a result deliver the majority of the state's burning program, with an annual target of 135,000 hectares. The NSW Forestry Corporation (FCNSW) is responsible for managing state forest and the state-owned commercial timber plantation resource. The Rural Fire Service (NSW RFS) plan and conduct burns on private land at the request of landholders, local government and other government authorities. NSW RFS priority for prescribed burning is the protection of life and built assets and as such is concentrated around the urban interface. NSW Fire and Rescue (FRNSW) only conduct small targeted burns, generally within urban areas. There is a significant amount of prescribed burning undertaken on private land, much of which goes unrecorded.

All NSW fire management agencies work collaboratively to deliver the burn programs across the state, through a range of formal and informal agreements to enable effective and safe resource sharing. Burns are managed using the Australasian Inter-service Incident Management System (AIIMS) structure. The interagency arrangements in New South Wales work well in providing extra resources needed to deliver programs where windows of opportunity are narrow. The resource sharing arrangements for prescribed burning helps staff from different agencies build good working relationships, share knowledge and skills while also providing a good base for future multi-agency bushfire response.

There are memorandums of understanding in place for cross-border resource sharing with Victoria, South Australia and Queensland, driven primarily by bushfire response, but extending to cover assistance with delivery of prescribed burning.

The NSW agencies support the concept of interagency/cross-jurisdictional resource sharing but acknowledge the risks associated with expenditure, given the day to day uncertainties with managing any burn program.

#### **4.2.7 Australian Capital Territory**

The fire management agencies within the Australian Capital Territory (ACT) include Parks and Conservation Service (PCS) and the Rural Fire Service (ACT RFS). PCS is a land management agency responsible for the majority of prescribed burning within the jurisdiction. The ACT RFS are responsible for the conduct of prescribed burns on small areas on leasehold land.

There are interagency support arrangements in place within the ACT for bushfire response and also for the delivery of prescribed burning operations. Legal agreements are in place between PCS and

NSW OEH, FCNSW and DELWP in Victoria. Due to the practical constraints on volunteer availability, the ACT RFS capacity to assist broad scale burning is limited.

The cost of conducting prescribed burning is becoming significantly more expensive due to increased planning and management of environmental issues including smoke. The effects of climate change can be expected to further affect the ability of safely and effectively deliver burn targets.

#### **4.2.8 Tasmania**

Prescribed burning in Tasmania presents a somewhat unique model. Historically the majority of prescribed burning was planned and conducted on public land by the land management agencies Tasmanian Parks and Wildlife Service (PWS) and Forestry Tasmania (FT).

In 2014, a comprehensive community bushfire risk analysis identified that around 40% of the forest fuel management by prescribed burning was on freehold land. The Tasmanian Government identified the need for fuel management to be applied across all land, regardless of tenure based on assessed bushfire risk to communities.

In doing so the government established the Tasmanian Fuel Reduction Unit (FRU) whose responsibility was to provide a single, coordinated strategic approach to delivering fuel reduction across the state. Embedded within the Tasmanian Fire Service (TFS), the FRU works closely with the PWS, FT, local government, the private forestry industries, farmers and graziers and the general community to deliver the program. The FRU is also responsible for planning and preparation, consulting and communicating with communities about the fuel reduction program.

PWS have experience of cross-jurisdictional support with parks personnel from Queensland coming to Tasmania, mainly with the objective of exposing their staff to ecological and cultural variances associated with prescribed burning, rather than for the objective of meeting targets.

Forestry Tasmania (FT) were historically responsible for broad scale burning in State forests, but with corporatization, that role has been significantly reduced to mainly high fire intensity regeneration burns and some local burns to help protect communities.

#### **4.2.9 New Zealand**

Due to the nature of its vegetation, topography and climate, New Zealand conducts very little prescribed burning. However, they see the clear benefit of having fire management personnel engaged in prescribed burning in Australia as a valuable training exercise.

New Zealand rural fire agency personnel have previously worked in Victoria to assist DELWP with the delivery of its burn program. Personnel were made available to the Victorian Government and as such the arrangements to date do not reflect a commercial procurement arrangement that could be carried forward for the long term.

### **4.3 Current fuel reduction burning capacity**

Feedback from jurisdictions would indicate that agencies generally have an adequate inventory of human and physical resources needed to deliver their prescribed burning programs in a 'normal year' based on historic seasonal trends. What constitutes a normal year is subject to increasing

debate and the factors that are causing a normal year to be less frequent are becoming better understood.

There is consensus between fire agencies that the notion of a normal year is being lost, making it very difficult to provide a baseline of skills and equipment required to achieve risk-based burn targets. Clearly improving cross-jurisdictional resource sharing provides an opportunity to improve burn outcomes.

The following section contains a detailed table that attempted to quantify national capacity to undertake prescribed burning in a normal year.

The table summarises the following information collected through agency survey:

- Current number of personnel within an agency/jurisdiction trained and competent to fulfill the range of tasks that are associated with the delivery of agency/jurisdiction prescribed burning programs; and
- The type and extent of equipment used by agencies to undertake agency/jurisdiction fuel reduction programs.

A primary objective of the survey was to provide participating agencies with the opportunity to indicate whether their existing prescribed burning resources were adequate to achieve their program targets and if not, identify the optimum number of resources that agencies deemed necessary to meet their burn targets.

From the information collected, it should be possible to determine whether access to an increased level of resources through cross-jurisdictional resource sharing would improve the likelihood of the agency achieving its targets. The jurisdictions were unable to provide information relating to the optimum resource level they felt would be required to ensure annual programs would be achieved.

The results of the survey are summarised and provided in Tables 4 and 5 following.



*Source: Queensland Parks and Wildlife Service*

**Table 4** National capability, personnel skills – ‘all agencies’.

National Capability – Personnel Skills – All Agencies										
Indicative Prescribed Burning Roles	Generic Role Description	Total	Quantity							
			ACT	NSW	VIC	QLD	SA	NT	WA	TAS
Burn Crew Member	Person participating in lighting and conducting PBs under direct supervision.	65133	150	37,268	21,100	673	364	N/A	N/A	5578
Burn Crew Leader	Leader of a PB crew.	44882	30	39,706	4,213	473	232	N/A	N/A	228
Sector Commander	Responsible for the management of all operational aspects and resources allocated to a sector of a PB.	40456	15	39,306	456	356	127	N/A	N/A	196
Burn Manager/ Operations Officer - simple burns	Responsible for the management of all operational aspects and resources allocated to a simple PB, i.e. a burn characterised by low risk, low intensity, small area, low risk to assets, with minimal variation to fuel characteristics and terrain.	2515	10	1,413	525	372	31	N/A	N/A	164
Burn Manager/ Operations Officer - complex burns	Responsible for the management of all operational aspects and resources allocated to a complex PB, i.e. a burn characterised by moderate to high risk, a range of fire intensity, medium to large areas, significant potential impact on assets and involve a variety of fuels and terrain.	1967	10	1,543	193	150	31	N/A	N/A	40
Burn Planner - simple burns	Responsible for preparation of approved plan that incorporates the specifications and conditions under which a simple PB is to be conducted, i.e. a burn characterised by low risk, low intensity, small area, low risk to assets, with minimal variation to fuel characteristics and terrain	534	2	119	12	208	31	N/A	N/A	162
Burn Planner - complex burns	Responsible for preparation of approved plan that incorporates the specifications and conditions under which a complex PB is to be conducted, i.e. a burn characterised by moderate to high risk, a range of fire intensity, medium to large areas, significant potential impact on assets and involve a variety of fuels and terrain.	741	2	394	42	200	31	N/A	N/A	72

National Capability – Personnel Skills – All Agencies										
Indicative Prescribed Burning Roles	Generic Role Description	Total	Quantity							
			ACT	NSW	VIC	QLD	SA	NT	WA	TAS
Incendiary Operator	Authorised agency person responsible for the operation, servicing, handling and storage of the aerial incendiary machine and associated consumables for a PB.	67	4	0	23	6	8	N/A	N/A	26
Incendiary Operations Supervisor	Authorised agency person responsible for the safe, effective and efficient conduct of aerial incendiary operations for a PB to prescription, including direction of the pilot and aerial incendiary machine operator, and liaison with ground crews.	100	4	50	23	0	4	N/A	N/A	19
Meteorologist	Qualified person to provide accurate and timely advice of forecast fire weather to assist in planning and implementation of a PB.	6	0	5	1	0	0	N/A	N/A	0
Fire Behaviour Analyst	Qualified person providing advice on fire behaviour to burn planners and operations personnel to meet PB objectives.	111	2	72	22	0	4	N/A	N/A	11
Environmental Monitoring	Qualified person or team to assist the planning of PB, prior to implementation, and develop a process to evaluate outcomes.	12	0	0	0	0	7	N/A	N/A	5
Community Engagement	Person who facilitates and make recommendations on community engagement for PB.	44	0	0	21	2	2	N/A	N/A	19
Resources Officer	Person responsible for maintaining information about the location and deployment status of people, vehicles and equipment involved in the PB program.	53	6	0	0	0	30	N/A	N/A	17
Logistics Officer	Person responsible for sourcing and maintaining the human and physical resources to support the PB program.	181	0	130	0	0	30	N/A	N/A	21

National Capability – Personnel Skills – All Agencies										
Indicative Prescribed Burning Roles	Generic Role Description	Total	Quantity							
			ACT	NSW	VIC	QLD	SA	NT	WA	TAS
Incident Controller (prescribed burns)	Authorised agency person responsible for leading all resources delivering the PB operations program within a defined geographic area. The program may include a number of PBs being conducted concurrently and the coordination of a large number of resources.	510	1	0	120	350	31	N/A	N/A	8
State/Regional/ Agency Strategist	Person responsible at the for analysing data and recommending long term (10+ years) fuel management strategies (using PB) at the state/jurisdictional scale, cognisant of state / agency policies and objectives and economic, environmental and social requirements.	59	0	4	34	0	12	N/A	N/A	9
State Burn Co-ordinator	Responsible for prioritising and monitoring the delivery of PB operations at jurisdictional level. Compile reports and prepare briefings.	28	0	1	7	0	4	N/A	N/A	16
Burn Outcome Evaluation and Monitoring	Person who assesses the outcomes of a PB.	275	4	0	0	200	12	N/A	N/A	59
Prescribed Burning Contractors	Business providing fee for service to assist in delivery of PB programs.	126	0	0	0	0	0	N/A	N/A	100
Other		0	0	0	0	0	0	N/A	N/A	0

**Table 5** National capability, personnel skills – ‘land management agencies only’.

National Capability – Personnel Skills – Land Management Agencies only											
Indicative Prescribed Burning Roles	Generic Role Description	Total	Quantity								
			ACT	NSW	VIC	QLD	SA	NT	WA	TAS	
Burn Crew Member	Person participating in lighting and conducting PBs under direct supervision.	3936	150	1,000	1,100	673	364	N/A	N/A	649	
Burn Crew Leader	Leader of a PB crew.	1876	30	700	213	473	232	N/A	N/A	228	
Sector Commander	Responsible for the management of all operational aspects and resources allocated to a sector of a PB.	1250	15	300	256	356	127	N/A	N/A	196	
Burn Manager/ Operations Officer - simple burns	Responsible for the management of all operational aspects and resources allocated to a simple PB, i.e. a burn characterised by low risk, low intensity, small area, low risk to assets, with minimal variation to fuel characteristics and terrain.	952	10	0	375	372	31	N/A	N/A	164	
Burn Manager/ Operations Officer - complex burns	Responsible for the management of all operational aspects and resources allocated to a complex PB, i.e. a burn characterised by moderate to high risk, a range of fire intensity, medium to large areas, significant potential impact on assets and involve a variety of fuels and terrain.	551	10	130	190	150	31	N/A	N/A	40	
Burn Planner - simple burns	Responsible for preparation of approved plan that incorporates the specifications and conditions under which a simple PB is to be conducted, i.e. a burn characterised by low risk, low intensity, small area, low risk to assets, with minimal variation to fuel characteristics and terrain	403	2	0	N/A	208	31	N/A	N/A	162	
Burn Planner - complex burns	Responsible for preparation of approved plan that incorporates the specifications and conditions under which a complex PB is to be conducted, i.e. a burn characterised by moderate to high risk, a range of fire intensity, medium to large areas, significant potential impact on assets and involve a variety of fuels and terrain.	612	2	275	32	200	31	N/A	N/A	72	
Incendiary Operator	Authorised agency person responsible for the operation, servicing, handling and storage of the aerial incendiary machine and associated consumables for a PB.	67	4	0	23	6	8	N/A	N/A	26	
Incendiary Operations Supervisor	Authorised agency person responsible for the safe, effective and efficient conduct of aerial incendiary operations for a PB to prescription, including direction of the pilot and aerial incendiary machine operator, and liaise with ground crews.	85	4	35	23	0	4	N/A	N/A	19	
Meteorologist	Qualified person to provide accurate and timely advice of forecast fire weather to assist in planning and implementation of a PB.	1	0	0	1	0	0	N/A	N/A	0	

National Capability – Personnel Skills – Land Management Agencies only											
Indicative Prescribed Burning Roles	Generic Role Description	Total	Quantity								
			ACT	NSW	VIC	QLD	SA	NT	WA	TAS	
Fire Behaviour Analyst	Qualified person providing advice on fire behaviour to burn planners and operations personnel to meet PB objectives.	39	2	12	10	0	4	N/A	N/A	11	
Environmental Monitoring	Qualified person or team to assist the planning of PB, prior to implementation, and develop a process to evaluate outcomes.	12	0	0	0	0	7	N/A	N/A	5	
Community Engagement	Person who facilitates and make recommendations on community engagement for PB.	39	0	0	16	2	2	N/A	N/A	19	
Resources Officer	Person responsible for maintaining information about the location and deployment status of people, vehicles and equipment involved in the PB program.	53	6	0	0	0	30	N/A	N/A	17	
Logistics Officer	Person responsible for sourcing and maintaining the human and physical resources to support the PB program.	181	0	130	0	0	30	N/A	N/A	21	
Incident Controller (prescribed burns)	Authorised agency person responsible for leading all resources delivering the PB operations program within a defined geographic area. The program may include a number of PBs being conducted concurrently and the coordination of a large number of resources.	490	1	0	100	350	31	N/A	N/A	8	
State/Regional/ Agency Strategist	Person responsible at the for analysing data and recommending long term (10+ years) fuel management strategies (using PB) at the state/jurisdictional scale, cognisant of state / agency policies and objectives and economic, environmental and social requirements.	53	0	0	32	0	12	N/A	N/A	9	
State Burn Co-ordinator	Responsible for prioritising and monitoring the delivery of PB operations at jurisdictional level. Compile reports and prepare briefings.	24	0	0	4	0	4	N/A	N/A	16	
Burn Outcome Evaluation and Monitoring	Person who assesses the outcomes of a PB.	275	4	0	0	200	12	N/A	N/A	59	
Prescribed Burning Contractors	Business providing fee for service to assist in delivery of PB programs.	126	0	0	0	0	0	N/A	N/A	126	
Other		0	0	0	0	0	0	N/A	N/A	0	

## 4.4 Adequacy of prescribed burning roles to support national resource sharing

An important objective of the stocktake was to determine the adequacy or otherwise of a jurisdiction to supply all the roles and equipment needed to deliver their burn programs utilising either their own resources or via interagency support. That is to undertake a gap analysis of each jurisdiction's capacity to fill the specified prescribed burn roles.

It proved difficult for agencies to determine which roles have adequate numbers of trained and competent personnel at the jurisdictional level to support a national resource sharing capability. It was clear at the Workshop that the following roles were considered under-resourced in a number of jurisdictions and a strategy to increase those numbers through either resource sharing or increased training needs could be established. Those roles were:

- *Planning Complex Burns* – A number of agencies indicated they had adequate trained and accredited personnel to plan complex burns, some agencies had plans completed for 150% of their annual burn program, whilst other agencies indicated that restricted capacity to prepare plans in appropriate time frames was hindering their capacity to deliver the burn program. In this situation, national resource sharing could assist with burn planning and preparation; and
- *Evaluation and Monitoring* – Almost all agencies indicated a significant deficiency in capacity to monitor and evaluate the outcome of their prescribed burning programs in terms of:
  - Burn objectives – extent and severity of the burn and degree of bushfire fuel risk mitigation; and
  - Environmental Impacts.

Post-burn assessment and outcome evaluation is a critical factor in determining the success or otherwise of any prescribed burn. Agencies currently employ a range of techniques to evaluate burn success, ranging from ground-based assessment, aerial mapping and use of more sophisticated remote sensing technologies. The workshop consensus was that the capacity to effectively evaluate and monitor prescribed burns at the national level requires a significant increase in the number skilled personnel and access to state of the art technologies. The National Burning Project has developed a *Prescribed Burning Performance Measurement Framework* and an *Objectives, Monitoring and Evaluation Framework* to assist agencies in measuring the success of their programs.

These points are considered in detail in Section 6.

## 4.5 National classification system – equipment

Most Australian fire management agencies have developed equipment to assist with the delivery of their respective burning programs, based on their specific agency needs and operating environments.

Equipment developed by individual agencies often leads to similar equipment being built with a broad range of variants. Such slight design and construction differences can restrict the capacity for the agencies to then share this equipment.

The FFMG has convened the Fire Equipment Development Group (FEDOG) with representation from land management agencies and some rural fire agencies. This group has led on the development of standardized forest fire equipment, including specialist equipment for burning.

Equipment used in delivery of prescribed burning operations, excluding aircraft, can be summarized as the following:

### Tankers

Depending on the nature of operations, terrain, fire and land managers responsible for prescribed burning activities use a range of water tankers to support operations. Only tankers with a four-wheel drive (4WD) configuration are used for prescribed burning operations. There is a nationally recognized classification system for 4WD tankers, based on capacity.

- Category 1 – Heavy 4 X 4 Tanker - Capacity – 3000 – 4000 lt.;
- Category 2 – Medium 4X4 Tanker – Capacity 1600 – 3000 lt.;
- Category 7 – Light 4 X 4 Tanker – Capacity – 800 – 1600 lt.; and
- Category 9 – 4 X 4 Striker / Slip-on unit – Less than 800 lt.

### Earthmoving machinery

While a number of land management agencies operate their own fleet of earthmoving machinery, there is a general trend to now utilize contract machinery to prepare prescribed burn boundaries and to assist in burn control and blackout.

In the main, smaller and easy to transport machinery such as crawler tractors or rubber tyred skidders are the preferred items of plant to support prescribed burning. Apart from local cross-border arrangements, it is unlikely that this type of equipment would be requested by other jurisdictions for a burning deployment.

There is a national classification system for plant used in prescribed burning, and all machinery used at fires are required to be compliant with *AS 2294-1997: Earthmoving Machinery – Protective Structures* and *AS 2294.1 Supplement 1 2003: Operator Protective Structures Fitted to Plant Used in the Timber Industry (Forestry Operations)*

### Aerial incendiary machines

There is a range of aerial incendiary machines in use by Australian land and fire management agencies. The range of manufacturers and designs has resulted in a range of incendiary consumables (such as 'ping pong balls'). For example, different manufacturers may design machines that use slightly different incendiary capsules to other machines, and different machines may require different aircraft engineering requirements and electronic circuitry requirements.

Commissioning an aerial incendiary machine presents significant risk associated with the compatibility of consumables (incendiary devices) and capacity to fit aircraft configuration.

A number of jurisdictions contract aerial ignition operations where the aviation company supplies the aircraft, incendiary machine and consumables, with the agencies providing the incendiary operations supervisor. This arrangement supports agencies across different states and territories to readily access a valuable burning resource.



*Source: Department of Parks and Wildlife, Western Australia*

### **Aerial drip torches**

Aerial drip torches are predominantly used for igniting high-intensity forest regeneration burns after harvest. However, they can also be used for other prescribed burns where the fuel is difficult to ignite due to high fine fuel moisture contents. Other applications for the aerial drip torch include lighting coastal scrub vegetation, which needs to be burnt quickly using a high-intensity lighting pattern. With strong coastal winds, this vegetation can produce dangerous fire behaviour and it is important that the burn is completed quickly before severe weather conditions develop.

### **Vehicle mounted flame throwers**

A number of land management agencies have developed or purchased vehicle mounted flame throwers to improve the efficiency of edge lighting or enable edge lighting when fuel moisture contents make conventional ignition more difficult.

The operation of vehicle mounted flame throwers is a relatively high-risk operation and is not used in a number of jurisdictions due to legal restrictions and inherent risks. Use of such equipment in interagency/cross-jurisdictional resource sharing arrangements would need to ensure that the flamethrower, vehicle and trained operating crew were commissioned as a package.

### **Airborne Surveillance and Burn Mapping Systems**

The majority of fire agencies own or have contractual access to airborne surveillance/imagery and mapping systems that provide both real-time and post burn information from which burn severity and extent mapping can be produced.

Such technology is expensive but highly mobile. Deployment to collect data to assist with or assess outcomes of a prescribed burn can generally be done quickly, making the technology very well suited to national resource sharing. Issues such as data formats and IT systems of requesting agencies would need to be considered before deployment decisions could be made.

Given airborne surveillance/imagery and mapping systems are highly sophisticated with rapidly changing technology, management of such a resource would be well suited to a national resource sharing arrangement.

### **Mobile Weather Stations**

On important and high-risk burns, having local weather information helps with managing the burn safely. A number of agencies have mobile weather stations and these could be easily and efficiently be deployed between agencies and states. As there are differences in design, technology and operating procedure, interagency/cross-jurisdictional resource sharing arrangements would need to ensure that the weather station and trained operating crew were commissioned as a package.

### **Communications Systems**

It was not feasible to undertake a communications stocktake as part of this sub project due to the broad range of communications systems used by the various agencies. Incompatibility between fire management agencies communications networks remains the single largest impediment to achieving safe and effective national resource sharing arrangements. The inability to conduct effective communications during a burn between agencies can present a significant level of risk to fire control and crew safety.

There is a clear need to promote a national approach to ensuring or providing interagency compatible communications to all personnel when deployed to interagency prescribed burning operations.

### Summary

Tables 6 and 7 provide information in relation the type and extent of equipment used by agencies to undertake agency/jurisdiction fuel reduction programs.

A primary objective of the survey was to provide participating agencies with the opportunity to indicate whether their existing inventory of prescribed burning plant and equipment was adequate to achieve their program targets and if not, identify the optimum number of resources that agencies deemed necessary to meet their burn targets. Agency responses provide insight into their existing inventory but gave no indication through their response as to what deficiencies they had that would improve performance outcomes should a national resource sharing opportunity be presented.

**Table 6** National capability, prescribed burning equipment – ‘all agencies’

National Capability – Equipment – All Agencies									
Item of equipment	Total	Quantity							
		ACT	NSW	VIC	QLD	SA	NT	WA	TAS
Cat 1 Tanker	4,854	6	4,500	81	0	30	N/A	56	181
Cat 2 Tanker	189	2	0	0	0	7	N/A	56	124
Cat 7 Tanker	69	0	0	2	40	6	N/A	0	21
Cat 9 Tanker	1469	6	300	415	203	62	N/A	208	275
First Attack Dozers	160	0	12	38	3	1	N/A	10	96
Vehicle-mounted flame throwers	9	0	1	2	0	5	N/A	1	0
Aerial Drip Torch	12	0	1	4	0	3	N/A	4	0
Aerial Incendiary Machine	54	4	14	12	3	0	N/A	9	12
Surveillance and Mapping Systems	29	2	25	0	0	0	N/A	0	2
Mobile Weather Stations	7	4	0	0	0	0	N/A	0	3

**Table 7** National capability, prescribed burning equipment – ‘land management agencies only’.

National Capability – Equipment – Land Management Agencies only									
Item of equipment	Total	Quantity							
		ACT	NSW	VIC	QLD	SA	NT	WA	TAS
Cat 1 Tanker	354	6	0	81	0	30	N/A	56	181
Cat 2 Tanker	189	2	0	0	0	7	N/A	56	124
Cat 7 Tanker	69	0	0	2	40	6	N/A	0	21
Cat 9 Tanker	1469	6	300	415	203	62	N/A	208	275
First Attack Dozers	160	0	12	38	3	1	N/A	10	96
Vehicle-mounted flame throwers	8	0	0	2	0	5	N/A	1	0
Aerial Drip Torch	12	0	1	4	0	3	N/A	4	0
Aerial Incendiary Machine	44	4	4	12	3	0	N/A	9	12
Surveillance and Mapping Systems	4	2	0	0	0	0	N/A	0	2
Mobile Weather Stations	7	4	0	0	0	0	N/A	0	3

Changes in design and manufacture of specialised prescribed burning equipment can restrict the effectiveness of cross-jurisdictional resource sharing. A detailed knowledge of prescribed burning equipment available for resource sharing will be pivotal to ensuring resource sharing is safe and effective.

### Recommendation 1

- Establish a cooperative approach to the development of equipment and performance standards including working with fire management contractors and
- A central registry of all designated specialist prescribed burning equipment be developed and maintained by AFAC with information including but not limited to:
  - Item of equipment;
  - Ownership;
  - Location;
  - Manufacturer make & model; and
  - Operating specifications / consumable requirements.

## 4.6 A developing contract fire management industry

There is clear evidence of a rapidly developing contract fire management industry, with a number of agencies having engaged suitably trained, skilled and equipped fire management contracting businesses to support delivery of their prescribed burning programs.

A range of large non-governmental land owners and land managers including Department of Defence, Aboriginal Lands Councils, Local Government, large pastoral enterprises and environmental Non-Government Organisation's (NGO's) engage fire management businesses to deliver their prescribed burning programs.

There are a number of benefits associated with engagement of fire management contractors including:

- Training and equipment standards would be set prior to engagement to reflect national standards;
- Procurement would be based on fixed rates for service and set performance standards for 'quality assurance';
- Skills, experience and attitude of contract work force would potentially be significantly greater than that of the public sector as fire management is core business; and
- Contracting work force would be highly mobile with capacity and expectation that deployment would be away from home base for a significant part of the year.

The ability to procure prescribed burning services under standard contract arrangements by agencies/jurisdictions paves the way for developing specifications and standards for the suite of equipment that contractors would need to provide before they could become a service provider. The onus to provide specialized equipment to an agreed national standard would remain with the contractor.

### Recommendation 2

- A central registry of specialist fire management contractors with prescribed burning skills and equipment be developed and maintained by AFAC with information including but not limited to:
  - Contractor business details;
  - Nominated operating base;
  - Business profile and prescribed burning experience in Australia and New Zealand;
  - Profile of personnel trained, accredited, experienced and available to participate in Australia and New Zealand wide prescribed burning activities; and
  - List of equipment and other physical resources owned and operated to support delivery of prescribed burning operations.

## 4.7 Inter-jurisdictional personnel competency matrix

### 4.7.1 The purpose of the matrix

To be able to effectively and safely implement any form of cross agency / jurisdictional capability for human resources, it is essential that agencies in different jurisdictions have compatible skill sets for the prescribed burning roles. To facilitate this, a key deliverable for this sub-project is the establishment of an inter-jurisdictional matrix of personnel competencies (job-titles and required skill sets) for prescribed burning roles, which could potentially be used as the minimum standard for inter-jurisdictional resource sharing.

The matrix was developed through a survey and stocktake of the agencies gathering information on the role title and description and training approach for both accredited and non-accredited training.

All agencies used the same accredited training for the lower roles in both fire suppression and burning operations. An AIIMS modelled approach was used for higher management roles during a burning operation. There was a step up in roles, level 1 to 2 to 3, depending on the complexity of the burn or series of burns.

A set of 'skill sets' for various roles has been recommended along with pathways to achieve accreditation in certain roles.

The process for establishing the matrix of personnel competencies for prescribed burning was included as part of the Prescribed Burning Training Competencies and Delivery sub-project, also undertaken by Ewan Waller and Associates, and the report for this sub-project contains a full explanation.

### 4.7.2 Induction for local arrangements

The Training TRG agreed that, while the principles of prescribed burning are national, each jurisdiction has a different legislative and policy framework and may have different environmental conditions. Therefore any training delivered training program must contain a mix of nationally consistent principles and local content.

Prior to being deployed into in a different jurisdiction, people filling prescribed burning roles need to be inducted into local arrangements. Additionally, if they are burning unfamiliar field conditions, they need to be supported by a person familiar with the environment such as the local weather, fuel type and the associated hazards.

#### Recommendation 3

- Agencies develop an induction program for use in briefing incoming resources on local arrangements so that burning can be conducted safely and effectively.

It is recognised it will take some time for agencies to ensure all people currently performing prescribed burning roles are trained in the competencies listed, particularly the competencies relating to supervision. Therefore, until this is achieved, the training of existing personnel should be assessed, and a judgement made if it is equivalent to the national competencies.

#### Recommendation 4

- 'Equivalent' training (that is, where the content of the training is equal to the content of the listed competency) be acceptable, at least in the short term. For the longer term, a framework for transition would need to be developed that includes time frames and methodologies.



*Source: Department of Environment, Water and Natural Resources, South Australia*

**Table 8** Draft inter-jurisdictional personnel competency matrix for roles where formal skill sets are proposed

Role	Role descriptor	Proposed units of competency for endorsed Skill Set	Logic underpinning the Skill Set	Optional skills (need to be specified)
<b>Prescribed Burn Crew Member</b>	The person participating in lighting and conducting prescribed burns under direct supervision.	PUATAE001B Work in a team PUAFIR215 Prevent injury PUAFIR204B Respond to wildfire		<ul style="list-style-type: none"> <li>• Heavy vehicle driving</li> <li>• Off-road driving</li> <li>• Chainsaw skills: <ul style="list-style-type: none"> <li>• Cross cut</li> <li>• Falling</li> </ul> </li> <li>• First aid</li> <li>• Topographic map reading</li> </ul> <p>Other units of competency or agency requirements such as fitness requirements</p>
<b>Prescribed Burn Crew Leader</b>	The leader of a prescribed burn crew.	PUATAE001B Work in a team PUAFIR215 Prevent injury PUAFIR204B Respond to wildfire PUAFIR303B Suppress wildfire PUAOPE020A Lead a crew	<u>Prescribed Burn Crew Member</u> plus: PUAFIR303B Suppress wildfire PUAOPE020A Lead a crew	
<b>Prescribed Burn Sector Commander</b>	The person responsible for the management of all operational aspects and resources allocated to a sector of a prescribed burn.	PUATAE001B Work in a team PUAFIR215 Prevent injury PUAFIR204B Respond to wildfire PUAFIR303B Suppress wildfire PUAOPE020A Lead a crew PUAOPE016A Manage a multi-team sector PUAOPE015A Conduct briefings and debriefings	<u>Prescribed Burn Crew Leader</u> plus: PUAOPE016A Manage a multi-team sector PUAOPE015A Conduct briefings and debriefings	
<b>Prescribed Burn Operations Officer (simple burns)</b>	The person responsible for the management of all operational aspects and resources allocated to a simple prescribed burn.	PUATAE001B Work in a team PUAFIR215 Prevent injury PUAFIR204B Respond to wildfire PUAFIR303B Suppress wildfire PUAOPE020A Lead a crew PUAFIR412 Conduct simple prescribed burns	<u>Prescribed Burn Crew Leader</u> plus: PUAFIR412 Conduct simple prescribed burns	
<b>Prescribed Burn Operations Officer (complex burns)</b>	The person responsible for the management of all operational aspects and resources allocated to a complex prescribed burn.	PUATAE001B Work in a team PUAFIR215 Prevent injury PUAFIR204B Respond to wildfire PUAFIR303B Suppress wildfire PUAOPE020A Lead a crew	<u>Prescribed Burn Sector Commander</u> plus: PUAFIR511 Conduct complex prescribed burns	

Role	Role descriptor	Proposed units of competency for endorsed Skill Set	Logic underpinning the Skill Set	Optional skills (need to be specified)
<i>Note - may also manage simple burns</i>		PUAOPE016A Manage a multi-team sector PUAOPE015A Conduct briefings and debriefings PUAFIR511 Conduct complex prescribed burns		
<b>Prescribed Burn Planner (simple burns)</b>	Responsible for preparation of approved plan that incorporates the specifications and conditions under which a simple prescribed burn is to be conducted.	PUATAE001B Work in a team PUAFIR215 Prevent injury PUAFIR204B Respond to wildfire PUAFIR413 Develop simple prescribed burn plans	<u>Prescribed Burn Crew Member</u> plus: PUAFIR413 Develop simple prescribed burn plans	
<b>Prescribed Burn Planner (complex burns)</b> <i>Note - may also plan simple burns</i>	Responsible for preparation of approved plan that incorporates the specifications and conditions under which a complex prescribed burn is to be conducted.	PUATAE001B Work in a team PUAFIR215 Prevent injury PUAFIR204B Respond to wildfire PUAFIR303B Suppress wildfire PUAOPE020A Lead a crew PUAFIR513 Develop complex prescribed burns	<u>Prescribed Burn Crew Leader</u> plus: PUAFIR513 Develop complex prescribed burns	

**Table 9** Draft inter-jurisdictional personnel competency matrix for roles where there are no proposed skill sets

Role	Description of the role	Suggested requirements	Comment
<b>Air Incendiary Operator</b>	The person responsible for the operation, servicing, handling and storage of the aerial incendiary machine and associated consumables for a prescribed burn.	As per agency training requirements. Suggest: <ul style="list-style-type: none"> <li>PUAFIR312C Operate aerial ignition equipment in an aircraft</li> <li>PUAFIR209B Work safely around aircraft</li> </ul>	<i>(Note that the Fire and Emergency Aviation Technical Group [FEAT] is currently examining the requirements for this role)</i>
<b>Incendiary Operations Supervisor</b>	The person responsible for the safe, effective and efficient conduct of aerial incendiary operations for a prescribed burn to prescription, including direction of the aerial incendiary machine operator and liaison with ground crews.	As per Agency training requirements. Suggest: <ul style="list-style-type: none"> <li>PUAFIR315B Navigate from an aircraft</li> </ul>	<i>(Note that the Fire and Emergency Aviation Technical Group [FEAT] is currently examining the requirements for this role)</i>
<b>Incident Controller</b>	As per the AIIMS role.	As per agency requirements for the AIIMS role	
<b>Resources Officer</b>	As per the AIIMS role.	As per agency requirements for the AIIMS role	
<b>Public Information Officer</b>	As per the AIIMS role.	As per agency requirements for the AIIMS role	
<b>Logistics Officer</b>	As per the AIIMS role.	As per agency requirements for the AIIMS role	
<b>Environmental Monitoring</b>	A qualified person or team to assist the planning of prescribed burn, prior to implementation, and develop a process to evaluate outcomes.	Agency endorsement for the role	

Role	Description of the role	Suggested requirements	Comment
<b>Meteorologist</b>	A qualified person to provide accurate and timely advice of forecast fire weather to assist in planning and implementation of a prescribed burn.	-	Role generally contracted from the Bureau of Meteorology
<b>Fire Behaviour Analyst (FBAN)</b>	The person providing advice on fire behaviour to burn planners and operations personnel to meet prescribed burn objectives.	Agency endorsement for the role	<i>(Note that the AFAC Predictive Services Group is currently examining the requirements for this role)</i>
<b>Burn Outcome Evaluation and Monitoring</b>	The person who assesses the outcomes of a prescribed burn program or a burn.	<ul style="list-style-type: none"> <li>PUAFIR412 Conduct simple prescribed burns</li> </ul> or <ul style="list-style-type: none"> <li>PUAFIR511 Conduct complex prescribed burns</li> </ul>	Monitoring burn outcomes is included within these units of competency
<b>State/Regional/Agency Strategist</b>	The Person responsible for analysing data and recommending long term (10+ years) fuel management strategies (using prescribed burning) at the state/jurisdictional scale, cognisant of state / agency policies and objectives and economic, environmental and social requirements.	Agency endorsement for the role	
<b>State Burn Coordinator</b>	The person responsible for prioritising and monitoring the delivery of prescribed burn operations at jurisdictional level.	Agency endorsement for the role	

## 5 NATIONAL RESOURCE SHARING

### 5.1 Benefits and impediments

The majority of states and territories indicated they would be unlikely to use cross-jurisdictional resources on a regular basis. With the exception of the ACT PCS, VIC DELWP and NSW OEH, few agencies have existing legal agreements between states that would support the movement of prescribed burning resources between jurisdictions.

All states and territories agreed there are clear advantages in adopting cross-jurisdictional resource sharing arrangements for prescribed burning, as it:

- Provides states and territories with the capacity to complete and potentially expand their prescribed burning programs to mitigate bushfire risk when weather constraints would otherwise limit that capacity;
- Provides participating agency personnel with the opportunity to become skilled and experienced with the fire behaviour in a range of different fuels and topographic conditions; and
- Facilitates the sharing of skills and knowledge between agency personnel.

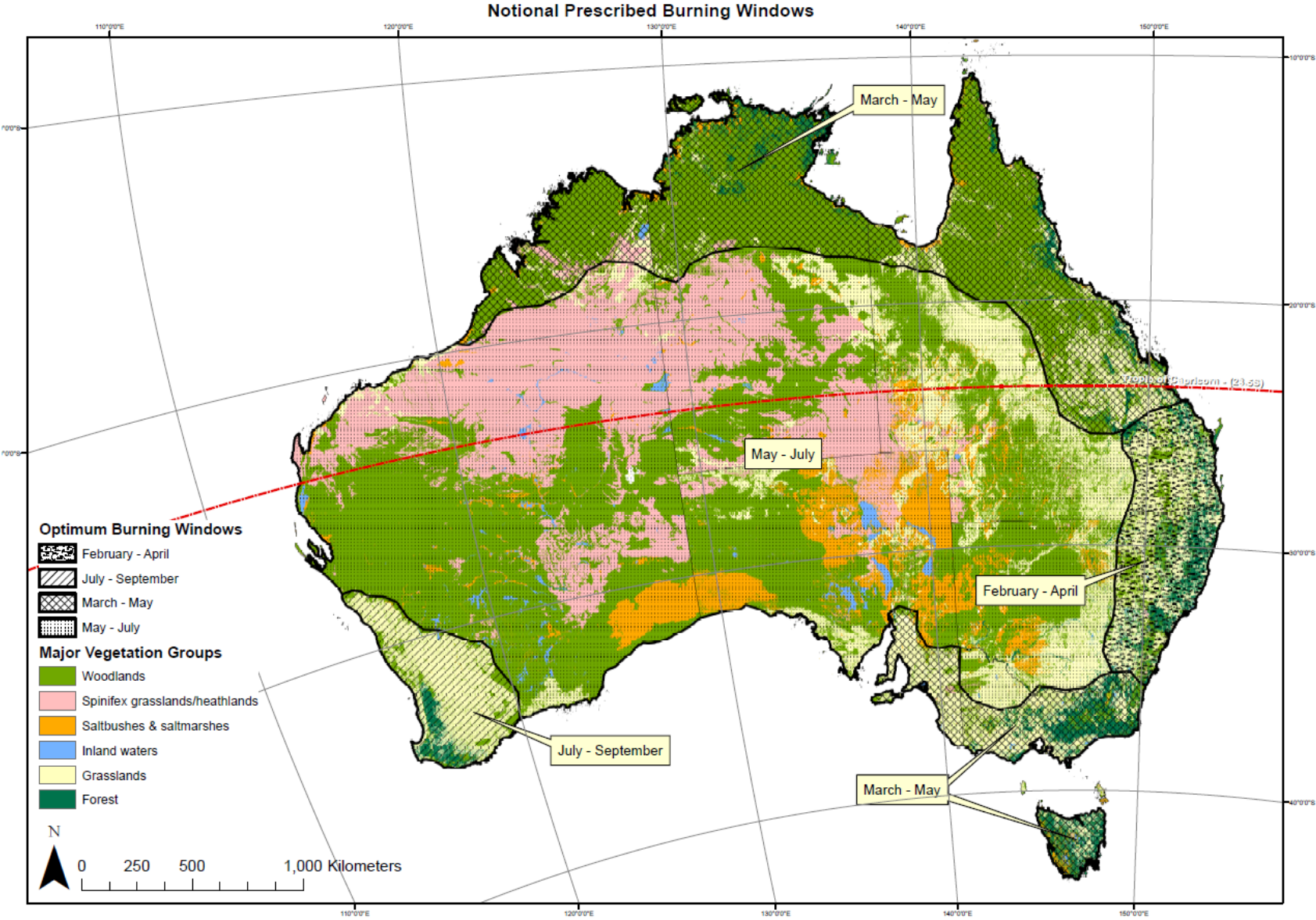
There is general acceptance of the principle of national resource sharing and the advantages to be gained, however, a number of practical issues were identified that could limit its implementation:

- State and territory programs are currently being met to a satisfactory level with existing agency resources;
- Adjoining jurisdictions are likely to experience the same weather conditions at the same time and therefore require their resources to deliver their own programs;
- When not committed to prescribed burning activities, personnel within any agency are required to deliver other budgeted core activities and are not necessarily available for deployment;
- There are significant costs associated with implementing a deployment, for example, travel and accommodation costs; and
- The risk that weather conditions change during a cross-jurisdictional deployment and the resources are not able to conduct the burns. This risk can be mitigated by requesting agencies preparing works programs for support resources that extend beyond active burning into preparatory works such as fireline construction or fuel hazard assessment. In doing so support resources are gainfully employed for the duration of the deployment.

While state and territory fire and land management agencies can manage their own burning programs in a normal year, clearly there are an increasing number of years where seasonal constraints, competing tasks and increased environmental constraints (such as smoke management and health risks) that can severely restrict the ability to deliver annual targets.

Australia's vast geography generates a broad variance in seasonal conditions and bushfire fuel complexes. Accordingly prescribed burning is undertaken in different regions at different months during the year. Figure 1 attempts to illustrate the usual windows of opportunity for prescribed burning operations across Australia. It indicates that there are opportunities to shift resources across jurisdictions.

**Figure 1** Notional Prescribed Burn Windows – Australia



## 5.2 Options for national resource sharing

### 5.2.1 Interagency resource sharing

The vast majority of prescribed burning within any jurisdiction is undertaken by the land management agencies who manage large areas of state forest, national parks and reserves. In recent years significant areas in northern Australia are subject to prescribed burning programs by pastoralists, Aboriginal Lands Councils as part of broadscale land management and endorsed carbon accounting programs.

Other state and territory fire services, both paid officers and volunteers undertake prescribed burning on a limited scale, focused on protection of communities and assets, largely within the urban interface. As bushfire risk assessment and management move progressively to reducing risk regardless of land tenure, it can be expected that fire services will become more involved in prescribed burning on private and leasehold land. This may increase the need to share resources.

Information gained from this project indicates that there is a range of systems in place in the form of Interagency Memoranda of Understanding (MOU's) and protocols that facilitate interagency support with prescribed burning programs. Some are informal and often done through local arrangements between agencies. For example, some volunteer brigades help state agencies on nearby burns when available.

Tasmania has developed strong cross-agency support for their burning program. Agencies can access funding for burns that are agreed will help protect communities and are included in the prescribed burning program. The program is supported by strong agency and community committee planning arrangements and regular meetings. The program strengths are transparency, inclusion and the open sharing of the funding.

Most jurisdictions are working to strengthen and formalise cross-agency working arrangements on burning programs. Some, such as Victoria and Tasmania, are moving to underpin their programs with risk-based burning strategies, where all agencies work together on burns in high-risk areas and burning programs become 'tenure inclusive'.

#### Recommendation 5

- States and territories develop formal cross-agency arrangements that set out working arrangements includes liabilities, costings, standards, meeting arrangements, engagement required.

### 5.2.2 Cross-jurisdictional resource sharing

In order to enable and encourage national resource sharing arrangements between jurisdictions, legal agreements will need to be prepared and participating agencies to become signatories to the agreement.

There are existing examples of inter-jurisdictional firefighting resource sharing agreements and MOU's. While their primary purpose of those agreements is the provision of bushfire response

support, a number contain provisions to extend the supply of services into supporting delivery of prescribed burning programs.

They include:

- **Firefighting Support Agreement 2010** – Vic DSE – ACT – This agreement has been utilised once to procure resources to assist Victoria to deliver part of its prescribed burning program. The procurement was very successful and the Agreement effective;
- **Bushfire Fighting - Mutual Assistance Agreement** – ACT – NSW Department of Environment, Climate Change and Water;
- **Murray – Mallee Partnership Agreement** – NSW NPWS, Parks Victoria and SA DEWNR; and
- **Australian Alps Liaison Committee Agreement (2016)** - NSW NPWS, ACT PCS, Parks Victoria.

AFAC has been responsible for the development of the Arrangements for Interstate Assistance (AIA), which provides a legal framework for the sharing of resources for firefighting across Australia and New Zealand in emergency situations. In its current form, the Agreement does not specifically provide an appropriate framework for sharing of resources for the purposes of providing interagency / interjurisdictional assistance with delivery of prescribed burning programs.

As the AIA has performed well in the capacity of bushfire response, it would be logical to assess the potential to adapt the existing AIA to extend the resource sharing for prescribed burning. Review of the existing interagency agreements and their past performance may provide insight into how the existing AIA could be modified.

In contrast to requesting cross-jurisdictional resources to support bushfire response, the agencies agreed that requesting support from other jurisdictions to undertake prescribed burning is the 'procurement of resources' that would be paid for out of agency annual budgets.

An alternative to the procurement of resources from within government fire management agencies may be the procurement of private sector fire management contractors.

## Recommendation 6

- |  |
|--|
| <ul style="list-style-type: none"><li>➤ Review existing agreements between agencies in different jurisdictions to determine their value as a template for the development of a national procurement agreement for the supply of prescribed burning resources across jurisdictions;</li><li>➤ Review existing agreements between agencies in different jurisdictions to determine their ability to support modification of the existing AIA to cater for national resource sharing (procurement) for prescribed burning; and</li><li>➤ Assess the capacity of the existing contract fire management industry to augment national prescribed burning programs. Assessment will need to include current training and skills sets within the industry and identification of training and accreditation requirements to meet national standards for prescribed burning.</li></ul> |
|--|

## 6 TOWARDS BUILDING NATIONAL CAPABILITY

### 6.1 Nation-wide support to build capability in burning

There is strong implied support for disaster mitigation management measures. To build and maintain the capability to adequately manage fire fuels nationally, strong government and agency support is critical. Prescribed burning is a difficult and hazardous undertaking and unfortunately, it is becoming more difficult and complex. Most jurisdictional burning programs are now large operations. All agencies undertaking burning and particularly prescribed burning practitioners must be supported in this difficult task. The reputation and liability of all involved must be protected.

Direct central ongoing funding support for bushfire risk mitigation work is essential to maintain and improve capability. This report recommends building capability in a number of key areas including operational and strategic planning, monitoring and assessing burn affects, and the management of the large burning programs

Having all jurisdictions linked formally through a national agreement for burning will show unity and structure and support direct government and agency funding. The creation of the 'Centre of Excellence for Prescribed Burning' will be fundamental to the national development of this critical element in risk management and ecological health of the fire-adapted environment.

#### Recommendation 7

- Federal, state and agency funding be sought to build national capability in burning management as a disaster mitigation measure.

## 7 DEVELOPING A NATIONAL CENTRE OF EXCELLENCE FOR PRESCRIBED BURNING

The Prescribed Burning Training Competencies and Delivery Review sub-project discussed a range of options for improving the delivery of a national approach to prescribed burning training with all agencies and all recommended the establishment of a National Centre of Excellence for Prescribed Burning.

This Centre will be the hub responsible to directly drive and assist agencies to build capability, through support for training, policy development and building depth in management for prescribed burning. It will be the base for programming in regular meetings on key burning issues and opportunities, developing further common training approaches and foster the exchange of ideas and best practice in burning across Australia and New Zealand. This will build capacity and capability in the management and operation of burning for what is such an important but long-neglected practice.

### Recommendation 8

- The Centre of Excellence for Prescribed Burning be developed quickly and expanded to focus on developing capacity and capability for prescribed burning.

### 7.1 Building capability to manage large prescribed burning programs

Jurisdictions are required to manage their prescribed burning activities as a large and demanding program, to be delivered carefully and professionally, using a full-time project planning and implementation approach. They need to build this capability for managing burning program through strategic landscape risk analysis, improving their planning and operational capacity and developing a resource base.

An important component of a prescribed burning program is managing and setting resource levels to ensure that targets are met, and the work is undertaken safely and efficiently as identified in the National Burning Project's National Guidelines and Risk Management Frameworks. This must include contingency planning to boost local resources with additional resources when burning conditions are suitable.

Prescribed burning programs are complex and costly, and as such management capability to manage these programs needs to be built and maintained. AFAC and FFMG could support member agencies and other organisations implementing prescribed burning to develop the capacity to manage large prescribed burning programs through a national workshop covering:

- national and jurisdictional policy;
- developing memorandums of understanding and cross-jurisdictional arrangements;
- strategy development;
- resource setting including contractor management;
- managing burning operations including using AIIMS;

- managing risks; and
- community engagement.

### Recommendation 9

- Workshops are established to build capability in managing national and jurisdictional large complex burning programs.

## 7.2 Building strategic planning

Given burning has inherent risks often involves costly and intensive resourcing, and has offsite impacts such as smoke, it is essential that burning is concentrated in areas that return the greatest benefits. Strategic planning for prescribed burning must be risk-based.

There are models available to support a risk-based planning approach that show the reduction in damage if mitigation works including burning are conducted. At a national, jurisdictional and agency scale, fire risk analysis can provide the evidence to support a strategic longer term approach to prescribed burning program planning.

There is a need for workshops and awareness programs to assist managers to develop their capability to lead and support strategic longer term prescribed burning programs within their agencies.

### Recommendation 10

- National workshops be established to develop capability in landscape and local fire risk analysis and planning.

## 7.3 Ensuring effective engagement

Burning affects communities and it is important that they are involved in the process or at least, understand the reasons why a burn is needed. It is also important that the communities understand that burning can be a difficult and risky task and even with well-planned and managed operations, and escapes can happen that may cause damage. There must also be an understanding that the agencies and individuals leading on burns are acting in the community's interest and as such should not be criticized in the event of an escape.

Most fire agencies in Australia conduct some form of community engagement around prescribed burning; however generally, this is basic and focused on informing rather than involving the affected community. Most communities expect to be effectively and appropriately engaged particularly where operations may directly impact on them. Community interest in burning can be expected to intensify, and fire agencies must therefore prepare for and have the capability to manage expectations (and potentially outrage). Ideally, communities need to feel some ownership of the program.

Fire agencies must have the capability to at least engage in order to maintain community goodwill around the current burn programs and present well thought through engagement programs.

Agencies must have the capability to keep all stakeholders informed across the burning program. This is particularly important with senior management and government, whose support is critical in understanding the benefits of prescribed burning and continuing support for what can be sometimes, be a controversial program. This political and government support is paramount when there are significant risks such as a damaging burn escape.

Achieving and maintaining effective engagement is a difficult task and the working environment is ever changing and approaches evolving. The Centre of Excellence for Prescribed Burning will be a critical hub and source of knowledge and learning in maintaining capability in effective communication and engagement.

#### **Recommendation 11**

- Agencies ensure they have sufficient capability to manage effective engagement programs around burning.

## **7.4 Building capability in non-member agencies conducting prescribed burning**

During interviews across Australian and New Zealand agencies it was apparent there are many organisation other than the fire agencies conducting prescribed burning. These include the Aboriginal Land Councils and pastoral owners in northern Australia that conduct extensive broad scale burns, farmers, plantation owners through to local councils that conduct small but sometimes difficult and contentious burns in urban areas. It is important that these agencies are supported and have the opportunity to build the capability to be able to confidently and competently conduct burning operations. It is also in the interests of all parties that all burning is done expertly and the need to burn is understood and accepted by the community.

AFAC and FFMG can support these agencies by establishing a data base of all agencies undertaking prescribed burning, a listing of qualified burn trainers and contractors, providing invitations to workshops and seminars on burning and passing on developments in the industry. The National Centre of Excellence for Prescribed Burning will be the ideal platform for providing support to improve capability in this important area of burning.

#### **Recommendation 12**

- AFAC and FFMG engage and support as appropriate, other parties doing significant prescribed burning programs through the Centre of Excellence for Prescribed Burning to build national capability in prescribed burning for all.

## 8 ACKNOWLEDGEMENTS

The project to produce this report was made possible through funding from the Attorney-General's Department.

The report was prepared by Ewan Waller, Ian Long and Prue Dobbin of Ewan Waller and Associates for AFAC and FFMG. The report was edited by Wayne Kington.

This project was guided by a Technical Reference Group drawn from AFAC and FFMG agencies. Their contribution is greatly appreciated.

The front cover image was provided by the Department of Environment, Water and Natural Resources South Australia.

The National Burning Project Steering Committee has worked consistently to ensure the project attracted funding, stayed on track and achieved desired outcomes. Their contributions are also acknowledged. The National Burning Project was managed and supported through the considerable efforts of Greg Esnouf and Deb Sparkes.

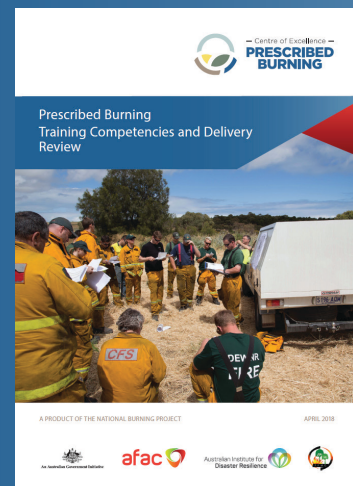
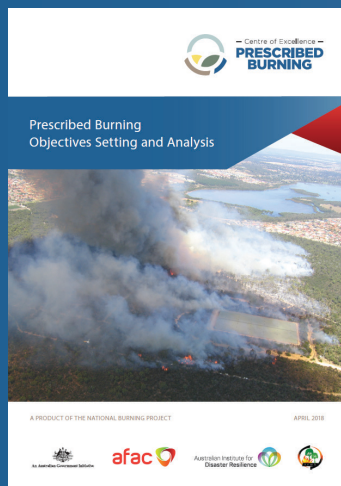
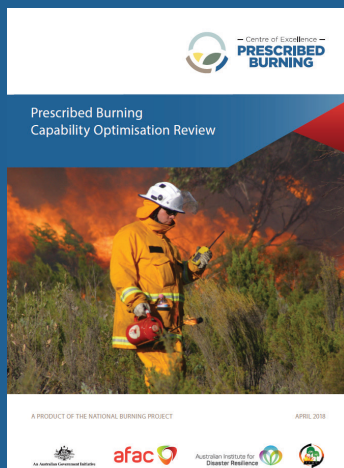


*Source: Paul de Mar GHD*

## APPENDIX A: TECHNICAL REFERENCE GROUP

**Table 10** Members agencies of the Technical Reference Group

State	Organisation
ACT	Parks and Conservation ACT
NSW	NSW Rural Fire Service
NT	Bushfires Northern Territory
NZ	New Zealand Fire Service
QLD	Department of National Parks, QLD
SA	Department of Environment, Water and Natural Resources
TAS	Tasmania Fire Service
VIC	Department of Environment, Land, Water and Planning
WA	Department of Parks and Wildlife
	Department of Fire and Emergency Services



## Prescribed Burning National Capability Optimisation

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