

## FOREWORD

In 1993 the Senate Standing Committee on Industry, Science, Technology, Transport, Communications and Infrastructure investigated 'The capacity of public sector authorities to plan for, forecast and respond to major disasters, fully recognising and utilising the skills and capabilities of volunteer organisations'. The work of the Committee was substantially completed by the end of that year. However, as a result of the devastating bushfires in New South Wales and Queensland in January 1994, the Committee was reconvened.

# **A REVIEW OF ALL STATE AND FEDERAL REPORTS ON MAJOR CONFLAGRATIONS IN AUSTRALIA DURING THE PERIOD 1939-1994**

by **Stephen Petris**

AND

# **A NATIONAL BUSHFIRE PREPAREDNESS STRATEGY**

by **Stephen Petris and Paul Potter**

(with "situation" comments by **Laurie Lavelle and John Nicholson**)

AUSTRALIAN FIRE AUTHORITIES COUNCIL  
EMERGENCY MANAGEMENT AUSTRALIA

OCTOBER 1995

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'Disaster Management', the Senate Committee report, was issued in June 1994. It contains a chapter devoted to Bushfire Management with the following major recommendation:

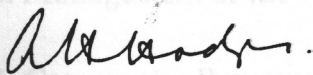
'The Committee ... recommends that EMA conduct a review of all state and federal reports on major conflagrations over the last 50 years to identify the key elements of prevention and suppression and develop a national bushfire strategy with emphasis on improving national coordination and cooperation.'

The Australian Fire Authorities Council readily accepted this task with the major work being undertaken by the Country Fire Authority Victoria. I believe that the resulting National Bushfire Preparedness Strategy is a very valuable contribution to our understanding of past fire disasters; but perhaps more importantly it identifies actions which can be taken to minimise dangers to life and property by proposing a strategy embracing three main areas:

Fire Control Capability  
Management of the Natural and Built Environment  
Community Preparedness

The challenge facing State and Territory Emergency Management Committees and fire agencies is to examine current approaches and determine whether the balance of effort between these three areas is appropriate, and whether there is a need for improvement in any area. I see the Australian Fire Authority Council having an important role in identifying best practice and disseminating information to agencies.

I greatly appreciate the willingness of the Australian Fire Authorities Council and the Country Fire Authority, Victoria to develop the strategy. In particular, I pay tribute to Stephen Petris and Paul Potter who undertook the detailed research and subsequent development of the paper under the guidance of John Nicholson, Director Risk Management, Country Fire Authority.



A. H. Hodges, AM  
Director General  
Emergency Management Australia

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## RATIONALE

In June 1994, the Senate Standing Committee on Industry, Science, Technology, Communications and Infrastructure released a report entitled *Disaster Management*, which examined the public sector authorities' capacity to plan for, forecast and respond to major disasters and large-scale emergencies.

One of the recommendations of that report was that Emergency Management Australia:

"... conduct a review of all state and federal reports on major conflagrations over the last 50 years to identify key elements of prevention and suppression, and develop a national bushfire preparedness strategy, with emphasis on improving national coordination and cooperation."

This paper has been prepared in response to a request from the Australian Fire Authorities Council to fulfil this recommendation.

This paper is divided into two parts to reflect the two parts of the Senate Standing Committee recommendation. Part I identifies key elements of prevention and suppression based on a review of all state and federal reports on major conflagrations during the period 1939 to 1994. This part also discusses the implications of these key elements for the role of fire management agencies.

To conduct this review effectively, it became necessary to supplement these state and federal reports on major conflagrations with a larger body of the contemporary literature examining aspects of major bushfire disasters.

This was because:

- a number of bushfire disasters have escaped the attention of government report writers;
- the theory to explain the social and technical response of fire management agencies is, in the main, not addressed in these reports; and
- explanations and interpretations have generally followed long after the major fire reports have described the particular bushfire disaster.

Part II of this paper contains a national bushfire preparedness strategy prepared in response to the review of major conflagrations.

# **PART I: A REVIEW OF ALL STATE AND FEDERAL REPORTS ON MAJOR CONFLAGRATIONS IN AUSTRALIA DURING THE PERIOD 1939 TO 1994 TO IDENTIFY KEY ELEMENTS OF FIRE PREVENTION AND SUPPRESSION**

## **EXECUTIVE SUMMARY of PART I**

### ***Traditional Agency Response to the Bushfire Hazard***

#### ***Bushfire as a Natural Hazard***

- The traditional view of natural hazards is that they are defined by extremes in the natural environment.
- Natural hazard research and mitigation are focussed on the extent to which variations in the natural environment influence the hazard.
- Strategies for reducing the bushfire hazard focus on the management of extremes in the natural environment.
- These strategies include fire suppression; fire prevention works designed to support suppression efforts, such as the construction of firebreaks and fire access roads, and the provision of water points; and broad-scale fuel reduction burning.

#### ***Assessment of the Traditional Approach***

- For the vast majority of fires, suppression is remarkably effective.
- Limitations of traditional fire prevention and suppression strategies only become apparent in the event of a major conflagration. During major conflagrations, fires can burn at such intensities that their forward spread cannot be controlled by suppression forces or firebreaks.
- This is significant as major bushfires are responsible for the vast majority of bushfire losses.
- However, fire suppression and prevention strategies may still be very effective at averting a major conflagration. For example, an extremely effective suppression strategy when weather and fuel conditions are conducive to a major conflagration, is to extinguish outbreaks of fire quickly, before they become too intense to control.
- Broad scale fuel reduction burning of forest fine fuels has proved to be an important factor in reducing fire size and improving the ease of control by suppression forces.
- In some instances, fuel loads have been found to accumulate rapidly after fuel reduction burning. An improved understanding of fuel accumulation rates in different forest types is essential to better assess the effectiveness of fuel reduction burning.

- The effectiveness of fuel reduction burning cannot be assessed simply on its ability to reduce litter weights. The reduction of bark and mid-storey fuels is an equally important objective of fuel reduction burning.
- The practice of fuel reduction burning is supported by the more widespread appreciation that fire is an integral part of the Australian environment.
- As biodiversity is intricately linked to fire regimes, fire ecologists advocate the implementation of a range of diverse fire regimes, including fire exclusion, to best maintain biodiversity.
- The study of the relationship between fire regimes and biodiversity for different flora and fauna communities is becoming an increasingly important field of research.

### ***Community Response to the Bushfire Hazard***

#### ***The Vulnerability of Communities to Major Bushfires***

- An alternative conception of hazard is that a physical event, such as a high-intensity bushfire, does not itself constitute a hazard.
- Rather, the magnitude of a bushfire disaster is largely a function of the extent to which the actions and behaviour of people make them particularly **vulnerable** in the event of a fire.
- Three studies, each based on the 1983 Ash Wednesday Bushfires in Victoria, have enabled us to identify the factors that influence the vulnerability of people and homes in major bushfires.

#### ***The Ability of Communities to Reduce Their Vulnerability***

- The understanding of factors that influence vulnerability confirms that there are many ways in which communities can significantly reduce losses in major conflagrations.
- By encouraging community participation in reducing vulnerability, fire management agencies may be able to resolve some of more complex disaster mitigation problems that have become apparent with the development of the urban-bush interface.
- An effective way of facilitating community participation is for fire management agencies to support community groups that have taken responsibility for the development of bushfire safety strategies.

#### ***Role of Agencies in Facilitating Community Participation***

- Participative processes have been employed extremely successfully in recent years in catchment and land management, particularly through the Landcare program. The quality of agency support to communities has been found to be an important factor in the success of these participative programs.

- For participative programs to be successful in reducing the bushfire threat, fire management agencies will need to create opportunities for community groups to take responsibility for their own fire safety, rather than advocating solutions that, in effect, absolve community groups from taking responsibility for their own fire safety.
- Fire management agencies will also have to acquire skills in the development and application of participative processes.

The losses sustained during the New South Wales Bushfires were relatively modest<sup>3</sup> in comparison to other major conflagrations in Australia's recent history.<sup>4</sup> However, they provided a vivid demonstration of what the Senate Standing Committee on Industry, Science, Technology, Transport, Communications and Infrastructure recognised in its report *Disaster Management* as the 'new problem area' for fire management agencies<sup>5</sup> - the emergence over the last twenty years of a new rural community at the urban-bush interface.<sup>6</sup>

The southern Sydney suburbs of Como and Jannali are examples of an urban-bush interface community where the conventional suburb abuts forest or grassland. Half of all homes lost during the New South Wales Bushfires were located in these two suburbs.<sup>7</sup> Most of the houses were perched on a ridge overlooking a forested gully from where the fire struck. In the satellite suburb of Melton, to the west of Melbourne, 14 houses were destroyed in 1985, when a grassfire burnt

<sup>1</sup> Department of Bushfire Services, 1994, 9

<sup>2</sup> Campbell, F., 1994, 17

<sup>3</sup> Department of Bushfire Services, 1994, reports that four lives and 205 properties were lost.

<sup>4</sup> The 1983 Ash Wednesday Bushfires in Victoria and South Australia claimed 75 lives and over 2500 buildings.

<sup>5</sup> In this paper, the term "fire management agencies" refers to all agencies that have fire prevention and suppression responsibilities, including both rural fire-fighting organizations and public land managers.

<sup>6</sup> Senate Standing Committee on Industry, Science, Technology, Transport, Communications & Infrastructure, 1994, 84

<sup>7</sup> Also described as the urban-rural interface, the urban-forest interface, the urban interface, the urban-rural fringe and, in the United States, the wildland-urban interface. Without deciding which term is most appropriate, this paper adopts the term used in the Disaster Management report: the urban-bush interface.

<sup>8</sup> Department of Bushfire Services, 1994, 9