

Australian Capital Territory

# **Emergencies (Strategic Bushfire Management Plan) 2005**

**Disallowable Instrument DI 2005-1**

made under the

**Emergencies Act 2004, s 72 (Strategic bushfire management plan)**

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## **1 Name of Instrument**

This instrument is the Emergencies (Strategic Bushfire Management Plan) 2005.

## **2 Strategic bushfire management plan**

I make the strategic bushfire management plan set out in the attachment for the ACT.

## **3 Commencement**

This instrument commences on the day after it is notified in the legislation register.

Ted Quinlan MLA  
Acting Minister for Police and Emergency Services  
12 January 2005

# Strategic Bushfire Management Plan for the ACT

Version 1  
January 2005

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## **Minister's Foreword**

The ACT Government has a vision of creating 'a safer community through collaboration and excellence in emergency services'.

This means working together to provide the best emergency services possible to the people of the ACT.

In order to achieve this, there has been a lot of change in the emergency services area over the past 12 months and the Stanhope Government is proud of these achievements.

Urban and rural fire and emergency services are better prepared than ever before to provide their services to the ACT region.

As part of being better prepared, the ACT Emergency Services Authority, in consultation with the community, rural lessees and land management agencies, has developed the Strategic Bushfire Management Plan.

The Plan is a sustainable 10-year solution to bushfire management in the Australian Capital Territory, and reflects the fact that fires have been part of the ACT landscape and history for a long time.

The initiative is a result of the January 2003 bushfires that devastated many parts of Canberra's suburbs, surrounding rural properties and forested hills. It reflects the recommendations of the McLeod Report that were adopted by the ACT Government in

July 2003.

The plan establishes the basis and framework for the efficient, effective and comprehensive management of fire and fire related activities and is based on the requirement to protect and preserve life, property, assets and the environment through a sharing of responsibility. It will also be reviewed to ensure that it includes the latest scientific and operational developments.

The Plan is being developed in two Versions, reflecting the complexity of bushfire management. The Strategic Bushfire Management Plan, Version 1 is released to set the scene and provide clear objectives, strategies and actions for bushfire management. Further analysis and investigation will be conducted until 1st July 2005 when Version 2 will be finalised and formalised.

The strength of the Plan arises from the partnership and shared responsibility between the community, land managers and the Emergency Services Authority. The importance of the Plan is reflected in the interest demonstrated by the community during the consultation period that identified many good ideas and issues. While it is not possible to eliminate the risk of unplanned fires, targeted efforts can reduce fire occurrence and impact. To ensure a timely, efficiently delivered and effective response, ACT fire fighting resources and the community must be ready to work together when bushfires start.

Mr John Hargreaves  
ACT Minister for Emergency Services

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## Executive Summary

# What is the Strategic Bushfire Management Plan?

The Strategic Bushfire Management Plan (SBMP) is a sustainable 10-year solution to the challenges of managing bushfires in the Australian Capital Territory and neighbouring states. The SBMP draws on a wide range of academic research and historical data and reflects the concerns and priorities of the ACT community and public and private land managers.

The Plan incorporates four essential elements:

- Prevention - focusing on the underlying causes of bushfires;
- Preparedness - ensuring that agencies, resources, the community and landholders are ready to fight fires effectively;
- Response - ensuring effective responses to those bushfires that do occur; and
- Recovery - property and environmental damage and helping people recover.

The Strategic Bushfire Management Plan establishes the basis and framework for the efficient, effective and comprehensive management of fire and fire-related activities for protecting human life, property, assets and the environment.

*The over-arching strategic objective of the SBMP is to minimise the likelihood of bushfires and their negative consequences.*

The Plan has been developed in two versions. The Strategic Bushfire Management Plan, Version 1 will be effective for an interim period until 1<sup>st</sup> July 2005 when Version 2, a 10-year plan, will be introduced. The SBMP identifies clear, measurable objectives and outcomes for the effective and balanced management of bushfires. These objectives reflect the ACT Government's policy of shared responsibility for reducing bushfire risk: Private, urban or rural lessees and the Government are all responsible for taking action to reduce bushfire risks to property, assets and personal safety on their own land.

The SBMP presents a series of key objectives for bushfire management in the ACT, that provide an integrated framework for the identification of strategies and actions for implementation. These objectives are:

- To understand fire causes in their social, economic, ecological and political context in order to establish priorities for prevention, preparedness, response and recovery.
- To provide information for decision-making to all functions of fire management and stakeholders at all levels - and keep ACT residents informed and consulted.
- To ensure the community is aware, capable and informed so that it can effectively share the fire management responsibility.
- To ensure people, planning, equipment, systems and processes to contain or suppress bushfires are capable of doing so and are ready to respond.
- To ensure rapid and appropriate responses to all bushfires in the ACT with the capacity to contain or suppress both small and large fires.
- To ensure effective and efficient implementation of management decisions to restore the social and environmental

infrastructure to a working, useful and balanced state.

- To measure the effectiveness of the SBMP and subordinate plans.
- To confirm the effective implementation of the SBMP.

The SBMP is presented in a series of sections:

**Living with Fire** – Natural fires have been part of the ACT landscape and its history. Planning to reduce the likelihood and consequence of bushfires must take into account the full range of fires and the situations that cause them.

**Bushfire Risk Assessment** – Damaging bushfires in the ACT tend to come from the west and northwest. The most common place for bushfires to start is near built-up areas - particularly on the edge of Canberra's suburbs.

**Prevention** – Targeted efforts can reduce fire occurrence and impact.

**Preparedness** – To ensure a timely and effective response, ACT fire fighting resources and the community must be ready before bushfires start. The responsibility for bushfire suppression rests with the ACT Rural Fire Service (RFS), incorporating the departmental brigades of the Department of Urban Services (DUS) and the ACT Fire Brigade.

**Response** – The response plan for fires in the ACT reflects the basic principle of bushfire fighting: keep bushfires small by safely delivering suppression first attack early.

**Recovery** – Helping re-establish, communities, infrastructure, buildings, biodiversity and ecosystem functionality.

**Standards, Monitoring and Reporting** – The SBMP involves consistent inspection, audit, monitoring and reporting against indicators of performance to ensure that the ACT Emergency Services Authority (ESA) and partner agencies meet plan objectives. Comprehensive reviews will be conducted every five years.

**Resource Planning** – The SBMP provides a comprehensive basis for resource planning over the 10-year life of the plan. Effective management of the Plan will require sustained allocation of resources to the ESA and other agencies.



## **1 Context of the Strategic Bushfire Management Plan**

In January 2003, severe fires burnt throughout the ACT impacting on most sectors and people across the Territory. These included catastrophic social, environmental and economic impacts. Four people lost their lives and more than 500 houses were destroyed.

Throughout the world, numerous agencies with overlapping roles and powers are responsible for bushfire management. In many cases, this leads to less effective management of bushfires. The ACT, because of its size, is uniquely placed to co-ordinate the planning and implementation of bushfire management across agencies and with the community.

Past approaches to fire management in the ACT focused heavily on the management of fuels through the preparation of “fuel management plans”. The Emergency Services Authority (ESA), in partnership with agencies and the community are setting new directions for bushfire management in the ACT. The ACT Government has created the ESA as the single body to develop, delegate and oversee the implementation of an integrated approach to the management of bushfires in the ACT. The ESA is required to provide government agencies and the community with policy guidance and advice on bushfire management. The Strategic Bushfire Management Plan is the mechanism to combine the elements needed to ensure balanced, effective and efficient fire management in the ACT. Each organisation is required to develop plans and procedures that are consistent with this Strategic Bushfire Management Plan. The community is encouraged to consider what this plan means to them and what measures they can take.

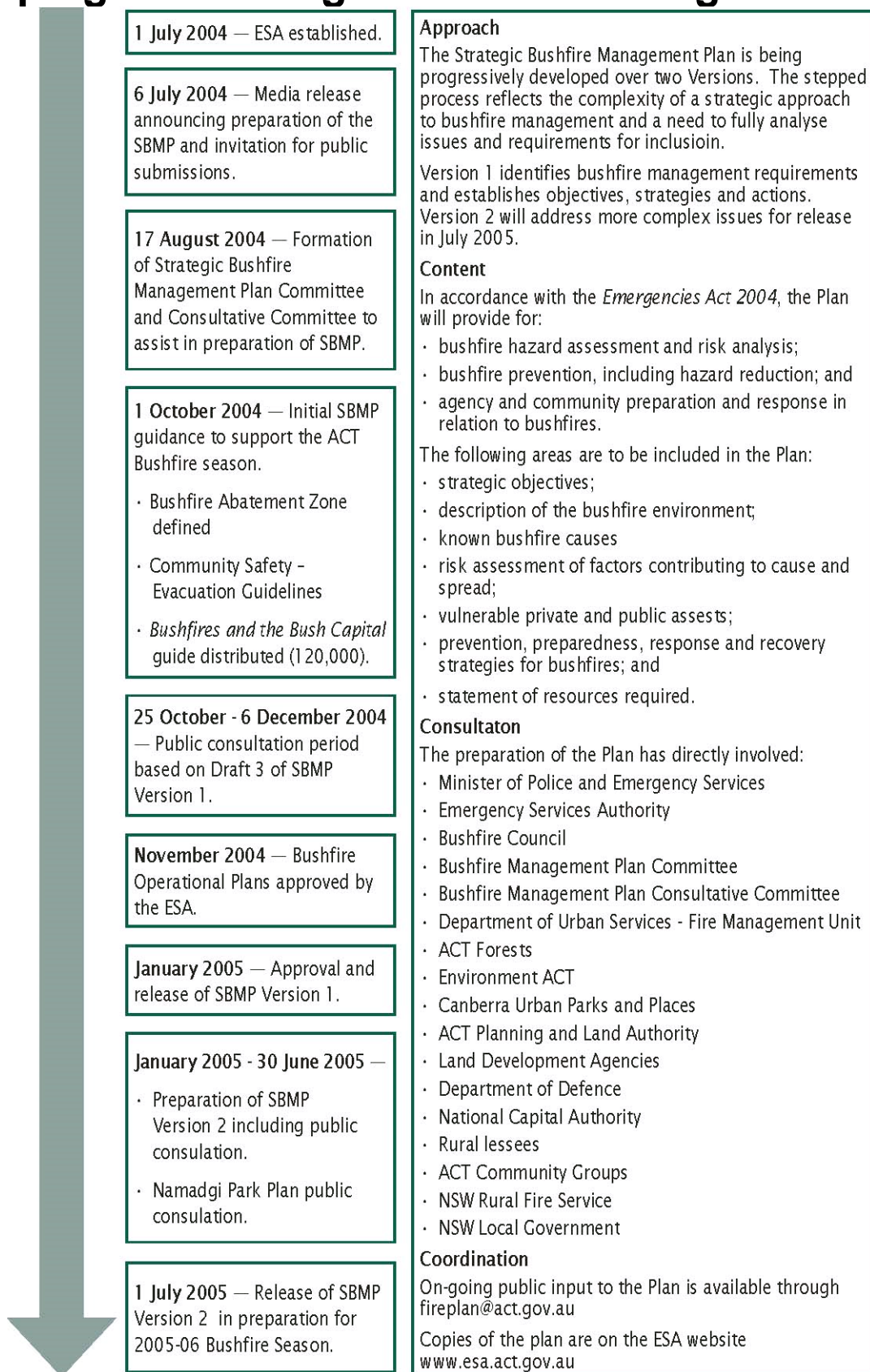
The *Emergencies Act 2004* requires the ACT Emergency Services Authority to prepare a draft strategic bushfire management plan for the ACT. In preparing the plan the ESA must consult with the Bushfire Council and consider the impact of the plan on land management agreements and on land managers. A committee was formed to help prepare the draft Strategic Bushfire Management Plan. This plan must provide a basis for:

- (a) Bushfire hazard assessment, risk analysis and risk reduction;
- (b) Bushfire prevention, including hazard reduction; and
- (c) Agency and community preparation and response in relation to bushfires.

The Strategic Bushfire Management Plan is a disallowable instrument, meaning that the Legislative Assembly of the ACT must approve it. The ESA must, in consultation with the Bushfire Council, monitor the scope and effectiveness of the plan.

The strength of the SBMP arises from the close collaboration and consultation between the community, rural lessees land managers and the Emergency Services Authority.

# Developing the Strategic Bushfire Management Plan



The Strategic Bushfire Management Plan is being progressively developed over two Versions. The stepped process reflects the complexity of a strategic approach to bushfire management and a need to fully analyse issues and requirements for inclusion. Version 1 identifies bushfire management requirements in the ACT and establishes clear objectives, strategies and actions. Version 2 will address the more complex issues for release in July 2005. Both Versions are the product of inter-agency collaboration and public consultation.

## Fire Management for the ACT

The ACT is a bushfire prone environment, subject to natural disasters including the risk of occasional overwhelming bushfires. Paradoxically, fire plays an integral part in the maintenance of many Australian ecosystems. The ACT community must learn to live with fire. Set out in this Strategic Bushfire Management Plan is a way to meet objectives for lands where fire is a natural process for ecosystem function or where fire is a threat and a tool. These lands will be treated differently, consistent with their management objectives, as identified in plans of management, with respect to fire management though they each occur in the bushfire prone environment of the ACT.

Bushfire management includes fire management and land management. It can be identified as having four phases, the same as those commonly used in emergency management. These phases, adopted by the Australasian Fire Authorities Council, are: Preparedness, Prevention, Response and Recovery (PPRR) and they form the basis of this plan. The activities that support these phases are not necessarily sequential, with elements frequently taking place concurrently. For fire management to be effective and implemented in a balanced way it needs to:

- Be supported by an enabling legislative and political environment with adequate and reliable budget allocation.
- Be an integrated part of development and strategic planning and land management at each government level across all sectors including industry, agriculture, tourism, protected areas, forestry and transport.
- Recognise sharply differing levels of fire knowledge, fire expertise, fire competencies and fire consciousness in the community.

Living in a fire prone landscape requires acknowledgement by everyone that unplanned bushfires, including large and overwhelming ones will occur and only the number, size and impact of them can be influenced. Bushfires cannot be eliminated and they will continue to have negative impacts on economic, environmental and social values. Community preparedness, including involvement in decision-making and community capacity building is a critical aspect of minimising the loss of houses and lives.

Fire is a land management tool that has a role in the protection and maintenance of natural and altered ecosystems. Balanced fire management is an integral component of land management including the appropriate use of prescribed fire, and supporting the ACT Rural Fire Service and the ACT Fire Brigade in meeting bushfire readiness and suppression responsibilities in the rural area and the built up area.

### Strategic Objective

The overarching strategic objective of this plan can be stated as:

*To minimise the likelihood of bushfires and the negative consequences of bushfires.*

Detrimental impacts can be on life, property and the environment. They can involve bushfires entering the ACT, bushfires originating in the ACT or bushfires leaving the ACT and causing damage elsewhere. The planning, roles, responsibilities, strategies and actions that work towards the strategic objectives obtain their direction, balance and focus from principles, considered at each stage of planning, implementation and communication.

### Balanced Fire Management

No blueprint is available for managing bushfires and the risks to people and ecosystems they create. Each situation has its own ecological, social, economic and political circumstances that need to be evaluated.

Effective and efficient fire management is built on past learning and requires the engagement of a wide variety of concerned stakeholders (government, non-government, community and private sectors). The focus is for the planning and implementation of a strategy that includes structured and holistic fire management processes for Prevention, Preparedness, Response and Recovery.

Balanced approaches to fire management are framed by the assessment of Bushfire Risk. This includes an analysis of the fire issue and identification of options for positive change, placing greater emphasis on addressing underlying causes and seeking long-term, sustainable solutions that incorporate four essential elements:

- 1) Prevention – focusing resources on the underlying causes of fires;
- 2) Preparedness – ensures that when fires occur agencies, resources, the community and individual landholders are ready to fight fires in ways that are effective and soundly based;
- 3) Response – ensuring effective, appropriate fire fighting for inevitable bushfires; and
- 4) Recovery – Helping re-establish, communities, infrastructure, buildings, biodiversity and ecosystem functionality.

### Fire Management Principles

The objectives, planning framework and activities developed for this plan have been prepared considering a set of core principles that underlie effective fire management for the ACT. The emphasis is on a strategic approach and applicable principles are included or repeated in the appropriate section. Core principles are set out below:

- The protection of life and property are fundamental.
- Fire management for lands should consider biodiversity assets, environmental assets and production objectives.
- All fire should be managed for suppression or containment.
- All lands should have appropriate fire management coverage and plans.
- Capacity building, including data and information provision, should be seen as assisting householders and small-scale land managers to play positive and constructive roles if or when a bushfire occurs in their local area.
- Fire management decisions and functions should be delegated to, and practiced at, the lowest practical administrative level, consistent with balanced fire management, efficiency and effectiveness.
- Land owners and land managers, including homeowners, should be assisted by advisory services and in other ways to take measures, which protect them from the impacts of unplanned fires.
- The level of integration between ACT and NSW fire agencies should be optimised.

## Purpose

The intent of the Strategic Bushfire Management Plan is to provide a broad and strategic focus for bushfire management in the ACT. The plan provides strategic guidance to agencies and the community of the ACT about bushfire management and identifies clear and measurable objectives and outcomes where available for the effective and balanced management of bushfires.

The purpose of the Strategic Bushfire Management Plan is to establish the basis and framework for the efficient, effective, and comprehensive management of fire and fire related activities for protecting human life, property, assets and environmental values from the negative impacts of bushfires or inappropriate fire regimes.

Management objectives will be achieved through the definition and application of principles, standards, procedures and prescriptions. Existing knowledge will be adapted to management and needs for further knowledge and research identified.

# Scope

The SBMP applies to all lands in the ACT other than National Land. It incorporates collaborative land management with National Land and some NSW land managers, who have been consulted in the preparation of this plan.

The National Capital Plan requires the ACT Government for Territory Land and the Commonwealth for National Land to prepare management plans for the National Capital Open Space System. The Strategic Bushfire Management Plan applies to all land in the ACT, other than National land and places high value on collaborative fire management with surrounding NSW. The managers of national land and NSW land have been consulted during the preparation of this plan. Discussion with them will continue and include the development of memoranda of understanding consistent with this plan and included in Strategic Bushfire Management Plan Version 2. Any plan, instruction, prescription or guideline developed for fire related activities, and actions that might influence or impact on fire related activities in the ACT must be prepared to be consistent with this Strategic Bushfire Management Plan and with existing legislation as appropriate. The Strategic Bushfire Management Plan is to be supplemented by Bushfire Operational Plans. Details of the timing and location of fire protection works and services programs in any specific year are to be identified in a Bushfire Operational Plan.

## Terminology used in this Plan

The definitions of the terms being used in this plan are consistent with those used in the *Emergencies Act 2004*, including:

- Built up area – means an area declared to be built up under the Emergencies Act and typically means the existing Canberra urban areas.
- Bushfire Abatement Zone – means a bushfire abatement zone declared under the Emergencies Act.
- Bushfire Operational Plan – means a bushfire operational plan for unleased Territory Land, Territory Land or land in the bushfire abatement zone.
- Hazard – means a thing or situation with potential to cause death or harm to a person and damage to property or the environment.
- Leased Territory Land – is land that has been leased to an individual or group
- Public Land – is a term not used to refer to lands of the Territory in this plan, with specific meaning under the Land (Planning and Environment) Act 1991, it includes land uses such as parks, wilderness, nature reserves and special purpose reserves.
- Rural area – is the area of the ACT outside the declared built up area.
- Territory Land – is land gazetted under the ACT Planning and Land Management Act 1988 managed by the ACT Government on behalf of the Commonwealth.
- Unleased Land – is all land in the ACT that is not under lease and includes ACT Forests' land and public land uses such as parks, wilderness and nature reserves.
- Urban Edge – is not a defined distance and includes urban and non-urban areas.
- Urban Interface – is the edge of the urban area where it meets non-urban land uses.

## Legislative and Policy Context

The basis for the Strategic Bushfire Management Plan derives from, and in part rests on, relevant legislation and supporting policies for the agencies that have roles in fire and land management; and their policies and the expectations of the community.

The ACT Government enacted the *Emergencies Act 2004* as part of its response to the needs identified by the McLeod Inquiry to replace the *Bushfire Act 1936* and sets the legislative basis for bushfire related planning.

The requirements under some legislation create opportunities for considering bushfires (e.g. Plans of Management under the *Land (Planning and Environment) Act 1991*). Other legislation may define requirements that need to be identified or flagged in the Strategic Bushfire Management Plan.

The preparation of this Strategic Bushfire Management Plan Version 1 has shown the need for careful examination and evaluation of the interactions and requirements of the different legislation relating to bushfires. This will be undertaken and finalised for Strategic Bushfire Management Plan Version 2. A partial listing of some of the laws, plans and other documentation relevant to bushfires and the ACT is attached (Appendix 1).

## Reviews

The ACT Government initiated a comprehensive review of the January 2003 Bushfires, the *McLeod Inquiry into the Operational Response to the January 2003 Bushfires* (McLeod Report). The McLeod report provided recommendations to resolve and remove or improve aspects of the planning, arrangements and management of bushfires, lands and agencies. The ACT Government adopted the recommendations of the McLeod Report and has implemented many of them, including the establishment of a single agency, the Emergency Services Authority (ESA), revision of the bushfire legislation and the identification of a Bushfire Abatement Zone.

The outcomes from key reviews and investigations will be considered for Version 2. These include the ACT Coroner's Inquiry into the 2001 Bushfires and separately into the January 2003 Bushfires and the NSW Coroner's Inquiry into the Fires in Kosciuszko National Park in January 2003. Lessons from other relevant bushfires will also be considered.

## Land Use Planning and Land Management in ACT

Land use planning in the ACT is determined by *Australian Capital Territory (Planning and Land Management) Act 1988* and the Territory Plan, prepared under the *Land (Planning and Environment) Act 1991*. The Territory Plan determines land use policies for the ACT and allows for areas to be set aside for specific purposes. The objective of the Territory Plan is to ensure that the planning and development of the Territory provides the people of the ACT with an ecologically sustainable, healthy, attractive, safe and efficient environment in which to live.

Land in the ACT is managed by a diverse range of agencies and individuals for an array of objectives. Rural land use accounts for approximately 22% of land, urban settlements approximately 12% and forestry approximately 10%. The remainder (approximately 54%) is under conservation management.

## Planning Context

The Strategic Bushfire Management Plan recognises that equivalent practices apply to all land managers regardless of the size of their holdings, apparent bushfire risk, the sophistication of their understanding and the resources available to prepare for and fight bushfires.

Currently there are a series of plans prepared for the land uses of the ACT. The Conservator of Flora and Fauna is required to prepare Plans of Management for land nominated as Public Land under the Land Act and most nature reserves have plans.

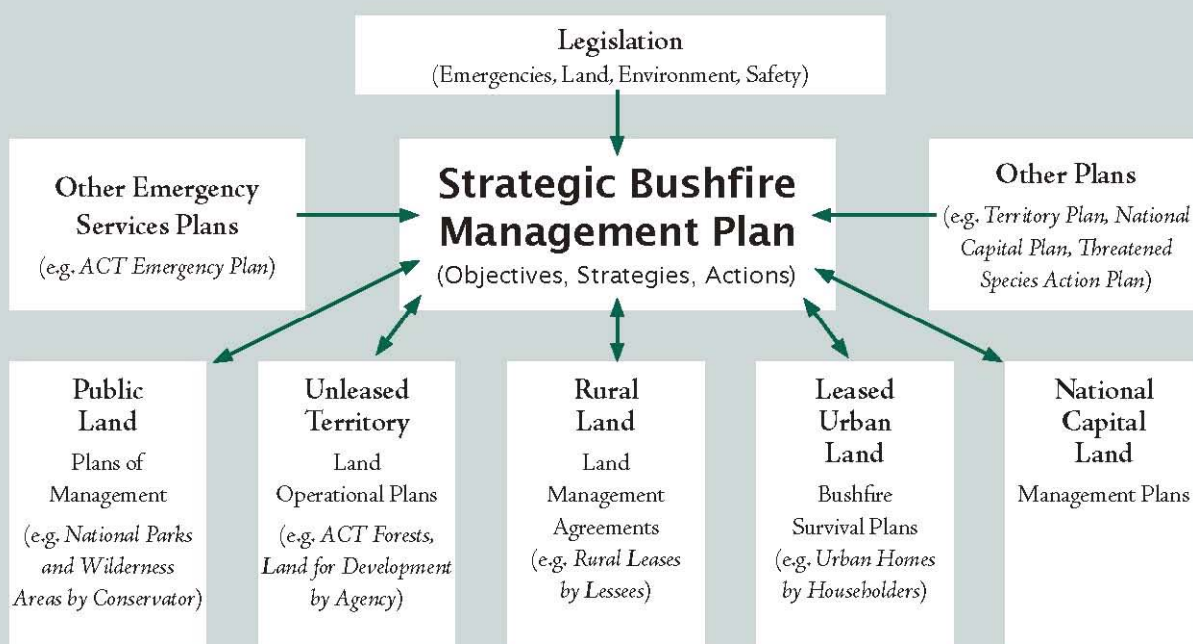
For example, the SBMP process is running concurrently with the development of the Namadgi Plan of Management, and these will inform each other. For example, for other unleased Territory Land there may be operational plans as for ACT Forests land and for land in the "development pipeline" managed by ACT Planning and Land Authority or the Land Development Agency. Rural leases have Land Management Agreements that facilitate collaboration between the Territory Government and landholders to achieve production, conservation and protection goals.

The Bushfire Operational Plan is identified as a mechanism by which land managers of unleased lands and Territory land plan and specify operational works and account for bushfire prevention, preparedness, response and recovery. Bushfire Operational Plans set out the manner in which a particular parcel or area of land is managed for bushfires and defines activities consistent with the Strategic Bushfire Management Plan.

Diagram – The Bushfire Planning Context.



Diagram – The Bushfire Planning Context



## Emergency Planning

The SBMP is connected to other operational plans through the responsibilities of the ESA and the Emergency Management Committee that provide guidance on the implementation of plans related to the management of emergencies and disasters including bushfires.

**State of Alert** – Under the *Emergencies Act (2004)* a 'State of Alert' can be declared that advises the public of a potential significant danger or emergency that is likely to happen across part or all of the ACT. A State of Alert facilitates an early public warning of a pending emergency and improving the capacity for the public to be better prepared. A 'State of Emergency' is declared when or after an emergency has occurred.

**State of Emergency** – A declaration of a 'State of Emergency' will automatically activate the ACT Emergency Plan. The ACT Emergency Plan is the principle document that outlines the broad policies, legal authorities, activation arrangements, overall coordination arrangements and procedures that will be relied upon to employ and manage emergencies. There are a series of sub-plans that provide activation and detailed coordination unique to the specific types of emergency events and deal with a wide range of aspects and factors upon which effective and balanced emergency response is based.

**Bushfire Abatement Zone** – Under the *Emergencies Act 2004* the ESA has declared an area of the ACT to be a Bushfire Abatement Zone (Map 1). The purpose of the Bushfire Abatement Zone (BAZ) is to reduce the impact of bushfires on the built up areas within the ACT. In addition to the primary BAZ around the built up area of Canberra, the BAZ includes three outlying areas (Uriarra Village, Pierces Creek Village and the Tidbinbilla Tracking Station). Bushfire planning is also required for all facilities (such as homesteads and infrastructure) outside the BAZ, particularly where a greater level of bushfire self-sufficiency is required. The BAZ has been created to provide additional measures for bushfire management planning in the ACT. The expansion of the built up area will cause changes to the BAZ boundary over time. A list of public and private assets vulnerable to fire has also been prepared (Appendix 2).

The location of the BAZ has been developed by the application of risk management considerations together with historical evidence of previous fires. The outer edge of the BAZ represents an area within which enhanced coordination of response arrangements occurs through joint operational planning by the ACT Fire

Brigade in consultation with the ACT RFS. The ACT Rural Fire Service conducts operational planning in consultation with ACT Fire Brigade for areas outside the BAZ. The outer edge of the BAZ follows recognisable land features wherever possible to facilitate operational coordination, and does not indicate separate bushfire management practices for properties that straddle the line.

Bushfire preparation within the BAZ requires collaborative development of fuel management guidelines and the provision of advice to land managers consistent with land use (including farming, forests, parks, river and road corridors). Equivalent bushfire management guidelines apply to areas outside the BAZ particularly in relation to access and use of fuel management measures (such as grazing, slashing and prescribed burning). Guidelines for bushfire management must achieve a reasonable balance between the increasing community demands on ACT lands for recreation and existing use for farming, forestry and conservation. The ESA is developing reasonable guidelines to reflect the current best practices in use in conjunction with all land managers for inclusion in SBMP Version 2.

Asset Protection Zone – Bushfire management along the urban edge is a critical element of the effectiveness of the BAZ. An Asset Protection Zone (APZ) will be defined around the built up area, which will be configured to address areas of identified bushfire risk. The APZ will include outer, inner and house protection zones and these zones will apply throughout the ACT. These zones are to inform future urban planning as well as existing landscape management and at the household level the design and construction of buildings and gardens and their maintenance. Suggested set back distances, construction standards, vegetation and fuel management will only be undertaken where necessary in new developments at this stage.

Bushfire Operational Plans (BOPs) – The Strategic Bushfire Management Plan requires land managers inside the Bushfire Abatement Zone to produce a Bushfire Operational Plan, which is subject to approval. BOPs will also be required of rural lessees unless there is a Land Management Agreement in place that sufficiently considers bushfire issues. Unleased land managers outside the Bushfire Abatement Zone will also produce Bushfire Operational Plans. BOPs should account for the presence of infrastructure such as roads, electricity and water systems. The *Emergencies Act 2004* also provides for the inspection of all lands to ensure that bushfire management activities are consistent with the Strategic Bushfire Management Plan.

Planning includes the extension of the BAZ concept into areas of NSW to the north west of the ACT and recognises that fires have historically crossed borders. The application of similar guidelines to NSW land managers is coordinated to ensure that a consistent approach to bushfire management occurs.

#### Unleased and Territory Land Management

The bushfire management of unleased Territorial land in the ACT, and its various uses, is a critical objective of the SBMP.

Unleased and Territory land in the ACT is identified as being for various uses. The National Capital Open Space System is part of this and contributes to the character of the ACT. The objectives of unleased and Territory land management include:

- To conserve the natural environment;
- To provide for public use of the area for recreation, education and research;
- To develop the area for public and community use;
- To conserve and enhance landscape amenity and provide the landscape setting for the city; and
- To support commercial plantation management.

The unleased land managed by ACT Forests is not identified specifically under the *ACT Land Act*. The focus of ACT Forests is on plantations and their management for the wide range of benefits and uses demanded of them by the ACT community.

#### Leased Land Management

The development of partnerships between land managers and the ESA is also a key priority.



From a bushfire management perspective, lands leased by individuals in the ACT vary widely. Some lands are large in size (i.e. many rural leases) and they are usually in the hands of landholders with experience and competence in bushfire management, and with a high year-round consciousness of bushfire risk. Other lands are in the hands of smallholders (e.g. owners of suburban blocks) without experience in bushfire issues, and often with little bushfire consciousness outside times of immediate bushfire threat. Rural lessees and householders are required to make a reasonable contribution to the protection of their own assets. The changing uses of land within the ACT will need to be mitigated with corresponding changes to the responsibilities of land managers.

These practical and behavioural differences between different groups of individual leaseholders need to be taken into account in considering or setting the contributions to be made by various landholders. Their roles, the expectations of them and the forms and levels of assistance or training they require will vary.

#### Bushfire Management Roles, Opportunities and Responsibilities

The policy of shared responsibility being put in place by the ACT Government highlights the requirement for all the people involved in formal and informal ways to take actions to prevent, prepare and respond to bushfires and then work on recovery. Activities vary between both geographical areas and entities.

Some activities, particularly those undertaken by individual landholders and householders can each be independent in their own right. Others activities require the coordination of activities of multiple agencies and organisations.

The tables following set out the roles of groups and agencies, according to their areas of opportunity and responsibility, from prevention through to recovery. The span of opportunity and responsibility ranges from operational to advisory.

#### Land Managers/ Land Users

##### Community

Prevention	Preparedness	Response	Recovery
<ul style="list-style-type: none"> <li>· Risk mitigation</li> <li>· Understanding "Bushfires and the Bush Capital" publication</li> <li>· Strategic Bushfire Management Plan</li> </ul>	<ul style="list-style-type: none"> <li>· Bushfire Survival Plan</li> <li>· Vegetation management</li> <li>· Property preparation</li> </ul>	<ul style="list-style-type: none"> <li>· Self protection</li> <li>· Property protection</li> </ul>	<ul style="list-style-type: none"> <li>· Community recovery services and support network</li> </ul>

##### Rural Lessees

Prevention	Preparedness	Response	Recovery
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initial			
<ul style="list-style-type: none"> <li>• Fuel hazard reduction</li> <li>• Bushfire Operational Plans (BOPs), unless an LMA consistent with SBMP</li> <li>• Area Management planning for conservation and production</li> </ul>	<ul style="list-style-type: none"> <li>• Bushfire management arrangements for property and local area</li> <li>• Testing and readiness of fire fighting equipment</li> </ul>	<ul style="list-style-type: none"> <li>• Reporting of fires and unsafe practices</li> <li>• Shared responsibility' – may provide attack on own leased land</li> </ul>	<ul style="list-style-type: none"> <li>• Land rehabilitation, asset repair, replacement and improvement</li> <li>• Restoration of fences and trails</li> </ul>

#### Department of Urban Services

(ACT Forests, ACT Roads, Canberra Urban Parks and Places)

Prevention	Preparedness	Response	Recovery
<ul style="list-style-type: none"> <li>• Park, Forest and Reserve closures</li> <li>• Fuel hazard reduction works</li> <li>• Equipment use and maintenance</li> <li>• Patrols and presence</li> <li>• Maintain access to tracks, trails, helipads</li> <li>• Reporting, recording and monitoring</li> <li>• Manage fuel hazards (Roads ACT)</li> <li>• Area management planning for conservation and production</li> </ul>	<ul style="list-style-type: none"> <li>• Equipment maintenance and support ACT RFS</li> <li>• Plant - heavy equipment</li> <li>• Seasonal firefighters</li> <li>• Preparedness rostering</li> <li>• Interstate agency support (NSW RFS and NPWS)</li> <li>• Implement ESA SBMP</li> <li>• Prepare Bushfire Operational Plans (BOPs)</li> </ul>	<ul style="list-style-type: none"> <li>• Part of ACT RFS Brigade in all rural areas</li> <li>• Provide incident control personnel</li> <li>• Some of the contracts for fire towers (Forests)</li> <li>• Initial response in Forests and reserves</li> </ul>	<ul style="list-style-type: none"> <li>• Restoration of Parks, Reserves and Forest production</li> <li>• Weed control</li> <li>• Restoration of fences and trails</li> </ul>

#### Land Managers/ Land Users — continued

Chief Ministers Department - Environment ACT

Prevention	Preparedness	Response	Recovery
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<ul style="list-style-type: none"> <li>• Park, Forest and Reserve closures</li> <li>• Fuel hazard reduction works</li> <li>• Equipment use and maintenance</li> <li>• Patrols and presence</li> <li>• Maintain access to tracks, trails, helipads</li> <li>• Reporting, recording and monitoring</li> <li>• Manage fuel hazards</li> <li>• Area management planning for conservation</li> <li>• Environment regulation (EACT)</li> </ul>	<ul style="list-style-type: none"> <li>• Equipment maintenance and support ACT RFS</li> <li>• Plant – heavy equipment</li> <li>• Seasonal firefighters</li> <li>• Preparedness rostering</li> <li>• Interstate agency support (NSW RFS and NPWS)</li> <li>• Implement ESA SBMP</li> <li>• Prepare Bushfire Operational Plans (BOPs)</li> <li>• Information on biodiversity assessments</li> </ul>	<ul style="list-style-type: none"> <li>• Part of ACT RFS Brigade in all rural areas</li> <li>• Provide incident control personnel</li> <li>• Initial response in Forests and reserves</li> </ul>	<ul style="list-style-type: none"> <li>• Restoration of Parks, Reserves</li> <li>• Weed control</li> <li>• Restoration of fences and trails</li> <li>• Monitoring of bushfire impacts and prevention works</li> <li>• Weed control</li> </ul>
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#### ACT Planning and Land Authority

Prevention	Preparedness	Response	Recovery
<ul style="list-style-type: none"> <li>• Strategic and forward concept planning for new urban areas</li> <li>• Development assessment (Land Act 1991 and Territory Plan)</li> <li>• Land management in areas of unleased Territory Land</li> <li>• Building control regulation</li> <li>• Bushfire Operational Plans (BOPs) for undeveloped land</li> <li>• Report, recording and monitoring</li> </ul>	<ul style="list-style-type: none"> <li>• Public information – awareness and education of wider community and stakeholder groups</li> </ul>	<ul style="list-style-type: none"> <li>• Coordination of bushfire response arrangements with ESA</li> </ul>	<ul style="list-style-type: none"> <li>• Weed control activities</li> <li>• Restoration work</li> </ul>

#### Land Managers/ Land Users — continued

##### ACT Land Development Agency

Prevention	Preparedness	Response	Recovery
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<ul style="list-style-type: none"> <li>· Bushfire Operational Plans (BOPs) for undeveloped land</li> <li>· Report, recording and monitoring</li> <li>· Building control regulation</li> </ul>	<ul style="list-style-type: none"> <li>· Coordination of Bushfire management arrangements for property and local area</li> </ul>	<ul style="list-style-type: none"> <li>· Coordination of bushfire response arrangements with ESA</li> </ul>	Restoration work
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#### Department of Defence

Prevention	Preparedness	Response	Recovery
<ul style="list-style-type: none"> <li>· Preparation of fire hazard management plans for Defence managed land</li> <li>· Fuel reduction and maintenance of fire control lines and access trails on Defence managed land</li> </ul>	<ul style="list-style-type: none"> <li>· Development of emergency response plans for Defence managed properties</li> </ul>	<ul style="list-style-type: none"> <li>· Implementation of emergency response plans for Defence infrastructure</li> <li>· Initial response in the event of early detection/ignition during supervised activities on Defence managed land</li> </ul>	<ul style="list-style-type: none"> <li>· Land rehabilitation, asset repair, replacement and improvement on Defence managed properties.</li> </ul>

#### National Capital Authority

Prevention	Preparedness	Response	Recovery
<ul style="list-style-type: none"> <li>· Design and construction standards</li> <li>· Land Management on National Land it owns and administers including fuel hazard on NCA land</li> <li>· Metropolitan Strategic Policy Planning</li> </ul>			<ul style="list-style-type: none"> <li>· Land rehabilitation, asset repair, replacement and improvement on NCA lands</li> </ul>

## Actew AGL

Prevention	Preparedness	Response	Recovery
<ul style="list-style-type: none"> <li>• Bushfire mitigation program</li> </ul>	<ul style="list-style-type: none"> <li>• Inspection of assets in bushfire-prone areas</li> <li>• Identified maintenance issues addressed</li> </ul>	<ul style="list-style-type: none"> <li>• Advice and input</li> <li>• Provision of operational support</li> </ul>	<ul style="list-style-type: none"> <li>• Asset repair, replacement and improvement</li> </ul>

## Emergency Agencies

### Emergency Services Authority

Prevention	Preparedness	Response	Recovery
<ul style="list-style-type: none"> <li>• Audit</li> <li>• TOBAN Declaration</li> <li>• Extend Fire Season</li> <li>• Strategic Direction</li> <li>• SBMP and BOPs</li> <li>• BAZ</li> <li>• Risk Assessment</li> </ul>	<ul style="list-style-type: none"> <li>• Joint Operations and Planning</li> <li>• Joint Emergency Services Training Academy</li> <li>• Communications Systems</li> <li>• Operational Analysis</li> <li>• Audit</li> </ul>	<ul style="list-style-type: none"> <li>• Advice to Minister and Government</li> <li>• Coordination</li> <li>• Emergency Coordination Centre (ECC)</li> <li>• Media and Community Education</li> </ul>	<ul style="list-style-type: none"> <li>• Restoration Coordination</li> <li>• Critical Incident Stress Management (CISM)</li> <li>• Debriefing and Operational Analysis</li> </ul>

## ACT Rural Fire Service

Prevention	Preparedness	Response	Recovery
<ul style="list-style-type: none"> <li>• Recommend Total Fire Ban (TOBAN) and Season length</li> <li>• Community Investigation and Enforcement</li> <li>• Patrols and presence</li> <li>• Assist with hazard reduction burns</li> <li>• Pre suppression Plans and SOPs</li> </ul>	<ul style="list-style-type: none"> <li>• Training and Development</li> <li>• Equipment and Aircraft</li> <li>• Personnel/Volunteers</li> <li>• Fire Danger Index</li> <li>• Pre-Season Workshops</li> <li>• Interstate/Inter-Agency Liaison/Agreements/MOUs</li> <li>• Preparedness Plans</li> </ul>	<ul style="list-style-type: none"> <li>• Bushfires</li> <li>• Command, Control and Coordination</li> <li>• Defensive Structural in rural area</li> <li>• Support ACT FB following transition from rural to 'Urban Rural' in City Area</li> </ul>	<ul style="list-style-type: none"> <li>• CISM</li> <li>• Debriefing and Operational Analysis</li> <li>• Restoration of fences and trails</li> <li>• Implementation of continuing improvement systems</li> <li>• Bushfire investigation and reporting</li> </ul>

## ACT Fire Brigade

Prevention	Preparedness	Response	Recovery
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<ul style="list-style-type: none"> <li>· Permits and regulations in BUA</li> <li>· Operational planning in the BAZ in consultation with ACT RFS</li> <li>· SOPs</li> </ul>	<ul style="list-style-type: none"> <li>· Training and Development</li> <li>· Equipment</li> <li>· Personnel</li> <li>· Community Fire Units</li> <li>· Preparedness Plans</li> </ul>	<ul style="list-style-type: none"> <li>· Structural fires (BAZ, city, rural)</li> <li>· Bushfires – Built up Area</li> <li>· Command, Control and Coordination</li> <li>· Fire response in BAZ (transition from rural to urban/rural fire)</li> <li>· Response Plans</li> <li>· Support ACT RFS following transition from rural to ‘Urban Rural’ in City Area</li> </ul>	<ul style="list-style-type: none"> <li>· CISM</li> <li>· Debriefing and Operational Analysis</li> <li>· Fire Investigation and reports including bushfires in the built up area</li> </ul>
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## Emergency Agencies — continued

### AFP ACT Policing

Prevention	Preparedness	Response	Recovery
<ul style="list-style-type: none"> <li>· Community investigation and Enforcement</li> <li>· SOPs</li> <li>· Strategic direction</li> <li>· Risk assessment</li> </ul>	<ul style="list-style-type: none"> <li>· Preparedness Plans</li> <li>· Personnel</li> </ul>	<ul style="list-style-type: none"> <li>· Advice to Minister and Government</li> <li>· Coordination – Police Operations Centre</li> <li>· Evacuation</li> <li>· Media and Community Education</li> </ul>	<ul style="list-style-type: none"> <li>· Critical Incident Stress Management (CISM)</li> <li>· Debriefing and Operational Analysis</li> </ul>

### NSW Rural Fire Service

Prevention	Preparedness	Response	Recovery
<ul style="list-style-type: none"> <li>· Input and review of relevant ACT Plans (Strategic Bushfire Management Plan, BOPs)</li> <li>· Engage, seek input from ACT on NSW planning</li> <li>· Joint activities as agreed</li> </ul>	<ul style="list-style-type: none"> <li>· Communication and liaison on bushfire potential</li> <li>· Joint training and exchange of personnel</li> </ul>	<ul style="list-style-type: none"> <li>· Shared responsibility on initial attack and ongoing fires as agreed and planned.</li> </ul>	<ul style="list-style-type: none"> <li>· Participation in debriefing(s)</li> <li>· Joint Operational Analysis</li> </ul>

### ACT Health

Prevention	Preparedness	Response	Recovery
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<ul style="list-style-type: none"> <li>Links from planning processes (ACT Emergency Plan and sub-plans)</li> </ul>	<ul style="list-style-type: none"> <li>Receive advice on bushfire potential</li> </ul>	<ul style="list-style-type: none"> <li>Treat and manage injuries and trauma</li> </ul>	<ul style="list-style-type: none"> <li>Injury rehabilitation</li> <li>Psychological and Emotional counselling</li> </ul>
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## Policy

### ACT Chief Minister's Department

Prevention	Preparedness	Response	Recovery
<ul style="list-style-type: none"> <li>Monitor bushfire management arrangements in ACT.</li> <li>Monitor emergency planning processes (including ACT Emergency Management Plan and sub-plans).</li> </ul>	<ul style="list-style-type: none"> <li>Receive advice on bushfire potential</li> </ul>	<ul style="list-style-type: none"> <li>Co-ordinate whole-of-government response when appropriate</li> </ul>	<ul style="list-style-type: none"> <li>Coordinate whole-of-government recovery.</li> </ul>

### Bushfire Council

Prevention	Preparedness	Response	Recovery
<ul style="list-style-type: none"> <li>Advice to Minister and ESA</li> <li>Monitor scope and effectiveness of SBMP</li> </ul>	<ul style="list-style-type: none"> <li>Advice to Minister and ESA</li> </ul>	<ul style="list-style-type: none"> <li>Oversight of bushfire response arrangements within the ACT</li> </ul>	<ul style="list-style-type: none"> <li>Advice to Minister and ESA</li> </ul>

### Conservation Council of the South East Region and Canberra

Prevention	Preparedness	Response	Recovery
<ul style="list-style-type: none"> <li>Contribution to preparation of plans, strategies and policies as required</li> <li>Contribution to educative processes</li> </ul>	<ul style="list-style-type: none"> <li>Contribution to preparation of plans, strategies and policies as required</li> <li>Contribution to educative processes</li> </ul>	<ul style="list-style-type: none"> <li>Advice and input to planning and processes</li> </ul>	<ul style="list-style-type: none"> <li>Involvement in recovery response task force as appropriate</li> </ul>

## Support

### CSIRO

Prevention	Preparedness	Response	Recovery
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<ul style="list-style-type: none"> <li>· Fuel Hazard works</li> <li>· Bushfire Operational Plans (BOPs)</li> </ul>	<ul style="list-style-type: none"> <li>· CSIRO Infrastructure</li> <li>· Bushfire Operational Plans (BOPs)</li> </ul>	<ul style="list-style-type: none"> <li>· Advice and input to planning and processes</li> </ul>	<ul style="list-style-type: none"> <li>· Advice and input to planning and processes</li> <li>· Restoration of fences and trails</li> <li>· Land rehabilitation, asset repair, replacement and improvement</li> </ul>
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#### Community Council Forum

Prevention	Preparedness	Response	Recovery
<ul style="list-style-type: none"> <li>· Input and review of Prevention Plans</li> <li>· Support prevention activities</li> </ul>	<ul style="list-style-type: none"> <li>· Prepare homes against bushfire</li> </ul>	<ul style="list-style-type: none"> <li>· Advice and input to planning and processes</li> </ul>	<ul style="list-style-type: none"> <li>· Advice and input to planning and processes</li> </ul>



## **2 Setting the Scene – Bushfires and the ACT**

The history, approaches to fire and land management, planning, the physical geography, environment, climate and weather of the ACT provide the backdrop against which bushfires must be considered, from which plans are framed, and within which actions are taken.

### **Fire History of the ACT**

Natural fires have long been part of the ACT landscape, and are a natural environmental phenomenon in most Australian ecosystems. A combination of inherently inflammable vegetation, dry summers, periodic drought and lightning ignitions, resulted in fires of small and large size, of high and low intensity, with periodic conflagrations that have covered the landscape. Much of the native vegetation in the ACT is subject to periodic fires; particularly the dry forest, woodland and grassland communities, and many are fire-adapted ecosystems. Recurrent bushfires and management burning have shaped the condition of the existing plant communities.

The ACT has a history of severe and damaging bushfires with large areas burnt in the bushfire seasons of 1919/20; 1925/26; 1938/39; 1951/52; 1978/79; 1982/83; 1984/85; 2000/01 and in 2002/03. Some of the most significant seasons are illustrated in

Figure 1 below.

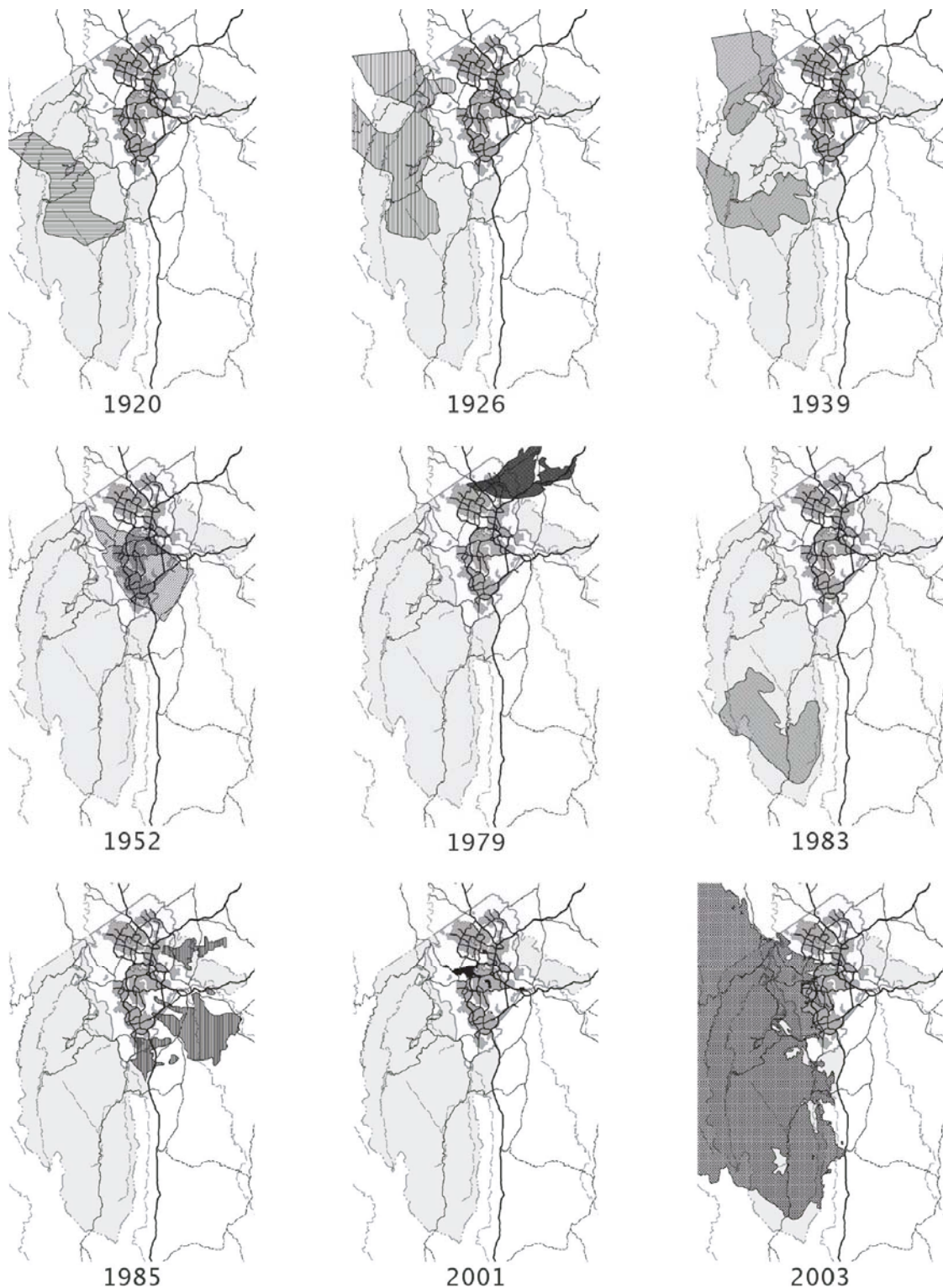
Intervals between recorded severe fire seasons range from two years to twenty-seven years. The impact of the 2002/03 bushfire is regarded as the most serious since the ACT was established. Severe fires will burn out large areas of land, travel long distances, threaten homes, lives and other assets and be uncontrollable until the weather moderates. The majority of the area burnt and most damage (including loss of life) occurs over a relatively short time. These relatively rare but severe events cause more than 95% of the damage and loss to people, property and assets. Bad or severe fires are not necessarily big fires. Close to the edge of Canberra's suburbs, relatively small bushfires are always potentially damaging.

Planning to reduce the likelihood and consequence of bushfires in the ACT must take into account the full range from small grass fires to landscape-wide severe fires. It must acknowledge that in severe fire events emergency services are extended beyond their capacity to either suppress the fire or protect all life and property, such as in Sydney in 1994 and Canberra in 2003.

Historically, there are patterns and trends in which fires, especially severe fires that cause significant damage to built and/or natural assets, start and where they spread. Consequently there is an identifiable set of characteristics of severe fires, which may support a focus for fire some management efforts. While weather and fuels will vary over time and space depending on climate and management intervention, it is possible to structure the response to fires to account for the major trends in severe fires.

Figure 1. Large Bushfires in the Australian Capital Territory since 1919.

Shading indicates approximate location of major fires.



Data supplied by Patrick Barling and Rick McRae.

For the purpose of analysing fire risk that might emerge in the ACT, a dangerous and damaging fire has the potential to occur when the following conditions prevail:

- Continuous available fuel – fuel at a moisture content sufficiently low to enable rapid combustion, arising from drought effects or the maturing and drying, of grasslands.
- Exposure of vulnerable assets. The “catchment” for such fires may be within several hundred metres or many (60-70) kilometres from the asset/s.
- A combination of weather conditions that generate a forest or grass fire danger index<sup>1</sup> of Very High (24) or greater. Typically in the ACT, prevailing adverse fire weather will have a strong Northerly through South Westerly influence.
- Fire in the landscape not effectively suppressed.

## Summary of fire causes

The objective of work on fire causes is:

*To understand fire causes in their social, economic, ecological and political context in order to establish appropriate priorities for prevention, preparedness, response and recovery.*

To support this objective there are three principles identified:

- Each bushfire should be reported, investigated and appropriate data gathered.
- The data collected must be collated and centrally analysed.
- Insights gained must be communicated widely.

Understanding fire cause enables appropriate prevention and response strategies to be prepared and implemented. To correctly understand and reduce fire cause we must look beyond the source of ignition to the underlying cause and the motivation as well.

There are three aspects of why fires start – the “Fire Cause”:

- The source of ignition.
- The underlying cause.
- The motivation for the fire.

These three aspects of fire cause are not often separated or clearly identified. Consequently the concept of “fire cause” is not generally well understood nor has it been clearly documented.

Fire investigation is the responsibility of the Chief Officers of the ACT Rural Fire Service and the ACT Fire Brigade.

Causes of bushfires, including those in the ACT, are natural and human caused and can be categorised as:

- Malicious – including arson;
- Careless – such as escaped campfires, children and burning off without a permit; and
- Accidental – uncommon but includes motor vehicle and industrial accidents.

The only common natural cause of bushfires in the ACT is lightning. The vast majority of ACT bushfires are human caused with many classified as arson.

The majority of fire ignitions are from arson, and arson ignitions are correlated to the demographics of the ACT. People are the major source of bushfire ignitions and where people concentrate, bushfires occur most frequently. Most bushfires occur in or near the built up area of Canberra. Notably, and further complicating bushfire causes, a proportion of bushfires are started by people with mental illnesses. The largest areas burnt are attributed to lightning ignitions, which are dispersed across the landscape. This requires a balance in fire management aspects to prevent, prepare and respond to higher numbers of fires in and around the suburbs of Canberra. Such fires immediately threaten homes, while a smaller number of fires farther away, potentially much larger, threaten rural homes and assets and possibly Canberra.

A review of bushfire reporting and analysis is being initiated to develop an interagency approach to the collection of bushfire related data and information across the ACT compatible with NSW and if possible other states.

## Fire Environment of the ACT

### Climate and Weather

The fire season in the ACT corresponds with the summer months' high temperatures and low rainfall, and can occur from September to April with a proclaimed bushfire danger period from October to March. There is significant variability from year to year. Fire seasons may be serious in three out of every 15 years, but this can vary considerably.

Bushfire risk management, planning and operations must take into account the likelihood of severe fire weather and the challenges it presents. Extreme and uncontrollable bushfires typically occur when the fire danger rating is over 50, a rating of Extreme. Many of the major house loss events have occurred at fire danger ratings over 70, on a scale of 0 to 100. Analysis of 1951-2004 meteorological records identified the days of Very High and Extreme fire danger from the Forest Fire Danger Index (FFDI) at Canberra airport:

- 0.1% of days (19 days in 53 years) had a FFDI exceeding 70
- 0.5% of days (94 days in 53 years) had a FFDI exceeding 50
- 18% of January days had Very High FFDI, and 2% of January days had Extreme FFDI

The Very High and Extreme Forest Fire Danger conditions mainly occur between November and March. Among the projected changes in climate, as a result of global warming, is that southern Australia will see greater variability in its climate with hotter and drier droughts possible. As the temperatures increase the Forest Fire Danger Indices will also increase, perhaps leading to a trend of larger, more intense fires in the landscape. Climate change remains a complex issue and only one of a range of factors that may be creating an environment conducive to large-scale fires.

One of the most practical and effective means of bushfire hazard reduction is prescribed burning on days when the objectives can be met.

An analysis of weather and climate for the ACT included an initial review of the days suitable for prescribed burning in the ACT. An average of 60 days/year met some example prescribed burning criteria. This initial assessment is an overestimate of days available as it includes summer days and other days in the Bushfire Danger Period and doesn't properly account for the drying of fuels in cooler months. Of course a proportion of the possible days for prescribed burning will fall on weekends and holidays or times of the year when tension between the need for bushfire fuel hazard reduction and other needs might be higher (e.g. Easter, Floriade, Canberra Show, State Visits to the National Capital by world leaders). This initial review does indicate there is significant variability between years from more than 100 suitable days to less than five suitable days. The opportunity to schedule and implement prescribed burning within a desirable window of favourable conditions is relatively limited.

Aspects that also must be considered and that reduce the numbers of suitable days for prescribed burning are the demands and requirements for smoke management in relation to air quality guidelines. There may be occasional or chronic conflicts between the need to undertake prescribed burning for bushfire fuel hazard reduction and the application of air quality guidelines. The potential for such conflicts and the options for meeting the need to reduce bushfire fuel hazard will be reviewed and considered in the evolution of the Strategic Bushfire Management Plan to Version 2.

Land managers and owners must take into account the potentially limited number of days and the possible interaction with air quality guidelines in the development, costing and implementation of prescribed burning programs.

### Vegetation and Fauna

The ACT has diverse vegetation communities ranging from temperate grasslands to sub-alpine woodlands. Approximately 68% of the total area of the ACT is covered by native vegetation.

The effect of fire on species and communities varies with changes in fire regimes. Typically elements of variation include: fire frequency, season of burn, fire intensity and the extent and pattern of burn as well as

plant species growth habits, maturity and pre-fire environmental conditions. Fire can also affect nutrient cycles, through direct loss in burning or subsequent loss through runoff or erosion. Prescribed burning is not necessarily deleterious to nutrient cycles. Near assets vulnerable to damage by fire, the intensity of fuel management required to reduce the bushfire risk may impact on nutrient cycling.

Limited specific information exists on how fire regimes affect fauna inhabiting vegetation communities in the ACT and Australia-wide. Most of our current knowledge of the effects of fire on fauna applies to ground-dwelling mammals and birds. While further work is required to increase understanding of the effects of fire on fauna, broad principles based on relevant studies elsewhere may be applicable to ACT. Fuel management planning must also consider the conservation requirements of threatened fauna species and impacts on fragmented communities in the ACT.

Fuel management planning at the urban edge must consider the broader strategic objective and recognise that some of the more fragmented or isolated examples of ecological communities are less likely to survive since they are impacted by adjacent urban land use. There may be valuable examples of ecological communities and threatened species within the urban area that have to be managed, including for fire, where they occur. It is also important to manage less fragmented areas where there is a stronger possibility of retaining the ecological values away from or less influenced by urban areas.

### Bushfire Fuels

Fuel is a critical element in bushfire planning and management. Although other opportunities are available to house holders and land managers generally, fuel is the one factor relating to fire behaviour that they can influence. A clear description of fuel is core in assessing bushfire risk across the landscape and the subsequent targeting of fire management programs.

Fuels in the urban environment play a significant role in the development and spread of unplanned fires on the urban edge and at depth into suburbs. An assessment of house loss after the 2003 Canberra fires lead to the conclusion that it was likely that more than 50% of the house losses were due to fire attack from suburban fuels (Ellis and Sullivan 2003). The management of bushfire fuels in suburbs, on both unleased and leased land, in conjunction with appropriate preparedness by residents, will reduce the risk of house loss. The ACT Planning and Land Authority is investigating requirements for changes to future suburb and infrastructure design to account for bushfires and contribute to the reduction of house loss.

### Natural Assets, Catchments and Heritage Values

The natural assets of the ACT are a major element in the context, aesthetics and sense of place of the Territory and the National Capital. These assets may be affected by bushfires and require management by fire among other factors. Environment ACT has prepared an initial classification of natural assets across leased and unleased land in the Territory. The basis for this classification is found at Appendix - Map 3, with a map detailing the classification attached (Map 2).

Planned and unplanned fire can lead to soil erosion and consequent water pollution through the loss of vegetative and litter cover which would otherwise protect the soil, and through the development of soil conditions where water is repelled. The severity and extent of bushfires, storm events following bushfires, and catchment characteristics will influence the impact on water quality and on water quantity. The use of planned fire in important catchments must consider inherent soil erosion and techniques to reduce effects. These include burning under soil moisture conditions to retain part of the lower litter layer, scheduling burns when the risk of intense storms is low, and protecting critical parts of the catchment from planned fire. The costs and impacts of using planned fires must be weighed against those of severe bushfires.

Bushfires may also have significant impacts on cultural heritage values, with the potential to damage or destroy sites or objects of Aboriginal and non-indigenous cultural heritage significance. The management of fire in catchments and impact on cultural heritage values will be addressed on a site-specific basis in the development, implementation and monitoring of Bushfire Operational Plans, and during the preparation and implementation of individual burn plans.

### **3 Bushfire Risk Assessment**

Risk has two elements: likelihood, the chances of a bushfire occurring and consequence, the impact of a bushfire when it occurs. Risk reduction can be achieved by reducing the likelihood of a bushfire, the opportunity for a bushfire to spread or the consequences of a bushfire (on natural and built assets). Bushfires will always occur. Bushfire Management should have a clear objective to reduce both the likelihood of bushfires and reduce the negative impacts of bushfires. It should also consider the costs, inconvenience and dangers of measures taken to reduce the risk of bushfires.

## **Bushfire Risk Assessment**

Many options are available to reduce the risk of bushfires starting, spreading and causing damage; reducing the unintended negative consequences of options taken to control risk; and the failure to achieve bushfire management programs.

The Australian Standard AS/NZS 4360:2004, the ACT Government Enterprise-wide risk management framework and the Emergency Management Australia (EMA) emergency risk management process provide the framework for establishing the context, analysis, evaluation, treatment, monitoring and communication of risk.

Bushfire risk is defined as the chance of a bushfire occurring that will have harmful consequences to human communities and the environment. Bushfire risk is usually assessed through consideration of the likelihood of ignition and consequences of a bushfire occurring. The consequences of bushfire management activities alone and the failure to implement programs also need to be considered. A range of factors influence bushfire risk these include:

- The likelihood of human and natural fire ignitions, as influenced by time, space and demographics;
- The potential spread and severity of a bushfire, as determined by fuel, topography and weather conditions;
- The proximity of assets vulnerable to bushfire fuels, and likely bushfire paths; and,
- The vulnerability of assets including natural assets, or their capacity to cope with, and recover from bushfire.

Broad strategies to manage bushfire risk include:

- Avoid the risk (do not proceed with the activity likely to generate the risk);
- Reduce the likelihood of a bushfire (e.g. reduce the number of natural and man made ignitions);
- Reduce the consequence (e.g. reduce the level of fuel available to burn in a bush fire);
- Increase the resilience of community and environmental assets to bushfires;
- Understand and accept residual risk (e.g. manage with fire response strategies).

## **Bushfire Risk Assessment Activities**

Emergency Services Authority (ESA) and Department of Urban Services (DUS) are in the process of developing a model of bushfire risk for the ACT. Bushfire likelihood will be combined with bushfire consequence to identify bushfire risk, which will then be mapped. Bushfire risk assessments for new developments are undertaken by the ACT Planning and Land Authority and take into account a number of useful guidelines. Two key guidelines are the Australian Standard for Risk Management and the Australian Standard for Construction of Buildings in Bushfire Prone Areas.

Monitoring and reporting on the effectiveness and impacts of options taken to manage risk is essential. Key management actions to reduce bushfire risk may be grouped into the following themes for the development of bushfire management strategies:

- Preventing unplanned bushfires by reducing the likelihood of ignition;
- Improving bushfire Preparedness at the landscape level;
- Improving bushfire Preparedness at the local household and suburban dwelling level;
- Responding effectively to unplanned bushfires;
- Effective Recovery from negative impacts of bushfires.

Assessment of the main bushfire risks in and around the ACT indicates that damaging bushfires tend to come from the west and northwest of the ACT. The most common places for bushfires to start are near the built up area of the ACT, particularly the edge of Canberra's suburbs. The most common cause is people. So the focus for bushfire risk is mainly west and northwest, and on people, with recognition of the potential of lightning caused fires in more remote areas.

## ACT Bushfire Risk Assessment

A preliminary assessment of bushfire risk for the ACT has been prepared for inclusion in Version 1 of this plan. Refinement of data and analysis is continuing to generate a bushfire risk assessment for the 10 years of the Strategic Bushfire Management Plan Version 2. The preliminary assessment has been prepared considering:

- Where fires start (Map 3)
  - Small and medium fires tend to start close to Canberra; large fires more distant from the built up area; while very large fires start in more remote areas.
  - There are many more smaller and medium fires than very large fires.
- How fires spread (Map 4)
  - Some fires spread less due to effective bushfire protection measures and firefighting – small and medium fires close to the urban edge.
  - Other fires become large or very large depending on the fuels through which they burn and the distance they burn through those fuels.
- Potential consequences (Map 5)
  - Small, medium and large fires may have minor or insignificant impacts being able to be contained and controlled and less likely to be able to cross roads and fuel breaks.
  - Very large fires, occur rarely, start a long way from the built up area but have major consequences.

Maps 3, 4 and 5 illustrate these factors of the preliminary ACT Bushfire Risk Assessment. The maps indicate that the many fires starting close to the built up area will be effectively dealt with by adequate bushfire protection on homes and other assets, Asset Protection Zones and effective response to fight bushfires. Large fires require these factors and effective fuel management as well to be contained and to reduce the risk of them developing into very large fires.

This preliminary Bushfire Risk Assessment for the ACT identifies the need to focus the balance of Prevention, Preparedness, Response and Recovery on:

- Reducing and managing bushfire ignitions;
- Reducing the risk of fires spreading; and
- Reducing the consequences of fires where they start.

## Strategies and Actions

### Analysis, Data and Adaptive Management

Once strategies have been developed they need to be continuously improved through ongoing analysis and adaptive management. A strong understanding of the factors contributing to fire occurrence and loss is a core requirement prior to effort on bushfires and applying fire to land (fire use).

The objectives for collecting and analysing data and information are:

- *To provide information compiled and analysed for decision-making to all functions of Fire Management and stakeholders at all levels.*
- *Keep ACT residents informed and consulted.*



The sound analysis of consistently collected meaningful data and information is critical to improving bushfire management and reducing the likelihood and consequences of bushfires. The nature of bushfires and their management means that everyone needs some information at some time and some need significant amounts of analysed information regularly, both during the bushfire season and at other times.

It is recognised that for some recipients, information is of immediate practical importance while for others, particularly out of fire season, it is not. The principles that should be applied for the identification, collection, processing and analysis of data and information, are:

- Strategic and operational decision-making needs to be based on best available information.
- Data and information should be consistent, reliable, relevant, with useful and usable content delivered on time.
- Recognising that the needs of particular groups of stakeholders in terms of content and timing will vary widely:
  - Targeting of messages to suit each group is needed.
  - Open, easily accessible information flow to and from all stakeholders is essential.
  - Information should be communicated by pre-determined and understood procedures and standards that include clear accountability and responsibility.
- All relevant information should be interpreted and effectively analysed to ensure it:
  - Feeds into decisions and informs processes; and
  - Can be clearly understood by the community.

The strategy and actions required to ensure that effective information is available to the fire management stakeholders in the ACT are set out below.

Strategy	Create and improve communications products for the stakeholders and the community that meets their needs
Action	Set data standards including definition of the data to be collected, stored and analysed.
Action	Establish and maintain clear processes for data collation and exchange.
Action	Identify gaps in data, data coverage and data analysis.
Action	Allocate roles and responsibilities for data of various types.
Action	Review and maintain the data sources and sets for suitability, validity, reliability, accessibility and compatibility.
Action	Analyse current data and identify trends, insights and useful knowledge it contains then ensure it is documented for future use.
Action	Ensure that useful information and insights are considered in decision-making and fire management processes and communicated to the community.



## 4 Prevention – Minimising Bushfire Occurrence and Impacts

Many bushfires need not occur and many impacts can be reduced. Government agencies, industry and land managers including householders must invest in fire management before bushfires occur by equipping themselves with the appropriate skills and resources to achieve prevention and minimisation strategies. Even with effective ignition reduction strategies, bushfires will continue to start, and at times threaten assets. Fire suppression capacity will be required regardless of the effectiveness of fire prevention efforts since unplanned bushfires will always occur.

### Concept and Context

Bushfire prevention aims to reduce the occurrence and impacts, based on bushfire risk assessment. Options include:

- Reducing occurrence of unplanned fires;
- Managing fuels to:
  - Reduce bushfire severity and impacts;
  - Improve bushfire suppression options.

Prevention contributes directly to managing fire impacts through reducing the occurrence of unplanned fires. Prevention also involves managing fuels to reduce the severity of bushfires and their negative impacts and improves suppression options.

### Objective

The objective of fire prevention is to:

*Reduce the likelihood and consequences of bushfires.*

### Principles

- Fire cause should be clearly understood.
- Target fire prevention based upon fire cause.
- Conduct prevention with appropriate timing identified through short, medium and long term information.
- Consider the environmental and production requirement in prevention activities.
- Hazard reduction activities should be implemented strategically across the landscape.
- Responsibility for prevention is shared between government agencies, the community, lessees and homeowners.

### Strategies and Actions

#### Ignition Reduction

It is not possible to eliminate the risk of unplanned fires, but targeted efforts reduce their occurrence and impact. Based on bushfire risk assessment prevention activities can be targeted to address:

- the source of ignitions – people, accidents, natural sources or industry;
- the cause of the fire – poor management of deliberate fire, inadequate enforcement of fire regulations, technical/engineering shortcomings; and
- the motivation for the fire – ignorance, lack of awareness.

Four strategies will be implemented:

1. Fire cause investigation and enforcement;
2. Ignition source management;
3. Presence and patrol; and

#### 4. Awareness and education programs.

The Emergency Services Authority (ESA) will investigate the cause of all unplanned ignitions consistent with national standards and liaise with the Australian Federal Police as required for co-ordinated arson investigation and prosecution. The ESA will establish and maintain an adequate number of competent Fire Investigators. Enforcement action for arson provides a strong community message of the importance of reducing unplanned ignitions.

The declaration of the Bushfire Season by the ESA requires mandatory permits for the use of fire, and imposes conditions aimed at reducing escapes from planned fires. The ESA will manage the introduction and cessation of each Bushfire Season consistent with an assessment of seasonal bushfire risk in the ACT and surrounding areas. Total Fire Ban (TOBAN) declarations limit ignition sources, through raising community awareness, and restricting some activities and access in some areas. The ESA will broadcast notifications of TOBANs as early and widely as practicable. Selected public reserves and areas where unplanned ignitions might occur may be closed to the public. Potential ignition sources from plant such as slashers and headers and equipment such as chainsaws and welding equipment will be managed through standard guidelines for fire season conditions for the use of plant and equipment across all land uses. Land management operations may be restricted during periods of extreme fire weather to minimise the risk of ignitions. Guidelines for equipment use and maintenance will be finalised prior to the completion of Version 2 of this Plan.

The presence of visible patrols by fire, emergency and land managers provides a deterrent for unplanned ignitions (especially arson), and enhances detection and subsequent initial response. The timing and location of patrols will consider Fire Danger conditions and fuel continuity. Volunteer Rural Fire Service Brigade units may patrol areas of high probability of arson and DUS will maintain visibility patrols of agency staff during periods of Very High and Extreme Fire Danger. City Ranger staff may conduct patrols on pre-defined routes when department brigade personnel are engaged in suppression operations and during TOBANs or Extreme Fire Danger conditions. Importantly with the dominance of human causes for bushfires and the increasing trend of arson fires specific actions to address this are required. Potential means of reducing arson including aerial patrols and cameras on key access roads to monitor all vehicle traffic, will be considered.

Targeted fire awareness programs, such as the young offenders programs used in some states, assist in reducing unplanned ignitions. The ESA currently delivers FireWise and Community Fire Unit programs in the ACT, and it aims to enhance its ability to prepare communities for bushfire and other emergencies. The ESA will assess the relative effectiveness of broad-based school and community programs versus targeted programs and may implement an appropriate program to reduce unplanned ignitions.

Strategy	Manage fire cause data, investigate fire causes and enforce laws on unplanned fires
Action	Develop and maintain a fire cause database consistent with national standards.
Action	Analyse and share ignition source data, particularly with neighbouring NSW, including annual summary reports identifying reasons, motivations, locality and timing of unplanned fires.
Action	Documented investigation of all unplanned ignitions with appropriate enforcement action.
Action	Monitor and review post fire analysis, investigation and research into fire ignitions from other jurisdictions.
Strategy	Reduce unplanned ignition sources

Action	Raise community awareness of Bushfire Season and TOBAN conditions through ongoing delivery of community education campaigns.
Action	Assess arson reduction program effectiveness and determine an appropriate model for the ACT prior to the completion of Version 2 of this Plan.
Action	Develop and distribute guidelines for plant and equipment use in the fire season prior to the completion of Version 2 of this Plan.
Action	Implement accepted standards governing other ignition sources (e.g. electricity distribution networks).
Strategy	Monitor public places and minimise unplanned fires, including arson
Action	Plan and maintain visibility patrols during periods of Very High and Extreme Fire Danger.

## Reducing Consequences

### Reducing Vulnerability of Homes

Lessons from 1967 Hobart, 1983 Ash Wednesday, 2003 Canberra and other fires shows that improving individual and community preparedness is essential for reducing vulnerability to severe fire events. The approaches taken in the SBMP comprise:

- Increasing collective community capacity to respond to bushfires;
- Planning and building design and associated standards at the individual dwelling level to better protect communities exposed to potential fires; and
- Reducing bushfire fuel hazards around and nearby homes and assets. A well-prepared community where the community has the capacity to respond appropriately before, during and after a bushfire is required to reduce impacts. Educating and empowering the community is a long-term and ongoing process.

Development planning and house design and construction and fitment standards that incorporate bushfire protection provide longer term and fixed methods for reducing community vulnerability. The ACT Planning and Land Authority is currently investigating construction standards for bushfire protection in the ACT. Research and investigation, since the January 2003 bushfires and before, has identified the key role that suburban fuels, including garden fuels, play in house losses. The information presently available will be communicated consistently and householders encouraged and supported to prepare their homes and gardens for the summer and potential bushfires. The *Emergencies Act 2004* creates inspectors and provides for notices and penalties to support effective bushfire preparedness.

Monitoring, measurement and audit to assess effectiveness and to improve bushfire fuels hazard reduction will be managed by the ESA.

Strategy	Build safer communities and prepare communities to be safe
Action	Review existing community programs from the ACT and elsewhere for utility, effectiveness and applicability.
Action	Undertake a risk assessment of community vulnerability to determine priorities.

Action	Develop and deliver a targeted capacity building and vulnerability reduction community program, commencing prior to the 2005/2006 Bushfire Season.
Action	Measure, monitor and audit bushfire fuel hazard and readiness around homes and other built assets.
Strategy	Reduce the vulnerability of new and altered developments
Action	Develop a bushfire risk assessment process and design guidelines for developments considering cross-border consistency.
Action	Develop landscaping standards for public land areas.

### Reducing Bushfire Fuel Hazard

Bushfire fuel hazard is the only factor of bushfire behaviour that can be influenced by land managers and residents. Fuel management can reduce fire behaviour and severity; improve fire fighter safety; increase the probability of suppression; and reduce impacts of bushfires on natural and built assets. However, fuel management alone is not the panacea for bushfire protection and it will not eliminate future severe bushfires. The risk from the distribution and development of fuel in forest, grass and woodland areas must be considered in strategic and operational fire management planning. The assessment of bushfire fuel hazard can be used to define fuel reduction needs, and to monitor their effectiveness. Fuel management programs must consider the risk of fires starting, spreading and causing damage. Untargeted programs are generally ineffective, unachievable and may result in adverse impacts. Reducing bushfire fuel hazard aims to increase the probability of first attack success, contain ongoing fires, break up potential fire runs and minimise fire impacts on communities, natural and built assets.

Fuel management across all land uses is required to effectively contribute to fire protection ACT-wide. This will include fuel management on land managed by the ACT agencies and should also include CSIRO, Department of Defence, National Capital Authority, Australian National Botanic Gardens, ANU and other land managers and owners including rural lessees. Collaboration with these land managers will be ongoing. The effects and effectiveness of fuel management activities must be monitored to determine if programs are meeting strategic objectives and that consequences on the primary purpose of land use are within acceptable limits.

The use of fire in land management requires land managers to make decisions about complex balances and trade-offs between bushfire protection and often-divergent social, environmental and economic requirements.

Specific considerations for fuel management planning include:

- The need to provide opportunities to manage large bushfires in the landscape.
- Intensive fuel management will likely only occur on a small proportion of the landscape.
- Over the majority of the landscape fire regimes will take account of ecological and production requirements.
- At or near the urban edge, and around other built and natural assets, the fuel management requirement will be determined by the bushfire risk assessment and land use objectives.

Fuel management under this Plan should complement operations carried out on adjacent lands where practicable to minimise the risk from unplanned fires. Co-operation between adjoining land managers in ACT and NSW to support joint fuel management operations will be developed.

Strategy	Reduce bushfire fuel hazard appropriately
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Action	Develop and implement a fuel hazard assessment program across all land tenures prior to the completion of Version 2 of this Plan.
Action	Develop a fuel management program across all land uses prior to the completion of Version 2 of this Plan.
Action	Develop and maintain an ACT fuel hazard models covering all vegetation communities and land.
Action	Develop bushfire fuel hazard - fuel load relationships for the ACT by 2007.
Action	Bushfire Fuel Hazard management along rural roads included in Bushfire Operational Plans.
Action	Identify effective practices for rural land fuel management prior to the completion of Version 2 of this Plan.
Action	Implement priority fuel management on public lands through Bushfire Operational Plans.
Action	Establish routine pre- and post-treatment bushfire fuel hazard assessments.
Action	Develop a monitoring program for fuel management effects and effectiveness prior to the completion of Version 2.

## Managing Bushfire Fuels

The McLeod Report recommended the planning and management practice developed for Victorian public lands where fuel management practice is considered to be among the best in Australia, the Victorian Code of Practice for Fire Management on Public Lands having been in place for nearly ten years. An initial consideration of this approach has been made and supports Version 1 of the Strategic Bushfire Management Plan. The broad approaches in other jurisdictions were also reviewed briefly and will be further examined for useful ideas and constructive models for adaptation to the ACT.

The fuel management zoning supports a Territory wide approach to fuel hazard reduction. This indicative concept is applied to unleased Territory land, but discussions are being held with rural lessees and Commonwealth land managers to provide an overall approach to fuel management across the Territory. Its application requires further development.

Zones on unleased Territory land have been identified considering the principle purpose for land use including ecological or production requirements, proximity to natural or built assets, suitability for fire control operations and the principle objective of protect life and property.

Fuel reduction burning in asset protection and landscape division zones, requires track and trail access. Individual track and trail construction options will require further investigation through normal environmental assessment and development planning and application processes.

Three types of fuel management zone are defined and applied to the ACT. The location and alignment of zones considers the risk of fires starting, spreading and causing damage and indicate the intent of fuel management with objectives, and standards, including indicators, for treatment. The zones and standards presented are preliminary and will be refined prior to the completion of Version 2 of this Plan.

The three Fuel Management Zones are:

- Asset Protection Zone (APZ): Land adjacent to vulnerable built or natural assets where fuel hazard is reduced. The APZ includes a Home APZ, an Inner APZ and an Outer APZ. The Asset Protection Zone may cover around 10% of the total landscape of the ACT.

- Home Asset Protection Zone – provides a defensible space for residents and emergency services personnel to better protect life and property and includes private residences, gardens and public open space.
- Inner Asset Protection Zone – is established to reduce fire intensity, ember load and the likelihood of crown fires adjacent to the urban edge with a width from 10 to 30m out from the residential boundary.
- Outer Asset Protection Zone – is created next to the Inner Asset Protection Zone to reduce fire intensity, ember load and the likelihood of crown fires further out from the Home Asset Protection Zone and will be perhaps 300m wide or more depending on assessed bushfire risk and asset vulnerability.
- Landscape Division Zone (LDZ): Corridors designed to break up major fire runs in instances where initial attack fails, to slow the spread of unplanned fires and reduce fire intensity and spotting to assist fire control operations. This zone includes a range of plantation, native forest and grassland fuel management practices and may cover around 20% of the total landscape.
- Land Management Zone (LMZ): Areas where fire may be applied to sustain production, or ecological, catchment values. In some communities, no planned fire will be applied. This zone includes a range of plantation fuel management practices and may cover around 70% of the total landscape.

Provisional maps detailing the location of Bushfire Management Zones are attached.

- Map 6 shows the location of Zones and urban interface classification on unleased land within the Bushfire Abatement Zone.
- Map 7 details the Fuel Management Zones across all unleased land in the Territory. The standards and guidelines for the development of Fuel Management Zones are described at Appendix 4.
- Map 8 shows the minimum fire thresholds for vegetation types within the ACT.

Bushfire fuel hazard may be reduced, removed or converted to a less flammable vegetation type. Each of the techniques noted alters different elements of bushfire fuel hazard and achieves different levels of hazard reduction. In general terms the techniques described in the table below will be selected as appropriate. Fuel management on leased agricultural lands is achieved through the regular and long-standing practices of grazing, preparing assets and other on-farm activities. These methods have been applied in a common-sense way by landholders for many years and will continue to be. Summary of effective practices will be developed in cooperation with rural lessees.

Fuel management works scheduled under this Plan should be coordinated with those carried out on adjacent lands to minimise the risk from unplanned fires. The existing co-operative partnership between adjoining land managers in ACT and NSW to support joint fuel management operations and linkage across the landscape, will be strengthened.

Table: Application of Fuel Management Techniques

Fuel management technique	Indicative application
Prescribed burning	Identified forest and woodland areas adjacent to the urban edge and throughout the ACT. Identified native and introduced grasslands where required.
Slashing	Immediately adjacent to identified residential properties other high value assets in the Inner Asset Protection Zone. Urban edge and rural road verges.
Grazing	Rural leases. Identified grassland and woodland areas adjacent to the urban edge.
Physical removal	Adjacent to high value assets in the Inner Asset Protection Zone to

	prepare the area for future alternative fuel management.
Thinning	Plantations, identified forest and woodland areas adjacent to the urban edge and throughout the ACT.
Pruning and Slash Treatments	In plantation operations adjacent to high value assets and for the protection of the plantations.
Conversion	Identified grasslands in nature reserves converted from exotic grass to lower hazard native grass and woodland.

Annual fuel management operations will be prioritised and scheduled in Bushfire Operational Plans considering strategies contained in the SBMP, current fuel hazard compared to treatment needs, bushfire fuel hazard, asset vulnerability and overall bushfire risk. Land managers may develop fuel management programs through assessment of the area of land in each zone and the indicative treatment frequencies. These will identify annual works targets. For example, ACT Forests has about 4000 hectares of native forest included in its estate with an identified burning frequency of eight years each indicating an annual program of approximately 500 hectares treated each year varying with ecological and operational factors). An average, assessed over three years is the best way to account for the variation in seasonal opportunities to conduct works and manage resource allocations.

Strategy	Define and map Fuel Management Zones for managing bushfire fuel hazard
Action	Document the basis and factors that support the definition of Fuel Management Zones.
Action	Fuel management zoning applied across all land uses for SBMP Version 2.

### Fire Access

Land and emergency management agencies in Australia and overseas recognise the importance of access to support bushfire management activities. Ground and aerial access provides a network for prevention and preparedness activities, and opportunities to contain fires before they escalate into major fires with significant suppression costs and losses to community, cultural and environmental values.

Better access to parks and forested land areas of the ACT and neighbouring NSW is required. Land managers and owners across all land uses must develop and maintain appropriate fire access networks to support bushfire management activities. Access must be maintained to prescribed standards to allow for safe vehicle passage, effective fire control lines, safe landing for aircraft and to mitigate environmental risks. Access networks should be periodically audited, utilising the opportunity for volunteer brigades to improve familiarity. Maps need to be updated regularly to reflect the condition and suitability of the fire access network.

Planning for the development and maintenance of the fire access network will be undertaken at three levels:

- Land managers and owners will design a strategic fire access network considering bushfire risk, the total long term access requirements and associated ten year capital and recurrent maintenance costs;
- Bushfire Operational Plans identify two year works programs consistent with the SBMP; and
- Site-specific plans.

Standards for ground access networks have been developed and documented by the Department of Urban Services. Land managers will develop or plan for fire access across all land uses in the ACT prior to the completion of Version 2 of this Plan applying similar standards.

There are significant efforts being made for fire access in the ACT. In particular the changes to ACT Forests land and the replanting of the forest have provided the opportunity to improve access for the plantation areas. The planning, development and improvement of effective fire access for the ACT is a major program that will take some years. Key elements for consideration in the planning of fire management access include an assessment of access needs to the west of Canberra, improved heavy vehicle float access to parts of the ACT, vehicular access for implementing bushfire prevention programs and support to fuel management zoning.

Map 9 identifies existing access and new fire access trails to be investigated on lands managed by Environment ACT. The specific location of trails will be subject to extensive study to further consider the most appropriate location in relation to environmental, ecological, catchment and fire protection values. Any fire trails proposed in the future will be subject to the full planning requirements necessary to allow for construction.

Strategy	Effective access for fire management and operations across the ACT
Action	Identify the minimum fire access network for the ACT prior to the completion of SBMP Version 2 of this Plan.
Action	DUS Land Management Agencies will complete Fire Access Plans prior to the completion of SBMP Version 2.
Action	Monitor and inspect the Fire Access Network to ensure trafficability, update mapping for operations and support prioritisation of works to be undertaken.

## 5 Preparedness – Getting Ready to Fight Bushfires

### Concept and Context

The fire fighting resources and the community of the ACT must be ready when bushfires start so that the response can be appropriate, timely, efficient and effective. The responsibility for bushfire suppression rests with the ACT Rural Fire Service, incorporating volunteers and departmental brigades and supported by the ACT Fire Brigade in the rural area and the built up area. The community, through preparing their houses against bushfires; by being aware of the bushfire danger and the bushfire situation and understanding the steps they can take if a fire threatens their home should support ESA preparedness. The establishment of Community Fire Units (CFUs) provides a local capacity to protect houses and property. It is also very important for the community to comprehend the options for evacuation should it be required and be able to make a clear decision as to what they will do before a bushfire.

The fire circumstances of the ACT indicate that the capacity to respond to bushfires must consider:

- A number of fires starting within the BAZ at about the same time under a Fire Danger rating of High or above and requiring rapid initial attack to minimise damage and achieve effective control quickly;
- A number of fires starting outside the BAZ, with a Fire Danger Index of High or above some distance from Canberra and requiring multiple shifts for containment and control; or
- A combination of the above.



When associated with high fire danger, these fires may have a significant impact on life, property and the environment. There may be other circumstances that impact on the capacity to respond to bushfires. The ESA is continually reviewing the resources needed to be able to meet the likely commitments.

## Objectives

The objectives of preparedness are:

*To ensure the community is aware, informed and capable so that it can effectively share the fire management responsibility.*

*To ensure people, planning, equipment, systems and processes required to contain or suppress bushfires are capable of doing so and ready to respond when required.*

## Principles

The ACT community will be encouraged to:

- Be aware of the potential bushfire risk;
- Prepare to defend their homes and house environs from potential bushfires; and
- Plan their response to a bushfire event.

Fire response and support agencies will:

- Have in place agreements and arrangements necessary for coordinated, seamless response to bushfires;
- Implement effective plans for readiness based on fire danger rating and fire status;
- Have appropriate numbers of staff properly trained, and fit for fires;
- Review, maintain and test all equipment and systems to ensure they are understood and functioning effectively; and
- Monitor the development of new technical approaches and methods that householders at risk from bushfire can adopt in advance of a bushfire occurring.

## Strategies and Actions

### Standard of Bushfire Capabilities

The development and maintenance of appropriate capabilities for a standard of fire cover for the ACT and adjacent regions is a major objective of the SBMP. Historical evidence shows that communities' attitudes and capabilities traditionally fluctuate between high levels of concern immediately after major bushfires, and indifference at other times. The high probability of bushfires within the region requires reasonable standing bushfire management resources and arrangements.

Appropriate bushfire capabilities must incorporate the continuum of PPRR requirements that provide a standing robust capability together with variations based on specific seasonal risk assessments. The variations must be planned and implemented with recognition of the time and resources taken to develop, train and place new capabilities. They also should recognise the longer term cycles for recovery of bushfire fuel hazard from both reduction work and bushfires.

The development of a reasonable standard of fire cover includes a range of integrated components and elements. These include the capacity for:

- Weather monitoring;
- Risk assessments (covering soil, vegetation, community, infrastructure and bushfires);

- Seasonal predictions;
- Availability of natural water sources;
- Volunteer RFS brigade capabilities;
- Departmental brigade capabilities (full time);
- Seasonal fire management resources;
- Fire Brigade capabilities;
- Community Fire Unit (CFUs) capabilities;
- Specialised fire fighting resources (fixed and rotary wing aircraft, plant and equipment);
- Rural lessees capabilities;
- Community awareness and preparedness.

Strategy	Ensure an appropriate level of resources for bushfire suppression
Action	Review approaches and methods in other jurisdictions for the development of capability standards.
Action	Develop a standard of capability for the ACT and surrounding regions so that the Territory can better deal with severe, protracted and multiple bushfires throughout the Territory.

#### Seasonal and Short Term Weather Monitoring

The ACT Rural Fire Service and the Bureau of Meteorology update arrangements on a continuous basis.

Seasonal and weather monitoring consist of:

- Pre and post fire meetings between the Bureau, NSW and ACT fire agencies
- The issuing by the Bureau of Meteorology of:
  - Three monthly Climate Outlooks on a monthly basis;
  - El Nino updates;
  - Four day weather outlooks;
  - Daily Fire Weather Forecasts;
  - Fire Weather Warnings as required; and
  - Direct briefings to the bushfire agencies as required.

Strategy	Ensure effective and timely assessment of critical climate and weather for bushfire management
Action	Improve, maintain and manage the flow of meteorological assessments and weather interpretations.
Action	Disseminate weather information and analysis widely and appropriately.

## Community Preparedness

Readiness and awareness of the community is vital for the safety of people and the preparation of their dwellings. The ACT community will be encouraged to learn more about the risk within their local area and how, as individuals and community groups, they can better prepare themselves and their homes for the onset of a bushfire. This will be achieved by a comprehensive public education campaign.

The year-round program focuses on aspects that need to be known by householders in advance of the bushfire season such as evolving design and standards. This consists of continuing monitoring, evaluation and analysis of data by ESA and other agencies, preparation of the data in a readily understandable form and promotion and distribution of this information.

Specific bushfire season-relevant efforts will be undertaken at the commencement of each season through a concerted media campaign incorporating elements such as:

- The Bushfire Wise program and brochure distribution;
- *Yellow Pages* ads featuring emergency preparedness information;
- A series of television and radio Community Service Announcements;
- A major information insert on bushfires in local newspapers; and
- Assessment and information on bushfire preparedness.

Some critical decisions by householders need to be taken well in advance of an approaching bushfire. Others arise for decision at the time a bushfire threatens. There are ranges of things householders may do to make their homes more bushfire prepared. These include:

- Improved design and equipment factors of their homes;
- Bushfire Wise garden layout and plant selection;
- Bushfire fuel hazard reduction; and
- Preparing themselves and their house and surrounds to better defend their home.

Critical steps to be undertaken and developed include:

- Defining community preparedness;
- Determining at-risk communities;
- Reviewing and developing processes for preparing communities; and
- Implementing these and monitoring their effectiveness on an ongoing basis.

In the ACT, Community Fire Units have been established to assist in protecting local communities. Eight units have been set up, with more to be established on a progressive basis.

## Self Sufficiency

It is appropriate to regard bushfire management as a role shared between the government and community, a reasonable level of self-sufficiency by all land managers, urban and rural lessees is desirable. This is required for all aspects of prevention, preparedness, response and recovery and serves to expand the overall capabilities within the ACT for bushfire management.

Self-sufficiency does not replace the service provided by the ESA but is intended to complement arrangements, particularly during major bushfires when resources will be stretched. Prevention and preparedness are the most important components of self-sufficiency, particularly for the monitoring of poor bushfire management practices and reporting of fires. Rural lessees are encouraged to develop, with ESA assistance, capacity to deal with smaller fires before they expand. Urban householders are encouraged to consider the elements of design, fittings and maintenance they can apply to their homes to optimise safety from bushfires, especially ember attack.

For both groups, but particularly rural lessees, reasonable bushfire management practices will also address matters such as procedures for Total Fire Ban days when increased patrols and a physical presence are required on properties.

Strategy	Build and enhance community capacity and preparedness for fire
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	management
Action	Provide the community with information to prepare their households for bushfire.
Action	Support and facilitate communities in preparing for bushfires.
Action	Use local area assessments and benchmarking studies against national and international programs for continuous improvement.

### Evacuate or Stay

A critical aspect that supports the fire fighting effort is the decision, before the bushfire season, that householders should make to be prepared and stay or plan to evacuate early well before the fire arrives.

The 2001 Australasian Fire Authorities Council (AFAC) position paper on *Community Safety and Evacuation During Bushfires* provides the framework for evacuation principles. It reflects:

- Houses protect people and people protect houses during bushfires;
- Fire authorities no longer advocate large-scale evacuation of people from areas threatened by bushfires;
- Communities at risk from bushfires should be allowed and encouraged to take responsibility for their own safety; and
- Creation of a ‘defendable space’ around houses and other buildings including as suitable, appropriately designed bushfire protection.

The *Emergencies Act 2004* provides the legislation for evacuation policy in the ACT. The “ACT Community Safety – Evacuation Policy” and guidelines developed by the ESA and the AFP-ACT Policing is consistent with AFAC and deals with all evacuation for all hazards including bushfires. The policy requires the evacuation of persons in emergency situations where human life is threatened by disasters, while maintaining reasonable steps to protect property and the environment. AFP-ACT Policing and Chief Officers of an emergency service (or their delegates) can evacuate people and animals to protect and preserve life and property. Members of the community are encouraged to take responsibility for their own safety and that of their property and to make their own plans for evacuation. Evacuation may be either immediate evacuation or planned evacuation as appropriate. These evacuations may be either selective or directed and may include self-evacuation, assisted evacuation or special needs evacuation. Reoccupation of affected areas will require similar coordination and planning arrangements as evacuation methods and means.

Strategy	Build and enhance community capacity and preparedness for fire management
Action	Provide the community with information to make the decision to ‘stay or go’ prior to the bushfire season.

### Service Preparedness

Effective fire preparedness for response will be established by:

- Leading into each bushfire season, ESA will review preparedness generally, with priority aspects receiving special attention including:
  - An assessment of the coming Bushfire Season;
  - Equipment levels, standards and requirements;
  - Training levels, standards and requirements;
  - Contractual arrangements for heavy plant and machinery;
  - Standard Operating Procedures (SOPs);
  - Readiness arrangements associated with each of the fire danger levels;
  - Communicating Fire Danger Ratings, Total Fire Ban information and the associated implications;
  - Fire reporting and response procedures;
  - Command and control arrangements;
  - The Memorandum of Understanding with relevant land management agencies;
- Ensuring establishment of the base standard of fire cover is maintained long term and adjusted based on seasonal conditions;
- Maximising the compatibility of equipment and techniques between the fire services of the ACT and NSW; and
- Systematic and accountable testing for communications, reporting, response and recovery as well as planning and other processes that is “live” testing.

### Human Resources and Training

There are eight volunteer brigades and two departmental brigades that form the Rural Fire Service across the ACT. Currently, there are 550 people available for fire fighting duty. Additionally the ACT Fire Brigade provides both initial response and added assistance to many bushfire events, providing an expanded pool of qualified and equipped staff.

The ACT RFS is working to increase the volunteer base within the next two years, both to strengthen the numbers available across all volunteer brigades and to replace natural attrition from the volunteer ranks. Additionally, the seasonal fire fighting program, which includes additional fire fighters and other readily available resources, should they be required.

To ensure the skills base of members of the ACT RFS is maintained and continually improved, training needs analyses will be conducted across all brigades annually. Ongoing training is continually occurring at brigade level while the ESA’s Joint Emergency Services Training Academy (JESTA) arranges and offers relevant bushfire fighting courses, for a wide range of skills and competencies, at regular intervals. Periodic interagency fire management exercises in prevention, preparedness, response and recovery will be used to further strengthen skills and competencies.

Studies are currently being undertaken to assist in the identification of preferred options for location of potential new brigades and the relocation of existing brigades, if required. This will help better match resources to population shifts and changes in land use.

### Fitness

The agencies involved in fire management and bushfire fighting are required to comply with relevant legislation that sets out occupational health and safety and workplace practices. Among other factors, the maintaining of personnel fitness standards for bushfire fighting and operations is important and the agencies involved, particularly the ACT Rural Fire Service, ACT Fire Brigade and volunteer and departmental brigades of RFS will continue to achieve the required standard of fitness for duty.

### Maps

The ESA has introduced new command support systems that incorporate geo-spatial data from a range of sources. Other initiatives include the issue of updated operational map atlases covering the ACT and adjacent NSW regions. These maps will continue to be updated.

### Detection

Fire towers funded by the ACT Rural Fire Service, two of them operated by ACT Forests, will operate as conditions indicate throughout the bushfire season. The ACT RFS maintains access to real time lightning strike information through both the NSW RFS and the NSW Country Energy Service. This information supports either a ground search or an aerial observation of potential lightning strikes in ACT, to identify possible ignitions. Additional detection may be provided by aircraft depending on the fire danger and the fire situation. The ACT RFS will on Very High and Extreme days have vehicles patrol various areas of the ACT, for immediate response to any fire in the ACT.

#### Equipment

The ESA continually assesses the appropriateness and standards of Personal Protective Equipment (PPE), vehicles and equipment used by its staff and fire fighters. This is done through research and equipment development with other rural fire agencies throughout Australia and in compliance with Standards Australia, through the ESA standards group. The ESA continually seeks to improve equipment and PPE through representation on the national equipment working group. The ACT RFS supplies all volunteer fire fighters with PPE and continually services and maintains all equipment supplied.

#### Liaison

Engagement and collaborative planning with NSW authorities and land managers will address the adoption of equivalent guidelines. This is a most important aspect of bushfire management and will ensure common practices apply across the border where they are required.

#### Machinery

The ACT RFS will have access to heavy plant such as bulldozers and graders for the use of fire suppression. DUS, ACT Forests and private contractors are all sources of heavy plant available for suppression purposes when required.

#### Aerial Fire Suppression

Control of fires in remote areas of the ACT will, where possible, be strengthened by use of aerial suppression resources to assist with rapid crew deployment and firebombing. A network of natural helicopter landing areas already exists in Namadgi National Park, and this will be assessed to determine its ability to support remote area fire suppression operations. Some expansion may be required following this assessment.

Firebombing using fixed wing aircraft from properly planned mixing bases is a cost-effective fire containment technique, especially when applied soon after fire ignition. This technology has been successfully and safely used in most jurisdictions of Australia for at least a decade. Environmental impacts of long and short term retardants can be reduced by adoption of suitable practices. These include ensuring that concentrate and overflow from mixing sites do not enter water courses, ensuring that drops are not in close proximity to streams and other significant wetland habitats, and using an Air Attack Supervisor to ensure efficient aerial operations.

#### Communications

All ACT RFS brigades have both pager and mobile phones for initial contact and ongoing communications. Considerable investment has been made into improving the radio communications system of the ESA. The infrastructure associated with the Government Radio Network (GRN) will greatly benefit the radio communications of the ACT RFS in years to come. For the 2004/05 season, VHF radio will continue to be the main communication used and will be bolstered by the addition of mobile repeater stations in areas known to experience radio communication problems.

Strategy	Ensure an appropriate level of resources for bushfire suppression
Action	Apply the standard of capability for the provision of fire cover.
Action	Annually assess current resources against seasonal requirements and preparedness levels and undertake adjustment as required.
Strategy	Ensure sufficient skilled personnel to meet bushfire management requirements

Action	Define training, experience and competence levels for fire fighting, AIIMS and other specialist roles.
Action	Conduct training needs analysis considering training standards and Standard of Fire capability outcomes.
Action	Deliver training to meet agency role requirements and assess against national standards and accreditation.
Action	Assess training needs against workforce planning to maintain competency standards.

## 6 Response – Reacting to Bushfires

# Concept and Context

The ACT Rural Fire Service (ACT RFS) is established to protect and preserve life, property and the environment from fire in the rural areas. It is responsible for operational planning in consultation with the ACT Fire Brigade (ACT FB), for fire outside the bushfire abatement zone including fire preparedness. It provides fire response in rural areas other than structural fires when ACT Fire Brigade is present. The ACT RFS consists of permanent staff undertaking a range of prevention, preparedness, response and recovery activities. This ensures balanced and effective fire management is coordinated with the ACT Fire Brigade. The volunteer and departmental members of the Rural Fire Service provide the bulk of bushfire fighting capacity.

The ACT Fire Brigade is established to protect and preserve life, property and the environment from fire in built up areas. It is responsible for operational planning for fire in the built up area including fire preparedness and for operational planning in consultation with the ACT RFS for bushfire in the Bushfire Abatement Zone. It provides fire response in built up areas.

Over the longer term the likelihood of a large, damaging bushfire in the ACT is virtually certain. It is necessary to always have appropriate capacity to contain and suppress bushfires. The response to bushfires reflects the overall objective of minimising the impact of bushfires upon the assets of the Territory. While the occurrence of bushfire is a fact of life both across Australia and in the Territory, in most cases the impact can be managed through an appropriate response immediately and through strategic fuel management in the medium to long term. The focus of the response component of the plan is the immediate protection of life, property and the environment. The basic tenet of bushfire response is to keep bushfires as small as possible by safely delivering suppression first attack as soon as possible. This reduces the threat to life, property, potential damage to renewable resources and assists in containing bushfire fighting costs.

## Objectives

The objective statement for bushfire response is:

*To ensure rapid and appropriate response to all bushfires in the ACT with the capacity to contain or suppress both small and large fires.*

## Principles

Containing and suppressing bushfires is a complex, dangerous, arduous and costly undertaking that is guided by the following principles:

- Safety at fires must be the dominant concern;
- Fire suppression actions should be directed by decisions made at appropriate levels;
- All unplanned fires should be managed for containment and suppression;
- All outbreaks of bushfire in the Territory should be met with the most rapid and appropriate weight of response;
- One designated organisation should be responsible for suppressing bushfires;
- Prompt detection, patrol and reporting of bushfires is essential;
- For all bushfires, the use of appropriate equipment suitable for the terrain, fuels and expected fire behaviour is paramount;
- The ACT RFS and ACT Fire Brigade must have and maintain well-organised and appropriately trained fire suppression crews; and
- The community should be kept informed and advised of bushfires and their location and potential at all times.



# Strategies and Actions

## Responding to Bushfires

Once a report of a bushfire has been received, the nearest available crews will be dispatched to the scene. The first crew or crews onto the fire-ground will provide a situation report providing an assessment of the fire situation, its extent and its capacity to develop.

Should the incident begin to develop or have the potential to develop into a moderate to large event (any bushfire that could burn for more than six to eight hours) the Duty Coordinator, in consultation with the Chief Officer ACT RFS, will coordinate the formation of an Incident Management Team (IMT). The IMT will coordinate planning, tactics and resources required for the suppression activities.

Bushfires in the ACT will attract a high level of government, media and community concern. Close coordination with the media is essential particularly in the event of a declaration of a State of Alert or State of Emergency, as provided for in the *Emergencies Act 2004*. The ESA is responsible for making arrangements for reporting the situation to the media, making future plans and evaluating requirements to maintain a strong media liaison capability.

The weight of initial response is based on Readiness Levels that correspond to the Fire Danger levels that are based on bushfire danger ratings, weather predictions and other related factors. The initial weight of attack for any given day corresponds with the pre-determined readiness levels for that day.

The response for fires in the ACT will be focus on three components:

- Initial Attack – Direct fire fighting: Bushfire fighting appliances and human resources arriving at the fire at the earliest possible time with the objective of controlling and suppressing the fire while it is small.
- Campaign Fires – Direct and indirect fire fighting: Bushfire fighting appliances and human resources allocated strategically to implement containment actions on planned boundaries with the objective of keeping a bushfire to those boundaries.
- Life and Property Protection – Where the conditions and bushfire location require it the protection of life and property will be paramount. This will include bushfire brigades and appliances designed for interface protection in cooperation with Community Fire Unit Volunteers where present.

In the majority of cases, the initial response will focus on direct fire fighting and in most cases this will constitute the entire response. The weight of that initial response will depend upon a number of factors including:

- What the fire is in or threatening;
- Seasonal and weather conditions and forecasts;
- The fire danger rating;
- Location of the fire, particularly proximity to the built up area combined with consideration of wind direction;
- Multiple ignitions and bushfire suppression priorities;
- Access and time taken to respond considering the anticipated rate of fire spread; and
- Resources available, including the need to maintain an adequate fire cover for the remainder of the Territory.

The weight of response will, as far as possible, be pre-determined through coordinated planning. The response requirements will influence, and be influenced by, combinations of all these factors. The underlying focus will be to respond to bushfires quickly and effectively and keep them small.

Strategy	Fight fires effectively and efficiently
Action	Respond as soon as possible to all bushfires consistent with resources and priorities.

Action	Prepare response actions considering the bushfire risk - the weather conditions, topography, fuels, fire fighting resources, fire location and the general fire situation.
Action	Each fire will be assessed and bushfire fighting strategies determined for it as soon as possible.
Action	Safety is paramount in bushfire fighting and will consider management of shifts, fatigue and shift changeovers.

### Incidents Outside but Threatening to Impact on the ACT

The ACT RFS and the NSW Rural Fire Service (NSW RFS) have a Memorandum of Understanding (MOU) identifying joint contributions of crews to suppression activities and personnel for Incident Management Teams. These arrangements are in place for any bushfire events occurring outside the ACT but threatening to impact on the ACT and also the situation of bushfires originating in the ACT but threatening NSW.

### Command, Control and Coordination for Bushfire Fighting

Control is critical to bushfires and the ACT is committed to using the nationally and internationally recognised AIIMS system for command and control. The Australian Inter-agency Incident Management System (AIIMS) is based upon three key principles: management by objectives; functional management; and span of control. Command and control will be undertaken by the lead agency, ACT Rural Fire Service or ACT Fire Brigade as appropriate.

The AIIMS framework applies across a whole range of incidents from small to large and provides the basis for an expanded response as the incident grows in size and complexity. AIIMS is made up of four functional areas: Control, Planning, Operations and Logistics. It is designed to assist an organisation to achieve the following outcomes:

- Provide a safe working environment;
- Minimise the impact of the bushfire on the community and the environment;
- Provide for the safety and welfare of people involved in controlling the incident;
- Control the incident effectively and efficiently; and
- Manage by objectives through the development of Incident Action Plans.

Initially for fires of a moderate size during normal day-to-day operations the combat fire service will manage the incident and suppress the bushfire.

At larger and more complex incidents, requiring both fire services, other emergency services over an extended period, the Emergency Coordination Centre (ECC) will be activated within the ESA. The ECC coordinates incident information and advice to the community, media and government. It also coordinates joint emergency services response and accesses external support and resources involved in bushfire response for complex large fires. The ECC will be staffed by members of the lead agency, ESA and specialists from other organisations such as AFP-ACT Policing, ACT Health and Community Recovery.

Strategy	Coordinate to fight bushfires
Action	Use the functions, roles and responsibilities consistent with the Australia Interagency Incident Management System (AIIMS).
Action	Ensure that the experience, training and competence to fill roles in the Incident Management Teams is established and maintained.
Action	Create a systematic approach to scaling up personnel and resources for bushfires of increasing size or complexity.

Action	Prepare and maintain Incident Command Centres for bushfires.
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## 7 Recovery – Restoring Bushfire Damage

### Concept and Context

After bushfires have been extinguished there remains the need to prevent a spiral of recurrent fire and further degradation in the short-term, and to help re-establish the buildings, communities and human settlements, biodiversity and functionality, over the longer term. Importantly some of the essential aspects of recovery should start as the bushfire incident develops. Failure to consider appropriate restoration strategies results in vulnerable people living in ever more precarious situations and environmental values that degrade, perhaps severely.

The recovery phase of bushfire management may deal with a damaged social and environmental infrastructure and restoring these to a balanced and healthy state. The recovery phase includes activities such as:

- Investigation, inquiry that results in revisions to Bushfire Management policies and controls;
- Aid to individuals and communities affected by fire;
- Reconstruction/remediation of civil and private infrastructure and the environment; and
- Commitments to improve the attitudes and expectations of society before and during the next bushfire event.

### Objectives

The objective of recovery:

*Effective and efficient implementation of management decisions to restore the social and environmental infrastructure to a working, useful and balanced state.*

### Principles

- Bushfire recovery activities do not increase the risk from bushfires in the short or long term.
- Promote research and effective use of restoration and rehabilitation treatments.
- Research interactions between fire, land management actions, and other disturbances, and apply lessons learned to future management decisions.

#### Critical Incident Stress Management

- Actively manage Critical Incident Stress through debriefing and support mechanisms.
- Provide external counselling services to all fire staff.
- Conduct external all party debriefs for all classes of fires.
- Conduct internal debriefs of fire fighters.

#### Fire rehabilitation

- Assess the need for formal fire rehabilitation plans following every fire.
- Restore diverse and resilient ecological systems to minimize damage from severe fire events through long-term restoration programs.
- Establish systems to ensure temporary suppression tracks are drained and rehabilitated following planned and unplanned fire.
- In the short-term, perform burned area emergency stabilization and rehabilitation work to protect life and property, protect catchment values, and prevent further degradation of critical cultural and natural resources.
- In the long-term, restore burned areas and repair and improve lands unlikely to recover naturally from severe fire damage.

# Strategies and Actions

## Health Impacts of Bushfire in the ACT

Adverse health impacts as consequence of bushfire to are to be managed under the ACT Health Emergency Management Sub-Plan, which is a Sub-Plan to the ACT Emergency Plan. The Sub-Plan details arrangements that coordinate health resources in response to, and recovery from, man made and naturally occurring incidents and emergencies in the ACT. For bushfire this includes coordination and medical management of casualties and the provision of timely public health interventions to limit initial and ongoing adverse health impacts to affected communities and populations over the recovery period.

For large scale incidents ACT Health will liaise with Australia's peak health coordinating body, the Australian Health Disaster - Management Policy Committee (AHD-MPC). The AHD-MPC administers national health emergency plans across all jurisdictions.

For the purpose of minimising adverse health effects on the population of the ACT region as a result of bushfire, the ACT Health Emergency Management Sub-Committee will continue to maintain and update the Health Emergency Management Sub-Plan arrangements.

## Community Recovery

Community Recovery encompasses “supporting disaster-affected communities with the reconstruction of the physical infrastructure and restoration of emotional, social, economic and physical well-being”. (*Australian Emergency Manual – Disaster Recovery, 1996*)

A normal community consists of units e.g. individuals, families, interests groups, neighbourhoods etc, linked in a complex latticework by social bonds that form the basis for communication, influence, community history and tradition. Communities undergo significant changes when faced by a disaster or significant emergency event as their usual bonds become disrupted or severed. The trauma and loss suffered by unexpected events can have severe effects on an individual, however such effects are significantly magnified in an event where whole communities are affected. Such community disruption can create long- term negative impacts upon the physical, cultural, economic and social aspects of an area.

The physical and psychosocial aspects are critical to effective recovery. Recovery is more than the replacement of what was destroyed and the rehabilitation of individuals. It is a complex social process and is best achieved when the affected community exercises a high degree of self-determination. Community recovery is a developmental, rather than remedial process, and the manner in which the physical and social aspects of the process are undertaken will have a critical impact.

The costs of poor or delayed recovery cannot be underestimated. Individuals and communities who are unable to adequately recover from an impact event will be less resilient and more vulnerable. The results can include increases in unemployment, family breakdown and children at risk – costs that are ultimately borne by governments and taxpayers through higher outlays over the longer term.

From a positive point of view, emergencies and disasters also provide unique opportunities for community development, ranging from revitalisation of infrastructure and other physical assets to community strengthening through development of community capacity and enhanced resilience.

Recent natural disaster events have led to an expansion of thinking on the dimensions of recovery. Previously, much activity would have focussed on physical and social recovery, however bushfires and other recent events have also highlighted economic and environmental impacts. The range of organisations traditionally involved in recovery management has now broadened, necessitating a more integrated approach to the management of community, psychosocial, economic, environmental and infrastructure aspects of recovery. As such, Community Recovery is a vital part of the emergency management equation.

In the ACT, Community Recovery currently consists of 21 government and non-government agencies providing 24 services to the affected community, with the Office for Children, Youth and Family support responsible for ensuring coordinated support and services are in place to attend the specific needs of those affected. Community Recovery in the ACT provides economic, social and emotional, practical and service support to ensure the affected community is able to move on and rebuild their life and community following the disaster. Services and supports range from the establishment and management of Evacuation and

Recovery centres, outreach services, childcare, financial assistance, supply of personal effects including clothing, furniture, bedding, food and housing, to provision of counselling, pet and first aid support, as well as information and referral, translation and transport, volunteer support workers and community development.

## 8 Standards, Monitoring and Reporting

### Concept and Context

*“Plans are of little value if they do not give rise to practical management outcomes against clear policy framework and an unambiguous set of measurable outcomes” – McLeod, 2003*

The *Emergencies Act 2004* prescribes that “the authority must, in consultation with the ACT Bushfire Council, monitor the scope and effectiveness of the Strategic Bushfire Management Plan”. This requires an audit or review of process, outputs and outcomes defined by the Plan and monitoring of the plan itself. Continual improvement and adaptive management is paramount. It is essential to assess the various management actions undertaken and the contribution these actions make to the achievement of the targets. Such assessment requires good baseline information and continued monitoring and evaluation of management actions and their outcomes.

Establishing standards, setting up monitoring, and consistent reporting are critical to the successful implementation of this plan to meet the objectives it sets out. The clear need to identify the standards, codes of practice, guidelines and standard operating procedures that are to be used and measured against for audit purposes should be met in a considered way and through participation from agencies and individuals and after evaluation of existing models and approaches. Strategic Bushfire Management Plan Version 1 identifies the needs for standards, codes of practice and guidelines and identifies a process, timeline and potential sources of information, data and models for the various aspects of standards, monitoring and reporting. Preliminary standards and examples of possible forms of monitoring and reporting will be identified in this version and developed for Version 2 of the Strategic Bushfire Management Plan.

### Objectives

The objectives of standards, monitoring and reporting are:

*To measure the effectiveness of the Strategic Bushfire Management Plan and subordinate plans.*

*To confirm the effective implementation of the Strategic Bushfire Management Plan.*

### Principles

The principles for standards and monitoring are:

- Activities and plans include defined standards and requirements for monitoring;
- Standards relate to what individuals and householders can do, not only what authorities can do;
- All data collected is analysed;
- Requirements for reporting apply to all land managers and the ESA; and
- Reports of performance will be made public, be consistent and relevant.

### Strategies and Actions

#### Reasonable Guidelines

Bushfire management within the ACT requires the development and implementation of reasonable guidelines that balance protection and preservation of life, property and the environment. This balance requires guidelines for prevention, preparedness, response and recovery actions consistent with public safety and land use requirements.

Reasonable guidelines are being developed for SBMP Version 2 through engagement with the community, rural lessees, and land managers to ensure that the vast knowledge and experience in bushfires in the ACT is

incorporated. The guidelines will reinforce existing best practices and seek to eliminate poor practices that increase the risk of bushfires. It is clear the ACT is in a period of transition including the longer-term recovery from the fires of 2003, the creation of new villages at Uriarra and Pierces Creek together with the expanding requirements of the community for recreation and access to public lands. The guidelines will reflect this transition and will require adaptation as the nature of land use in the ACT changes. The development of guidelines requires recognition of the actual use of land in the ACT to ensure business activities such as farming and forests continue. Sustainable practices for bushfire management need to be consistent with the wide range of uses of land. The guidelines will also encourage the continuation of effective prevention practices.

#### Operational Performance Indicators

While annual targets in areas such as financial expenditure and specific works programs are important, the achievement of some targets for activities such as prescribed burning are best assessed over a number of years, to identify trends and account for seasonal variations.

Achievement of bushfire management objectives requires a consistent approach to program and project management. Operational performance indicators are required. Achievement of targets to the required standard then needs to be reported, assessed and audited, both internally and externally.

Sometimes standards need to be set at the national level rather than at the territorial level. At other times it is beneficial for standards to be territorial rather than national although not essential. In either of these events, ACT agencies will be vigorous in pressing for development and application of appropriate national standards in relation to fire management preparation and processes.

#### Monitoring

Monitoring and reporting aims to ensure the ESA and partner agencies are meeting the objectives of the Plan, and they identify the need for remedial action where necessary. Monitoring is to be undertaken by the agency that is responsible for the implementation of activities set out as part of this plan and sub-plans. ESA will collate information and monitor Plan achievement.

#### Data Sharing and Capacity Building

Although the major fire fighting agencies and land managers undertake much of the bushfire task, there are others involved in the process. Frequently this requires activities well in advance of a bushfire taking place.

##### Inspection and auditing

###### Internal

Internal inspections and audits are part of project management to examine all aspects of work, systems and processes to ensure that there is compliance and accountability for activities undertaken for Bushfire Operational Plans. Supervisors or managers will carry out internal audits in accordance with a schedule developed by each agency. Audit frequency is determined based on the status and importance of the activity for audit. The results of internal audits will be recorded. Where deficiencies are found, corrective action will be identified and carried out. Innovative practices will be identified and communicated to other operators and agencies to foster and support adaptation and continuous improvement.

###### External

External audits will be undertaken to validate reporting, system compliance and adequacy. External audit of fire management is required under this plan. This includes ESA service arms, the ACT RFS and the ACT Fire Brigade, fuel hazards within rural leases and on residential lands and Government land management agencies with respect to bushfire access and bushfire fuel hazard. An independent external auditor will provide 3rd party auditing of any or all of the audits undertaken by ESA.

#### Reporting

Consistent monitoring and reporting is required against performance indicators of the Strategic Bushfire Management Plan and Bushfire Operational Plans. Fire management reporting involves the systematic consolidation of budget and performance information to track program achievements and inform decision-



making. Reporting occurs at different levels and intervals, and involves varying degrees of consolidation depending on the use of the information.

Reporting is intended to inform Government and the community on the effectiveness of the agencies and support performance improvement. Reports should be consistent with the annual reporting requirements set out in the *Emergencies Act 2004*:

*“An annual report of an agency must give an account of the operations of the agency in relation to the strategic bushfire management plan (including any bushfire operational plan approved under the plan) for each area of unleased Territory land, or land occupied by the Territory, used by the agency or someone on behalf of the agency”.*

There are two levels of reporting required by the plan, reporting against the SBMP and reporting against BOPS.

#### Reporting against the Strategic Bushfire Management Plan

The operating framework and subsequent reporting will be reliant on measures of quality against standards, quantity against targets and cost against budgets. All agencies involved in implementing the plan will contribute to the compliance reporting of the Strategic Bushfire Management Plan. Each land management agency and the ESA agencies will develop processes for reporting, monitoring, filing and central collation of performance against the Strategic Bushfire Management Plan.

The accurate planning and expenditure of resources is dependent on the measures implemented for the reporting of achievements. Achievements will be based on the quality of work completed against the established standards, the quantity of work that is completed in a period of time and the management of costs through efficient practices.

Reporting requirements and procedures for the land managers of public and leased lands are being developed for SBMP Version 2. The intended introduction of common geographic information and data arrangements together with graphic display systems will facilitate this process, and ensure that sufficient transparency exists to support Government, media and community information requirements.

#### Reporting against the Bushfire Operational Plans

Bushfire Operational Plans set out two-year programs of fuel management and burning for ecological outcomes; other prevention and preparedness programs; fire prevention-related education and enforcement programs; and a schedule of prevention and preparedness programs as well as the reporting and monitoring intended for the two year period. Bushfire Operational Plans will be reviewed for achievement against their objectives and programs.

Reporting of the achievements of Bushfire Operational Plans over the two-year period of implementation is of particular importance. The means of measurement of outcomes in terms of fuel management, ecological sustainability, education and awareness, inspection and enforcement other requirements is also being developed for incorporation in SBMP Version 2. The practical achievements and analysis of actions during the 2004/2005 season will inform this process.

#### Review

It is clear that effective bushfire management requires an adaptive and flexible approach to planning. While the strategic intent of the SBMP should ensure that major changes to the approach are not required, a process of on-going review will occur. The SBMP will be subject to comprehensive review every five years, and in addition will be the subject of annual assessment to ensure that recent operational and scientific developments can be directly incorporated. The five yearly review considers the ten-year period after the date of review. Bushfire Operational Plans will be reviewed biannually and updated on an annual basis.

## **9 Resource Requirements**

There is a need to apply a set of comprehensive approaches to identifying the resource requirements that are required to implement the Strategic Bushfire Management Plan. Existing approaches to the evaluation of resource requirements should be considered and assessed for their potential to provide guidance to the ACT in evaluating resource needs under the Strategic Bushfire Management Plan.

### **Strategic Approach**

It is widely accepted that effective bushfire management requires the commitment and expenditure of adequate resources over long periods. The allocation of sufficient financial resources will always remain a challenge given the competing demands on Government budget allocations and the affordability of actions by private lessees. A balance is required for which adequate resources are available for both longer term management activities together with the fluctuating requirements for seasonal variations and new infrastructure developments including Australian government initiatives such as the National Disaster Mitigation Program (NDMP).

The SBMP provides a comprehensive basis for resource planning. It covers the strategic level requirements within the ACT for prevention, preparedness, response and recovery requirements. It is intended to provide sufficient direction to enable the preparation of detailed Bushfire Operational Plan and follow-on work plans for public areas, and separately for Land Management Agreements and actions by rural lessees.

The strength of the SBMP lies in the ten year focus that will enhance the capacity of land managers to forecast resource requirements, together with a clear impact statement of the potential consequences of not undertaking a particular activity. The articulation of the consequences in terms of the increased probability of major bushfires, the vulnerabilities associated with postponement of activities and the imbalance caused by differing levels of completion of actions in adjacent areas.

### **Managing the Strategic Bushfire Management Plan**

The ESA is responsible for the implementation of the Strategic Bushfire Management Plan. The roles and functions required to monitor the implementation demand human, technical, managerial and physical resources. The quantity and quality of the resources needed will be identified and obtained for the life of the plan (10 years).

Managing the development of SBMP Version 1 has provided a workable approach to the longer-term implementation of the SBMP requirements. It is clear that effective management will also require the sustained allocation of resources to the ESA and other agencies. The inclusion of rural lessees in the management arrangements is a requirement that also has resource implications.

The permanent management arrangements for the implementation and reporting of actions associated with the SBMP are being developed and will be incorporated into SBMP Version 2. It can be expected that the management structure will require a permanent commitment from the various agencies, and should evolve as new initiatives and procedures are accepted. As an example the on-going introduction of common geographic information and data for mapping purposes can be expected to enhance planning and reporting in the ACT.

### **Implementing the Strategic Bushfire Management Plan**

The various elements and aspects of the Strategic Bushfire Management Plan will generate demands on the agencies and individuals responsible for them. In some cases these may be significant across the life of the plan and will require specific calculation and procurement. Bushfire management is a long term process requiring strategic, management and operational consistency over an extended period. It is critical that the need for consistent implementation of the requirements of the plan is understood and supported throughout the ACT community and on the part of government. Clear calculations of costs are pivotal to the maintenance of this understanding and the continuity of resource provision.

The use of the SBMP for resource planning requires the interpretation and application of the principles and concepts to achieve the specific outcomes. Requirements are being developed and will be refined over the 2004/2005 bushfire season through analysis of bushfire incidents both within the ACT (should they occur) or elsewhere in Australia. A key requirement is the development and adherence to longer-term bushfire management plans that incorporate the cyclic conduct of actions, such as prescribed burns, that occur over several year gaps.

## **2004-2006 Bushfire Operational Plans**

The Bushfire Operational Plans are the two-year works programs for agencies. Consequently they are readily assessed for costs and the need for other resources and arrangements. The 2004/06 Bushfire Operational Plans have been prepared and the financial implications for them identified.

## Appendices

# Appendix 1 – Some of the Laws, Plans, Strategies and Reports of the ACT relevant to bushfires

- The Australian Capital Territory (Planning and Land Management) Act 1988.
- The *Territory Plan* – the fundamental purpose of the Territory Plan is to manage land use and development with the ACT in a manner consistent with the strategic directions set from time to time by the ACT Government, Legislative Assembly and the community. A principle theme of recent planning and policy development has been sustainability – meeting today’s needs without compromising the welfare of future generations. This requires conservation of resources and the achievement in balance of economic vitality, community well-being and environmental quality.
- The *Environment Protection Act 1997* – sets specific environmental standards (e.g. water quality and ambient air quality) that must be achieved. Monitoring programs assess performance against these targets, and practices are modified if environmental harm is occurring or likely to occur.
- The *Water Resource Management Plan 1999* – states what level of water flow must be maintained before water can be extracted for irrigation and makes provision for expected new water allocations over the next 10 years.
- The *Nature Conservation Act 1980* – aims to protect the biological diversity of the Territory and to maintain its ecological processes and systems. Tangible objectives, that will enable the ACT to work towards this goal, are put forward and accompanied by implementation strategies. The Act commits the Territory to the protection of threatened species and communities.
- *Nature Conservation Strategy (1998) and Implementation Plans* – the goal of the Strategy is to protect the biological diversity of the Territory and to maintain its ecological processes and systems. Tangible objectives, that will enable the ACT to work towards this goal, are put forward in a structured form. Objectives are accompanied by implementation strategies designed to achieve positive conservation outcomes in an environment of economic restraint, and increasing regional collaboration in planning and management of natural resources. An Implementation Plan is prepared annually and contains agreed actions, performance indicators or targets and target dates as well as priorities. The Plan and its implementation are a collaborative effort between agencies and links with other strategies, which address biodiversity issues—for example, the ACT and Sub-region Planning Strategy.
- The *Integrated Catchment Management Framework for the ACT (2000)* – articulates the principles, processes, and commitments that guide natural resource-related activities by the Territory community and government. Five building blocks provide the foundation for integrated catchment management in the ACT:
  - An effective partnership between the community and government;
  - Appropriate knowledge and skills;
  - Legislative and planning instruments;
  - Management coordination mechanisms, including sub-catchment planning;  
and
  - Effective resource use.
- *ACT Natural Resource Management Plan 2004-14* – developed by the Natural Resource Management Advisory Committee in its capacity as the Territory board that advises on the delivery of Natural Heritage Trust and the National Action Plan for Salinity and Water Quality. The Plan is endorsed by Australian Government Minister and the ACT Minister of the Environment. It incorporates the principles and policies set out in the ACT Government resource management strategies, such as the Nature Conservation Strategy.
- *Working Together for the ACT’s Environment – A Support Strategy (2001)* –recognises the importance of the active participation of the Territory community in the development and implementation of natural resource management strategies and plans. The Strategy outlines plans and tactics to enhance the capacity of the community to

undertake this role effectively.

- The *ACT Commissioner for the Environment Act 1993* –established the Office of the Commissioner for the Environment. It is a requirement under the Act that State of the Environment Reports (SOER), assessing condition of the environment and recommending actions to minimise adverse pressures, be presented to the Government every four years. The reports provide a process for addressing resource condition recommendations through annual assessment of Government response to recommendations. They also identify where baseline data are missing and inform targets in the Plan.
- *People Place Prosperity: a Policy for Sustainability in the ACT* released in 2003 – incorporates the ideas and advice provided during consultation and the policy will direct the incorporation of sustainability into the business of government within the ACT. The policy articulates government commitments and the principles that will lead the transition towards sustainability in the ACT. The policy defines what sustainability means for the ACT Government and describes five specific commitments relating to guiding principles, decision making, partnerships, communication and monitoring and reporting progress.
- The policy for sustainability is closely linked to *The Canberra Plan* currently under development. The Plan has three integrated components that draw upon sustainability principles:
  - The Canberra Spatial Plan is about ‘what goes where’;
  - The Canberra Social Plan will focus on the well-being of the whole community.
- *The Environment Protection Act 1997* – provides for the protection of the environment and for other purposes (including integration of environmental, economic and social considerations in decision-making processes) by regulating activities that cause or may cause environmental harm, and by creating offences for polluting the environment. It creates a general ‘environmental duty’ which requires a person to take such steps as are practicable and reasonable to prevent or minimise environmental harm or environmental nuisance caused, or likely to be caused, by an activity caused by that person.
- *The Water Resources Act 1998* – provides for the management and use of the Territory’s water resources in a way that sustains the physical, economic and social well being of the people of the Territory while protecting the ecosystems that depend on those resources. It protects waterways and aquifers from damage and, where practical, reverses damage that has already occurred. It also seeks to ensure water is put to its highest value use. It is a requirement of the Act that a Water Resources Management Plan be developed.
- *The Plans of Management under the Land (Planning and Environment) Act 1991* – the Plans reflect information and issues gathered from past processes and input from the community, special interest groups, experts and governments agencies. A number of specific management principles apply to each plan and provide guidance on how that area should be managed. Examples include:
  - Murrumbidgee River Corridor Management Plan;
  - Tidbinbilla Nature Reserve Management Plan;
  - Belconnen Region Plan of Management; and
  - Woden/Weston Region Plan of Management.
- Special Issues Strategies, Management Plans and Implementation Plans A number of Strategies and Management and Implementation Plans dealing with natural resource management issues of particular concern have been developed. They take a whole of Territory or a regional approach to dealing with these issues. They include:
  - ACT Weeds Strategy;
  - ACT Vertebrate Pests Strategy;
  - Action Plan for Natural Temperate Grassland; and
  - ACT and Region State of the Environment Report.

## Appendix 2 – Public and Private Assets Vulnerable to Fire

Table of Key assets vulnerable to damage by bushfire

Asset
Human life
Infrastructure
Rural villages and settlements
Rural lease
Agriculture
Plantations: Native and exotic species
Scientific institutions
Natural Environments and Biodiversity Assets
Domestic and non-domestic water supply catchments and reservoirs
Soils, and particularly organic soils
Recreation, education and tourist facilities
Management facilities
Communications Infrastructure
Fire detection towers
Essential municipal services for example: Electricity substations, Lower Molonglo Water Quality Control Centre, Stromlo water treatment plant
Buildings and sites of cultural heritage significance
Private property and public land in adjacent NSW

# Appendix 3 – Natural Asset Classification

## – Preliminary Descriptions

### Category 1

Nature Reserves (or parts thereof)\* that contain examples of:

- ecological communities that are listed as Endangered and are fragmented or otherwise isolated by urban development;
- significant examples of natural vegetation, plant or animal habitats because of their size, degree of intactness or freedom from major disturbance;
- special flora or fauna or species that are listed as Endangered or Vulnerable to extinction; and
- habitats that are particularly sensitive to disturbance generated by human activities or natural events (eg fire sensitive alpine ash vegetation, wetlands).

This category contains Yellow Box – Red Gum Grassy Woodland in nature reserves, all Natural Temperate Grassland and related areas containing grassland/woodland habitat for threatened species, large areas of natural bushland in urban Canberra and habitats in Namadgi that are particularly sensitive to fire. Specific areas include Black Mountain, Aranda Bushland, Mts Ainslie/Majura, Goorooyarroo and Mulligans Flat Nature Reserves, Red Hill/Callum Brae woodlands, Jerrabomberra, Lawson and Majura grasslands.

*\*NB This category may include land that is not formally in a nature reserve, but which is closely associated with one and includes an extension of the above values*

### Category 2

Land (may include leased rural land and parts of Nature Reserves) containing examples of:

- ecological communities that are generally in good ecological condition;
- extensive areas of relatively undisturbed native vegetation (that may also include endangered communities or habitat for threatened species);
- habitats managed as part of the rural landscape.

This category contains most of the forested lands in the ACT, and associated areas of woodland and grassland vegetation. Specific areas include Namadgi National Park and the Murrumbidgee River Corridor, Bullen Range, Rob Roy Nature Reserves, Lanyon Bowl and some woodland and forest located around the urban edge.

### Category 3

Other Land (including parts of Nature Reserves) containing examples of:

- ecological communities that have been substantially and severely modified;
- native vegetation managed in association with, or part of, another primary land use;
- exotic pastures or plantations.

This category contains substantially or severely modified woodlands on and off reserves, exotic and native pastures and other native vegetation associated primarily with rural land. Specific areas include the Molonglo River Corridor, Greenwood Hills, Kowen escarpment, and some nature reserves not included in other categories.

## Appendix 4 – Fuel Management Zones – Preliminary Descriptions and Standards

Preliminary descriptions and standards for consideration around existing developments are set out below. ACTPLA is separately developing guidelines and standards for new developments.

Stratification of unleased and Territory land, which is outside of the built up area into Fuel Management Zones, has been undertaken considering the requirements for fire protection and management objectives for unleased Territory land:

### **Fire Protection Considerations**

Values and functions of an area, including the location, nature, value and vulnerability to damage by fire of assets to be protected:

- The Bushfire Abatement Zone;
- The likely contribution of the area to the risk of fires starting or spreading and causing damage, including breaking up potential fire runs and minimising the impact of fires should they reach people and their assets;
- Topographic characteristics;
- The type and flammability of the vegetation and fuel hazard dynamics;
- The length and direction of fire runs toward assets;
- Fire behaviour under various FFDI's, including near worst case conditions;
- Suppression thresholds most appropriate to the area and response times;
- Adjacent land use and management;
- Fire history and climate; and
- Physical constraints, such as logical boundaries for treatments.

### **Land Management Considerations**

- Primary land use consideration, for example production forestry, nature conservation or agriculture;
- Catchment Values, particularly the impacts of fuel management and access works the quality and quantity of water from water supply catchments;
- Classification of Natural Assets, as described in Appendix 3;
- Heritage Values;
- Social and recreational values of Parks and Nature Reserves; and
- Minimum fire thresholds for dominant vegetation communities, describing the minimum acceptable frequency for fire to occur within the dominant vegetation type of ecological communities described in the ACT<sup>2</sup>.

### **Classification and Standards for Fuel Management Zones**

Zone	Home Asset Protection Zone
Purpose	To provide a defensible space for residents and emergency services personnel to protect life and property and to reduce the probability of house ignitions and fire propagation through urban areas through reducing embers, radiant heat and flame contact.
Location and extent	Private residences, gardens and public open space, 100m into suburb from primary urban edge, 50m into suburb from secondary edge.



Target overall fuel hazard	Low.
Treatment standards	Low flammability gardens within 5m of houses, inorganic mulch preferred, shrub and shrub beds widely spaced, tree canopies not overhanging houses.
Treatment types	Garden maintenance, pruning, mowing.

Zone	Inner Asset Protection Zone
Purpose	To reduce fire intensity, ember load and the likelihood of crown fires to reduce the probability of asset damage and provide a defensible space for residents and emergency services personnel to protect property.
Location and extent	Adjacent to urban edge. Width is variable with urban edge type, from 10 to 30m wide out from residential boundary.
Target overall fuel hazard	Low.
Treatment standards	Slashing to maintain grass height <200mm when required, shrub and tree removal as required to maintain 4 to 6m crown separation, with stump height <50mm to allow slashing, burning to manage bark fuels on rough bark species, minimum 80% coverage.
Treatment types	Slashing, shrub and tree removal, prescribed burning.
Treatment frequency	Slashing – as required to meet standards. Prescribed burning – indicative burn cycle 4-8 years.
Ecological impact	Intensive fuel management may have an impact on environmental values. Where there is incompatibility between fuel management and the management of rare or threatened species, habitats or communities, modifications of fuel management techniques will be implemented where appropriate while maintaining appropriate protection.

Zone	Outer Asset Protection Zone
Purpose	To reduce fire intensity, ember load and the likelihood of crown fires to reduce the probability of asset damage.
Location and extent	Typically abutting assets to the north and west or surrounding assets of very high vulnerability. Urban edge Outer APZ from 0 to 300m wide, other APZ generally 300m minimum width. Plantation APZ varies with locality. Approximately 5% of Government Managed Land.
Target overall fuel hazard and fuel break standards	Native Forest and Shrubland: Maintain fuel elements at or below: <ul style="list-style-type: none"> <li>· Surface fine fuels Moderate (litter bed height 15-25 mm) or less;</li> <li>· Bark fuels High (unless surface fine fuels are Low) or less;</li> </ul>

	<ul style="list-style-type: none"> <li>• Elevated fuels High.</li> </ul> <p>The trigger level for scheduling a burn in this zone is when the Overall Fuel Hazard reaches Moderate and/or bark hazard reaches Very High. Minimum burn coverage 80%.</p> <p>Woodlands and Grasslands: Maintain fuel elements at or below:</p> <ul style="list-style-type: none"> <li>• Elevated fuels (woody weeds and shrubs) Moderate (30% cover);</li> <li>• Bark fuels High (unless surface fine fuels are Low) or less,;</li> <li>• Ungrazed grassland fuel hazard &lt;35, grazed grassland fuel hazard &lt;50.</li> </ul> <p>Plantations:</p> <ul style="list-style-type: none"> <li>• Manage stands as crown fire reduced areas, with progressive pruning and thinning to achieve high pruned, well spaced, may include prescribed burning of fine fuels under mature stands;</li> <li>• Schedule harvesting operations to avoid contiguous areas of untreated slash during fire season;</li> <li>• Roller crush clearfall harvesting slash as soon as practicable prior to the fire season;</li> <li>• Maintain strategic fuel breaks through the maintenance of road pavements, verges and road edge pruning/thinning;</li> <li>• Designated boundary fuel breaks are to be at least as wide as the height of adjacent trees.</li> </ul>
Likely treatment types	Prescribed burning, slashing, physical removal, plantation silviculture operations.
Likely treatment frequency	<p>Prescribed burning – indicative burn cycle 4-8 years, minimum 80% coverage.</p> <p>Slashing – as required to meet standards.</p> <p>Plantation operations – as required to meet standards.</p>
Ecological impact	Intensive fuel management may have an impact on environmental values. Where there is incompatibility between fuel management and the management of rare or threatened species, habitats or communities, or pines and commercial forestry values, modifications of fuel management techniques will be implemented where appropriate while maintaining appropriate protection.

Zone	Landscape division zone
Purpose	To provide strategic corridors of sufficient width and continuity to provide a substantial barrier to the spread of unplanned fire by reducing its speed, intensity and the potential for spot fire development; to reduce damage caused by unplanned fire through reducing severity; and to provide areas that assist in making fire suppression safer and more effective.
Location and extent	<p>Strategically located and spaced to minimise the area burned under strong northerly and westerly winds. Corridors will run both north-south and east-west, with adequate linkages to complement Asset Protection Zones. Includes slashed fuel breaks on major rural roads.</p> <p>Approximately 20% of Government Managed Land.</p>

Target overall fuel hazard and fuel break standards	<p>Native Forest and Shrubland: Maintain fuel elements at or below:</p> <ul style="list-style-type: none"> <li>• Surface fine fuels High (litter bed height 25-35 mm);</li> <li>• Bark fuels High (unless surface fine fuels are Low);</li> <li>• Elevated Fuels High.</li> </ul> <p>The trigger level for scheduling a burn in this zone is when the Overall Fuel Hazard reaches High. Minimum burn coverage 80%.</p> <p>Woodlands and Grasslands: Maintain fuel elements at or below:</p> <ul style="list-style-type: none"> <li>• Elevated fuels (woody weeds and shrubs) Moderate (30% cover).</li> <li>• Bark fuels High (unless surface fine fuels are Low) or less</li> <li>• Ungrazed grassland fuel hazard &lt;35, grazed grassland fuel hazard &lt;50</li> </ul> <p>Plantations:</p> <ul style="list-style-type: none"> <li>• Schedule harvesting operations to avoid contiguous areas of untreated slash during fire season;</li> <li>• Roller crush clearfall harvesting slash as soon as practicable prior to the fire season;</li> <li>• Maintain strategic fuel breaks through the maintenance of road pavements, verges and road edge pruning/thinning;</li> <li>• Designated internal fuel breaks at least half as wide as the height of adjacent trees;</li> <li>• On the western and/or northern side of internal strategic fuel breaks, maintain stand density of no more than 600 stems/ha and prune to a minimum of 2.5m high, for a distance of 20m into the plantation. (Only applicable to pine forest with average stand height greater than 8 metres).</li> </ul> <p>Strategic Arterial and Rural Roads:</p> <ul style="list-style-type: none"> <li>• Slash roadside grass fuels at least twice annually to break up thatch;</li> <li>• Maintain grass fuels slashed to less than 500mm on identified areas during fire season.</li> </ul>
Treatment types	Prescribed burning, slashing, physical removal, plantation silviculture operations.
Treatment frequency	<p>Prescribed burning – Indicative burn cycle 8-12 years, minimum 80% coverage.</p> <p>Slashing – as required to meet standards.</p> <p>Plantation operations – as required to meet standards.</p>
Ecological impact	May be locally significant in corridor areas. Where there is incompatibility between fuel management and the management of rare or threatened species, habitats or communities, pines and commercial forestry values, careful placement and delineation of the zone boundaries will be used.

Zone	Land management zone
Purpose	To provide for the application of appropriate fire regimes and fuel management, including:

	<ul style="list-style-type: none"> <li>• The use of prescribed burning for biodiversity conservation (within acceptable fire regimes);</li> <li>• The exclusion of prescribed burning for at least the period of the plan, from areas of vegetation and assets in which there would be a high potential for economic, ecological or cultural loss if they were subject to prescribed burning; and,</li> <li>• May include areas of plantation fuel management including strategic pruning, slash management and fuel breaks.</li> </ul>
Location and extent	<p>Broad natural areas.</p> <p>Approximately 75% of Government Managed Land.</p>
Target overall fuel hazard	Prescribed burning will influence target fuel loads that vary dependent on ecological and catchment values.
Treatment types	Prescribed burning, no planned burning, pruning, roller chopping slash, thinning.
Treatment frequency	Fire frequency, intensity, seasonality and patchiness varies with ecological community requirements.
Ecological impact	Favourable with the development of a range of successional stages across the landscape.

## Maps

1. The Bushfire Abatement Zone for the ACT.
2. Provisional Natural Assets Map of the ACT.
3. Risk Assessment – Where Fires Start.
4. Risk Assessment – How Fires Spread.
5. Risk Assessment – Potential Consequences.
6. Provisional Fuel Management Zones – Unleased Land within the Bushfire Abatement Zone.
7. Provisional Fuel Management Zones – Unleased Land.
8. Preliminary Map of Minimum Fire Intervals for Ecological Communities.
9. New Fire Trail Access to be investigated.