1 Introduction

(How the Inquiry was conducted and some essential background information)

This report sets out the conclusions reached and the recommendations formulated by the Inquiry into the Operational Response to the January 2003 Bushfires. The Chief Minister of the Australian Capital Territory, Mr Jon Stanhope MLA, established the Inquiry in the wake of fires that caused widespread damage to rural properties, parks and forests, homes and urban infrastructure between 8 and 20 January 2003. Four people died and damage estimated at $300 million resulted.

Essentially, the Inquiry was asked to examine and report on how the official organisations involved in dealing with the fires performed during the crisis, how well prepared they were, and what lessons can be drawn from the experience. (Appendix A sets out the terms of reference.)

Any major disaster presents an opportunity to review the authorities' preparedness and their performance when put to the test. It is not surprising that post-mortems reveal shortcomings, and this Inquiry is no exception. Nevertheless, if areas needing improvement are clearly identified steps can be taken to secure the future.

The work of the Inquiry

The Inquiry began at the beginning of March 2003. The ACT Government initially sought a report by the end of June, a period of only four months. Because of the authorities' significant and continuing operational responsibilities for the recovery process after the fires—and the bushfire season did not officially end until the end of March—it was not until early May that the Inquiry received detailed submissions from all the official bodies involved. I therefore asked the Chief Minister if he would agree to extend the Inquiry's reporting deadline until the end of July 2003. He readily agreed.

This still allowed only a relatively brief period in which to collect material from public and private sources, to test and assess it, and to reach conclusions. As a consequence—and despite my examination of all the issues I considered to come within the terms of reference—this report should be regarded as being strategically focused. Basically, it provides an overview of events: it does not deal in detail with the multitude of matters raised. In this way I consider I have been able to meet the Government's objective of having an independent report available to it relatively quickly. This will help the Government make prompt decisions about a range of important factors that

might have a bearing on the ACT emergency services' capacity to respond to bushfires as soon as late 2003.

All the government agencies and other bodies involved in the Inquiry provided valuable briefings in advance of their written submissions and cooperated fully in meeting my requests for detailed discussions on many of the matters dealt with in the report. I acknowledge the level of cooperation I received, the openness that characterised the discussions, and the willingness of officials to answer frankly the questions I asked of them. I formed the view that there was a genuine desire on the part of the agencies to seek out answers and to acknowledge deficiencies, in the interests of determining how the management of any future emergencies can be improved.

The Inquiry team made a number of inspections and visits in order to become familiar with the course of the fires and the damage they caused and to gain an appreciation of the operational facilities available to fight the fires and manage their aftermath.

Each organisation involved in the firefighting effort has been conducting its own internal appraisal as part of a continuous improvement approach. This assisted with their submission of views to the Inquiry and to the concurrent coronial inquest; it will also be helpful in preparing the ACT Government for its responses to national bushfire-related reviews, particularly the one initiated by the Commonwealth Government. In addition, the ACT Government established several other reviews arising from the bushfires. A full list of these, with a brief description of their purpose, appears at Appendix B.

The Inquiry received more than 130 written submissions from the general public. A number of people also sought to speak personally with the Inquiry; all requests of this kind were agreed to. The submissions, written and oral, were extremely valuable. These first-hand accounts helped the Inquiry gain a clearer understanding of the reaction of members of the public, and of some emergency workers, to the impact of the fires. Many of those who contributed were seriously affected by the fires, and I am indebted to them for their willingness to recount their personal—and often painful—experiences.

The quality of the submissions overall was particularly high. Much praise was directed at the efforts of the firefighters, police and other emergency workers and the volunteers, who fought desperately to save lives and property, often in difficult circumstances. The submissions did, however, also contain many criticisms of what were believed to be deficiencies on the part of the authorities.

A number of common themes that emerged from the public submissions helped the Inquiry identify areas where there may have been systemic failure.

I thank all who expressed their views to the Inquiry. I hope that, through consideration of this report and its recommendations, the Government will be assisted by the Inquiry as well as by the contributions of a broad cross-section of citizens who wanted to have their views heard and taken into account. Chapter 3 provides an analysis of the various matters raised in the public submissions.

During the course of the Inquiry, the ACT Budget for 2003–04 was introduced in the Legislative Assembly. It was pleasing to note that provision had been made for a number of improvements flowing from the Government's own preliminary analysis of the impact of the fires and some of the shortcomings they exposed. I acknowledge these initiatives in this report. Where the Government has already committed itself to a course of improvement, I do not dwell on the matter: rather, my focus is on those areas where I believe decisions remain to be taken.

Shortly after the Inquiry began there was debate in the Legislative Assembly about protection from the threat of legal action for people who might want to express critical views to the Inquiry. This difficulty was resolved by the passage of the *Bushfire Inquiry (Protection of Statements) Act 2003*, which, in summary, afforded protection against defamation action to people making statements to the Inquiry or providing documents or information to it. I was pleased to see the passage of this legislation: it offered encouragement to people who might otherwise have been reluctant to come forward with critical comments.

The terms of reference require that the Inquiry 'make reference to arrangements that exist in other jurisdictions for dealing with emergencies'. The Inquiry consulted with all states and visited a range of fire and parks authorities in NSW, Victoria and Tasmania. It also visited the Australasian Fire Authorities Council, which was very helpful. Appendix C lists the outside bodies consulted.

The CSIRO Bushfire Behaviour and Management Group was also consulted. Mr Phil Cheney and Mr Jim Gould are thanked for their assistance.

The Inquiry's preliminary work, the public submissions and the external consultations gave rise to a number of important questions:

- Did the fires constitute an exceptional event that could not have been planned for or were they avoidable?
- Why were the fires allowed to reach the city of Canberra?
- Why were ACT citizens not better prepared and better informed before and during the bushfires?
- Why did the ACT fail to seek more external assistance at an earlier stage?
- Why did government land managers not act more positively to reduce the accumulation of fuel, which added to the intensity of the bushfires?
- Did the emergency service organisations perform as well as they could have?
- Are the existing operational, management and financial arrangements for dealing with emergencies in the ACT as good as they could be?

Much of the Inquiry's subsequent work—and indeed the terms of reference—demanded answers to these questions. A number of other related questions can also be posed, but those just listed are the essential ones.

I hope that the ACT community, and those who govern it, will heed the lessons of these fires. Learning by personal experience can be hard, but lessons learnt in this way are often more enduring. A number of positives are already apparent as a consequence of the fires, and they are touched on in this report. I trust that the lessons referred to in the report will be embraced and followed through.

I am indebted to the small group provided to assist me in my work. Mr Stuart Ellis AM, formerly Chief Executive Officer of the Country Fire Service of South Australia, gave outstanding support. Ms Leanne Power and Ms Bronwyn Turner made excellent contributions as Executive Officer and Project Officer respectively. Although I accept full responsibility for the report, it was a team effort and I thank each team member for their professionalism and support throughout the Inquiry.

Before proceeding with an analysis of the fires, some background knowledge is essential. A general understanding of the government bodies that exist to deal with emergencies of this kind and how they are organised is needed. The weather plays an important role in most bushfire events: a brief explanation of the significance of the weather and how it affects bushfires follows. Some appreciation of bushfire behaviour is also helpful. Finally, a brief history of major bushfires in the ACT is provided.

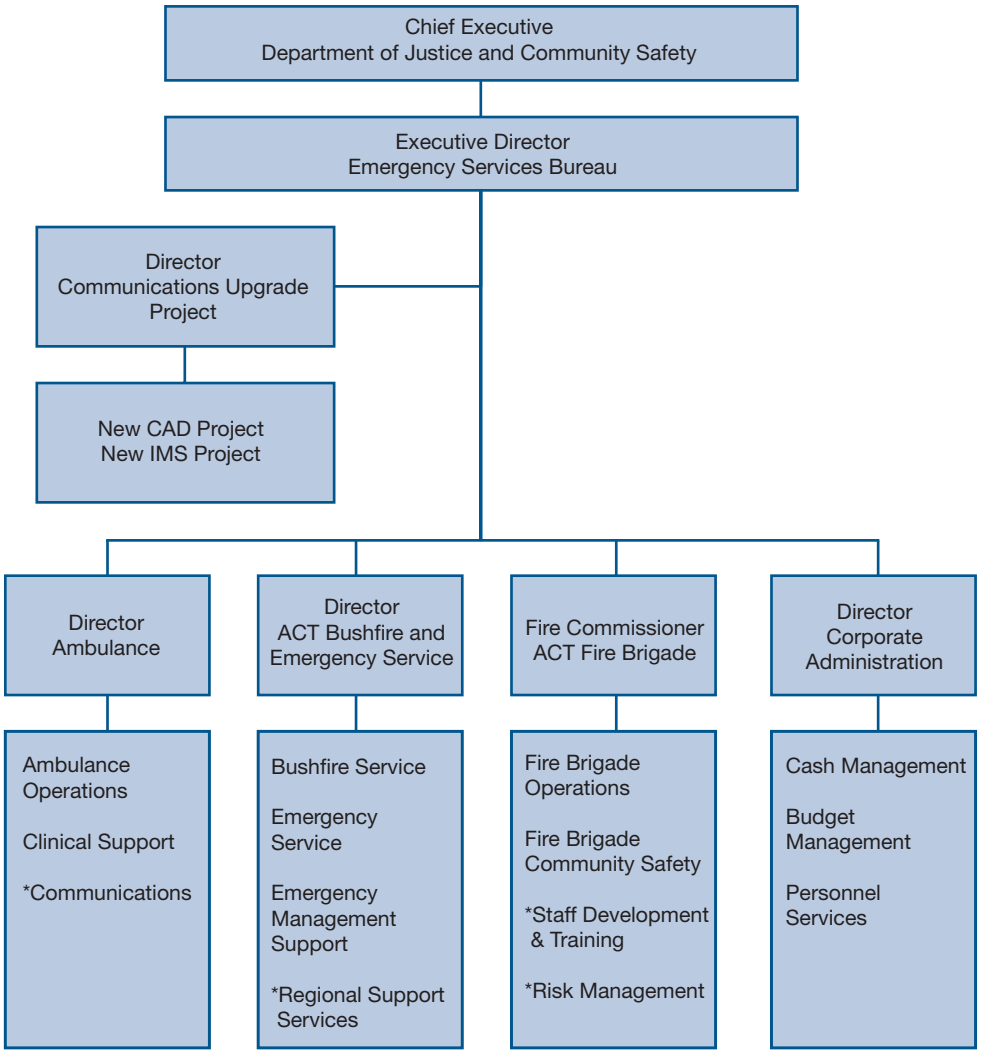
The emergency organisations

The Emergency Services Bureau is the ACT government agency responsible for emergency management and other support activities. The Bureau and its four operational services—the ACT Fire Brigade, the ACT Bushfire Service and Emergency Service, and the ACT Ambulance Service—exist to provide response to fire and other emergencies and to minimise the effects of fire, both within the urban area of Canberra and in the rural and bushland areas of the Territory. They also assist with road accidents, medical and other emergencies, and disasters of all kinds. These bodies together with ACT Policing, are the key agencies responsible for responding to emergencies and community crises in the ACT.

ESB is established within the Department of Justice and Community Safety and the current Minister for Police and Emergency Services is Mr Bill Wood MLA. The background and nature of the current institutional arrangements are described in more detail in Chapter 6. Suffice it to say here that responsibility for dealing with bushfires outside the urban boundary of Canberra rests with the ACT Bushfire Service, while fires within the urban area of Canberra are the primary responsibility of the ACT Fire Brigade. There is some crossover in the responsibilities of the two firefighting organisations, but in general the distinction holds true.

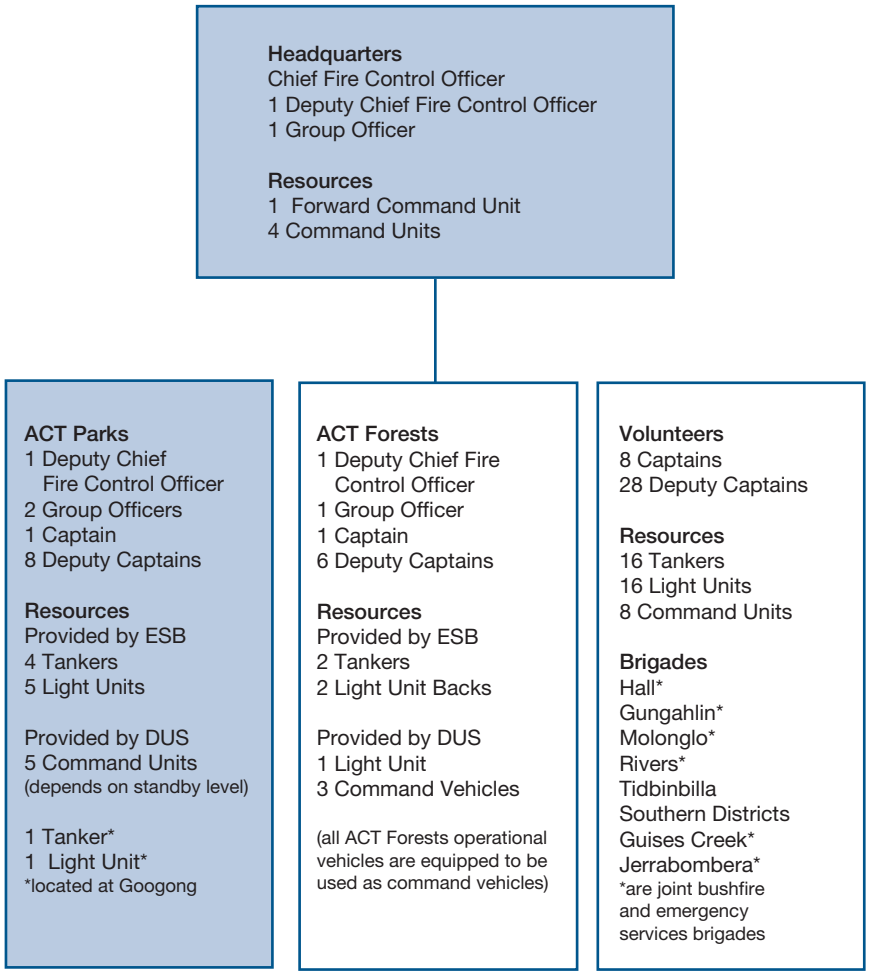
ESB provides administrative support to the four separate operational services and has an important role in planning and coordinating the provision of all types of emergency services throughout the ACT.

Figure 1
Emergency Services Bureau organisational structure



* Denotes Bureau portfolio function.

Figure 2
ACT Bushfire Service



The ACT Bushfire and Emergency Services are predominantly made up of volunteers who receive no payment for their services. There is, however, a small number of full-time, salaried personnel who perform headquarters functions. The forests and parks areas of the Department of Urban Services support their own fire brigades, consisting of departmental rangers, foresters[1], and so on, which form part of the total ACT complement of 10 bushfire brigades and one headquarters brigade, under the overall control of the bushfire service.

About 450 active bushfire volunteers and about 120 departmental staff in the forests and parks brigades make up the firefighting personnel who deal with the vast majority of bushfires in the Territory. As is explained later, in certain specified situations the urban fire brigade units complement these personnel.

The Emergency Services Bureau's submission to the Inquiry[2] outlines in more detail the history of the organisation and describes the resources available to it, the manner in which it responds to bushfires, and the scientific and technological support it draws on in undertaking risk assessments and determining strategies to counter bushfires.

The weather

The following extract from the Bureau of Meteorology's submission to the Inquiry provides a good overview of the weather conditions leading up to January 2003.

> The drought prevailing at the time of the recent fires was one of the most severe in the nation's recorded history. Large areas of the country were experiencing serious or severe rainfall deficiencies. Additionally, atmospheric humidity and cloudiness were below normal and daytime temperatures were at record levels. The combination of factors led to an early advanced curing[3] of fuels across most of Eastern Australia. Although many of these factors were also present during previous major bushfire events, the high temperatures in the lead up to the 2002/03 fire season appear to be unprecedented. The likelihood of conditions conducive to a bad fire season had been identified in Seasonal Outlooks provided to fire agencies and other users as early as mid-July 2002.[4]

The Bureau of Meteorology has two automatic weather stations in the ACT—at Canberra Airport and at Isabella Drive in Tuggeranong. There are no stations in the Brindabella Range, although observations are sent from Tidbinbilla daily and from Bendora and Corin Dams when non–Bureau of Meteorology staff are

available. In addition, a weather watch radar, recently installed, operates from Captains Flat. All ratings and measures provided in this report are a result of readings and advice provided by the Bureau of Meteorology.

The Canberra office of the Bureau of Meteorology provides the ACT Bushfire Service with fire weather forecasts twice daily throughout the fire season, which is usually from 1 November to 28 February. As part of those forecasts, a fire danger rating is provided, giving a broad indication of the likely difficulty of suppressing fires. For forests, the rating is scaled from low (less than 5) to extreme (50 or greater); the ACT Bushfire Service always declares a total fire ban when the scale is above 50 and at times does so when the rating is lower if the Chief Fire Control Officer deems this prudent for other reasons.

The Bureau of Meteorology also issues fire weather warnings to the public, as well as emergency authorities; these are intended to warn of probable extreme fire weather conditions. ESB is responsible for imposing total fire bans, although this information is often also provided in the Bureau of Meteorology's fire weather warnings. The Bureau of Meteorology also supplies special fire weather forecasts at the request of ESB, to assist in the safe and efficient use of firefighting resources.

The Bureau of Meteorology identified the three months from October to December 2002 as 'a very critical'[5] period leading up to the January 2003 fire event. Rainfall during the period was less than one-third—40.2 millimetres compared with a median of 150.4 millimetres—and was the third-lowest total on record. A 'very large positive anomaly'[6] was also identified for the average maximum temperatures, with November 2002 being 5 degrees above average. The Keetch–Byram Drought Index[7], measuring soil dryness, indicated a 'rate of increase far larger than would be typically expected'.[8] These factors clearly illustrated by December 2002 the severity of the summer, the extreme dryness of the soil and vegetation, and the consequent increased risk of extreme wildfire behaviour, regardless of daily weather conditions. The severe drought conditions experienced in south-eastern Australia were connected with the El Nino climate cycle: some referred to the drought as a one-in-100-year event.

A brief explanation of fire behaviour

> 'Australia was meant to burn, will burn and should burn. But it should not have intense destructive wildfires which bring tragedy.'
>
> — Joan Webster[9]

Although the term 'bushfire' is commonly used in Australia to describe any fire in the bush, or in rural areas generally, fire authorities also use the term 'wildfire' to describe fires totally out of control: the fire has gone wild. To the casual observer, major bushfires might appear fickle and volatile in nature but, as ESB submitted, 'There is some degree of predictability about possible bushfire behaviour'.[10] The predictability comes from an understanding of the relationship between fuel, oxygen and heat and the ability to measure these three elements and predict their response to the environment when fire has begun. This allows experts in fire behaviour to understand the reactions occurring and estimate the speed at which changes will occur.

The contribution of fuel is discussed further in Chapter 4, under 'Fuel management'. Put very simply, the greater the fuel load, the more intense the fire, the greater the heat (energy) generated and the greater the potential for more intense fires and subsequent extreme fire behaviour. Such fires generate unique microclimates, feeding on oxygen and expelling hot gases that rise in large events, potentially forming 'convection clouds'.[11] The wind's velocity and direction around fires of this kind can differ significantly from that of the prevailing winds and, therefore, what is recorded at the fixed weather stations.

Topography also affects fire behaviour. Fires burn much faster uphill as gases and flames preheat the fuel further up the slope. This preheating, together with the potential for flames to directly contact the fuel if the flame angle allows, leads to increased fire spread. Conversely, downhill slopes generally reduce the rate of fire spread. As a general rule, a 10-degree upslope doubles the rate of spread in the direction of the prevailing wind. Fires burning against the wind or downhill may be considered as if burning without wind or slope.[12] The ACT features a range of bushfire challenges resulting from its terrain, which includes undulating grassland and bush, the urban–rural interface, and mountain country. Steep terrain also poses access problems for vehicles and firefighters.

ACT fire history

South-eastern Australia has been a regular victim of bushfire. Throughout the preceding century fire events have regularly affected South Australia, Victoria, Tasmania and NSW.

Fires have affected Canberra, invariably on the western side, many times in the last 100 years, mostly during summer (January–February). Major fires occurred in 1903, 1926, 1927 and 1939, three times in 1952, and in 2001 and 2003. The 1927 fire occurred in spring, but all the others were in summer. Most of the fires were started by lightning strikes during dry seasons that followed a warm, dry winter and spring and most were accompanied by very strong winds. On this basis alone, it can be considered that the 2003 fires were not a one-in-100-year event. Details of some of the major and inner city fires that have occurred in the ACT follow.[13]

1939

The summer of 1938–39 was the driest since 1918. The Black Friday bushfires, in January, in southern NSW and the ACT resulted in the deaths of six people. Fires also devastated the Victorian town of Noojee, where 71 lives were lost. A thousand homes were destroyed.

In heatwave conditions a fire broke out across the border in the area behind Uriarra Station; it reached the ACT on 13 January, in three tongues around Mount Franklin, Mount Coree and Horseshoe Bend. By early 14 January winds gusting up to 70 kilometres an hour started numerous spot fires, and by afternoon fire had created a front of 72 kilometres along the Murrumbidgee River and had crossed it in several places. The Mount Franklin fire burnt right across the Territory, with serious outbreaks at Tidbinbilla, Cuppacumbalong, Booroomba and Lanyon. The fires were put out by a cool, moist change that moved across the region on 15 January. Although no lives were lost and stock losses were relatively small, there was considerable loss of property: 60 750 hectares of timbered and grazing land (including 1100 hectares of pine plantation) were destroyed.

Mount Stromlo, 1952

Fire followed a remarkably similar path to the 2003 fire on 25 January 1952. Started by a lightning strike in scrub near Walker's Hill, it moved quickly towards Mount Stromlo, fuelled by thick undergrowth and fallen pine needles and driven by strong westerly winds. The fire was brought under control in Kambah after

having destroyed several observatory buildings and equipment at Mount Stromlo, 310 hectares of mature pines, and burning 2385 hectares of grassland. Two people died. Until the 2003 fires this event was the last time houses in the vicinity of Canberra were destroyed by bushfire.

Subsequently, between 7 February and 4 March, over 6000 hectares were burnt in the Mountain Creek area, again as a consequence of lightning strikes.

Gudgenby, 1983

The 1982–83 fire season was among the worst in the ACT's history. There was a severe drought, and the winter of 1982 had been one of the driest recorded. Firefighters attended fires as early as August and the fire danger season was declared two months early, on 1 September. Forest fuels were extremely flammable and there was a higher than usual number of forest fires. On 9 January fires in the Gudgenby area burnt out 36 000 hectares of forest and grazing land.

Mount Majura, 1985

After a relatively wet spring and summer, which resulted in prolific growth of vegetation, particularly grass, the ACT experienced one of its driest summers on record. This meant that the fire season was unusual, with strong potential for both grass and forest fire.

There were several big fires during the season, but the most significant were those that occurred on 2–4 March: 6000 hectares were burnt at Mount Majura and 5500 at Tharwa. These fires started under extreme weather conditions and burnt out of control into NSW, causing several million dollars' worth of damage to property. A total of 28 000 hectares of pasture and bushland (10 000 hectares in the ACT) were burnt and 7000 head of stock were lost.

Black Mountain and Pierces Creek, 1991

A fire started on the north-eastern side of Black Mountain. The fire burnt in a north-easterly direction, eventually crossing Barry Drive and threatening residential property along Dryandra Street. Minor damage was caused to front yard properties and the Koomarri School. An area of 135 hectares was burnt.

A fire started in the Pierces Creek pine plantation in the early afternoon on 21 April. Under worsening weather conditions the fire burnt in an easterly direction, eventually reaching the crest of the Bullen Range. Spot fires ignited

grasslands east of the Murrumbidgee River. The total area burnt was about 870 hectares, which included about 457 hectares of pine plantation.

Curtin, 1994

A fire started at about 3.30 pm on 5 January on the eastern side of the Tuggeranong Parkway near the junction of the Cotter Road. It burnt in a south-easterly direction across the Illoura Community Horse Holding Paddocks to eventually reach Munro Street, Munro Place and Bavin Street, threatening residential properties and an ActewAGL substation. Gardens, backyard fences and sheds and pergolas were affected but no houses were destroyed. About 80 hectares were burnt in total.

In addition, a fire on Mount Taylor came close to jumping Sulwood Drive and threatened houses before it was contained.

December 2001

On Christmas Eve 2001 a series of fires threatened central Canberra. Fire outbreaks occurred at Huntly, Stromlo, Bruce Ridge, Red Hill, Oaks Estate and Wanniassa Hills. It is thought that an arsonist lit fires on Uriarra Road and Coppins Crossing Road during the early afternoon, and they burnt rapidly through areas of grassland. The Uriarra Road fire was halted just short of the Stromlo pine forest. The Coppins Crossing fire raced across grazing land down to the Molonglo River and very soon threatened parts of Duffy, Holder, Weston, Yarralumla and Curtin. ESB issued the Standard Emergency Warning Signal to the community for the first time and advised residents of the affected suburbs to take steps to ensure their own safety. The fire crossed the Tuggeranong Parkway and burnt to the shore of Lake Burley Griffin and the edge of Curtin. Millions of dollars' worth of plantation pines were destroyed and many hectares were burnt out.

On Christmas Day new fires flared, threatening major thoroughfares and suburbs and burning to the lawns of the Australian Mint. Large areas of Stromlo forest were lost: in the event, however, this proved a valuable firebreak for the January 2003 fires and arguably protected Black Mountain and central Canberra.

Notes

1 ACT Forests provides staff for one brigade. Environment ACT, City Scape, and Canberra Urban Parks and Places provide staff for the other departmental brigade. ACT Roads and Land Development Agency all contribute to the overall effort.

2 The ESB submission, and those of other ACT government agencies, is online at www.cmd.act.gov.au.

3 Curing is a non-meteorological measure of the volume of dead material in grassland. It is provided by fire authorities to the Bureau of Meteorology to assist in assessing fire danger indices.

4 Commonwealth Bureau of Meteorology submission, p. 4.

5 ibid., p. 15.

6 ibid., p. 16.

7 A numerical value reflecting the dryness of soils, deep forest litter, logs and living vegetation, and expressed as a scale from 0 to 200.

8 Commonwealth Bureau of Meteorology submission, p. 17.

9 Webster, J 2000, *The Complete Bushfire Safety Book*, 3rd edn, Random House, Sydney, p. 1.

10 ESB submission, p. 51.

11 A convection column is a rising column of smoke, ash, burning embers and other matter generated by a fire.

12 This is widely accepted but some would quibble in quantitative terms.

13 www.esb.act.gov.au/firebreak, as sourced from various ACT Bush Fire Council annual reports.

The cumulous cloud above the fire ground developed to a height of 14 000 metres before collapsing once the air cooled. Photo courtesy ESB.