Nature Conservation Council of NSW and Australian Conservation Foundation

Submission to the Commonwealth House Select Committee on the Recent Australian Bushfires

Contents

Executive Summary

Between July 1995 and July 2003, 2301 fires occurred in NSW National Parks. Of these 2301 fires, 11% spread from national parks to private property, whereas 22% of these fires started on private land and spread to national parks. In other words, twice the number of fires that left National Parks for private property entered National Parks from private property.

89% of fires in National Parks were contained within Park boundaries.

The notion that National Parks are badly managed in relation to fire relative to neighbouring private lands is simply not accurate. However, Environment Groups recognise that improvements in fire management need to be made on both public and private land.

Engaging and involving Australia's communities in mitigating bushfire risk is critical to the successful and sustainable management of bush fire risk. Environment Groups believe that both private home owners in urban/ semi-urban areas and rural land holders need to be equipped to take responsibility, to a large degree, for their own protection. This requires public understanding and appreciation of the fire risk they face, and a willingness to work together with neighbours and authorities to prepare themselves for fire attack.

As part of this process, the public needs to come to terms with the reality of periodic fire as well as appreciate the value of various risk management strategies. Moreover, the public needs to work with land and fire management agencies, in a coordinated way, to achieve a higher level of community and property owner fire preparedness.

Meanwhile, land management agencies need to review their fire management operations and develop more effective and efficient risk management planning systems, taking into account the concepts of inter tenure coordination and stakeholder participation.

Micro planning and stakeholder coordination

Community/public involvement in the bushfire risk management planning process is essential to community appreciation of bushfire risk management strategies, and to cultivating an appreciation amongst the public of their role in bushfire risk management. Management of hazards on private property should be an integral component of any bushfire risk management strategy.

States and territories should move away from token public consultation on risk management plans and towards genuine community participation in the planning and mitigation processes. This is being achieved in some parts of NSW through the cooperative development and implementation of property, reserve, village

and town level management plans, each of which is a sub set of a larger district or zone plan. These 'micro' level plans provide for a high level of detail as well as land-owner/manager interaction (public-private) and stakeholder participation at the local level.

Fire Services and land managers need to develop these mechanisms for collecting and utilising knowledge and information from locally acting stakeholders including farmers, volunteer fire fighters, conservationists and the Aboriginal community. The incorporation of these knowledge resources would have the dual effect of developing a comprehensive understanding of fire and its interaction with the environment in particular localities, as well as broadening the scope of risk management and stakeholder involvement. This would have beneficial outcomes for risk management on both private and public land.

In addition to this, fire managers need to work with and support the efforts of landholders to mitigate fire risk on their properties while conserving natural resources and agricultural productivity. The development of a framework for property level risk management planning would be an important contribution to these processes.

We consider that a major challenge in bushfire management is the ability for formal planning processes to accommodate and facilitate local initiatives and capacity. These range from highly informal group partnerships to detailed and formal planning including a data collection phase and the production of documents and maps. They usually comprise of a combination of coordinated risk management strategies across both public and private land (more often than not multiple tenures) and contribute significantly to the protection of specific assets (natural, built and commercial).

Building controls

Environment Groups consider that the implementation of significantly strengthened building and development controls in fire prone areas is critical for the long-term protection of life, as well as public and private assets, including the environment.

The likelihood of damage to property from bush fire is directly related to the proximity of the asset to the fire hazard, design and composite materials, as well as the ongoing management of hazards in and around the property. However, overall, the existing codes regulations and standards have failed to prevent inappropriate development in fire prone areas.

1.0 Introduction

The recent bushfires on the eastern coast of Australia coincided with extreme weather conditions. Drought, combined with extremely high average temperatures and strong winds combined to provide the conditions necessary for large and intense fire events.

The extremely dry weather is partially explained by the El Nino effect[1]. However, although rainfall levels have been similar to past droughts, average temperatures in many places have been unusually high[2]. These warmer conditions are consistent with predicted greenhouse gas induced climatic change.[3]

Nevertheless, the Australian continent has been subject to periodic fire events for a long time. Studies show that fire regimes have changed with corresponding variations in climate and vegetation on large time scales (millions of years)[4].

Humans have also had an important influence on fire regimes and vegetation over the past 60 –100 000 years. While anthropogenic burning is thought to have had an increasing influence on vegetation assemblages over the past one hundred thousand years (100 000) charcoal analysis from samples in several parts of the country show marked increases in fire frequency since European settlement[5]. This is despite the popular view[6] that frequent burning decreased with European colonisation and that this lead to certain changes in vegetation (eg increases in density).

Many people have speculated on the nature of pre-European fire regimes in the hope of gaining insights that could inform contemporary fire management. However, consensus on pre-European fire regimes is lacking[7], and the relevance of pre-European fire management for the present is questionable due to different management objectives and an altered landscape.

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[1] Bureau of Meteorology http://www.bom.gov.au/climate/current/soi2.shtml

[2] Bureau of Meteorology http://www.bom.gov.au/announcements/media_releases/nsw/20020201.shtml

[3] Williams A. J, Karoly, D. J & Tapper, N. 2001, The sensitivity of Australian fire danger to climate change. *Climatic Change* 49: pp 171-191: *This report by leading meteorologists has shown that human-induced global warming was a key factor in the severity of the 2002 drought. The report compares the 2002 drought with the four other major droughts since 1950 and has found higher temperatures caused a marked increase in evaporation rates from soil, watercourses and vegetation. The report warns that higher temperatures and drier conditions have created greater bushfire danger than previous droughts. (Drought severity also has increased in the Murray Darling Basin, which produces 40% of Australia's agricultural product).*

[4] Kershaw, A. P, Clark, J. S. Gill, A. M & D'Costa, D. 2002, A history of fire in Australia, *Flammable Australia, Fire regimes and biodiversity of a continent.* pp3-25

[5] Ibid

[6] eg Ryan, D.G., Ryan, J.E. & Starr, B.J. 1995. *The Australian landscape - observations of explorers and early settlers* (Murumbidgee, Catchment Management Committee: Wagga Wagga NSW).

[7] Bowman, D. M. J. S. 1998. The impact of Aboriginal landscape burning on the Australian biota. Fire Ecology and Australian Aborigines. *Phytol* 140, pp 385 - 410

Undoubtedly, contemporary Aboriginal people's cultural values and knowledge about fire have an important role to play in modern management, but this contribution should be developed through partnerships with Indigenous people today, and not based on an imagined past. Past fire regimes, including those prior to European colonisation, may also be relevant to current management where these can be ascertained.

The Australian landscape, fire regimes and human interaction with the environment have all changed significantly over the last 215 years. The introduction of European agriculture and the establishment of urban infrastructure are two major components of the European form of development imported by the British, and pursued by our subsequent federated Australian State. These processes of development have come to determine the way we manage bushfire and other components of the landscape.

Each time a commercial or built asset is established in a fire prone area, a liability is created that will require active management for the lifespan of the asset. As a result, over time, more finances and resources have been required for bushfire prevention, mitigation and suppression. Indeed, requirements to protect commercial, built and natural assets from wild fire have combined to motivate the development of an integrated set of management strategies, responsibilities and actions and the establishment of large and expensive public service agencies, for example the NSW Rural Fire Service. Conservation and Forestry agencies also possess a significant fire management capacity.

While we are always likely to need institutions to mitigate the risk of bushfire, it is important to remember that fire has also been a useful tool that humans have used for millennia.

Humans have found a range of uses for fire. In contemporary Australia primary producers use fire for mobilising nutrients contained in vegetation for short term improvements in productivity (e.g. stubble burning and green pick pasture) and for clearing. Fire fighting agencies use fire for fuel reduction (hazard reduction) and suppression (back burning) and the National Parks services for conservation outcomes (ecological burning). Indigenous peoples continue to use fire throughout Australia for a range of purposes including cultural, economic, environmental and spiritual.

Therefore, fire can be understood to be both a natural landscape scale disturbance as well as a land management tool used for a diverse range of economic and cultural purposes.

Fire requires heat, oxygen and fuel to propagate however bushfires are caused by natural and anthropogenic ignitions. Lightning strikes still account for a large number of fires in certain places under certain conditions, but destructive fires are also attributed to legal and illegal human burning.

1.1 Fire regimes in the Australian landscape

Although weather conditions may have been the most influential factor in the recent fire events, other factors including the density, structure and composition of vegetation will also affect fire behaviour[8].

Fire regimes and behaviour vary greatly across the Australian landscape. For example grass fires burn out much of the savannah country of Queensland and the Northern Territory on an annual basis and massive fires with incredible force tear through the temperate dry forest of the eastern seaboard periodically. However, rainforests and many other ecosystems with high moisture content across the country do not usually burn[9].

Some ecosystems demonstrate a high level of adaptation to fire, and some components of these fire-adapted systems can benefit from fire at certain stages in their reproductive cycles. However, wild fire and anthropogenic burning can represent a significant threat to species viability and survival in natural systems if they occur at a frequency or intensity that is inappropriate for that system. For this reason the NSW Scientific Advisory Committee has listed 'frequent fire' as a key threatening process under the Threatened Species Act 1995[10]

Fire regimes influence the distribution of our plants and animals. However, the structure and composition of vegetation communities also influence fire regimes and fire behaviour. Therefore fire and biology interact at more than one level to effect changes in both fire patterns and ecosystem composition.

The cause and effect relationships between fire and ecology have only recently become the subject of any detailed study and the results of these inquiries have yielded highly complex and variable results[11]. Despite the complexity, these research findings provide a better basis for managing our ecosystems than would guesswork based on casual observation.

In practice both observational and technical knowledge is required for effective land management. Indigenous and rural farming knowledge systems also have a strong contribution to make. However, while local knowledge is vital for both risk management and emergency scenarios, it is just as important that this be considered within a scientific model, and harnessed through a rigorous adaptive management framework of monitoring and data collection. Technological requirements include the range of hardware as well as electronic mapping and data capture systems.

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[8] Whelan, R. J. 1994. *The Ecology of Fire*. pp 29 - 34
[9] Hitchcock, P. P. 1991. The rainforests of North East New South Wales, their conservation status as a context for rainforest rehabilitation programs. Phillips, S. (ed). *Rainforest Remnants*. NSW National Parks and Wildlife Service. pp 1 - 12
[10] *Threatened Species Conservation Act 1995*
http://www.austlii.edu.au/au/legis/nsw/consol_act/tsca1995323/
[11] Whelan, R. J. 1994. *The Ecology of Fire*. pp 29 - 34

1.2 Fire management in Australia

Public service efforts to control wild fire are motivated by the requirement to protect people, property and the environment, however the emphasis of management varies across land tenures. Fire is, and should be, managed differently in a National Park and in a State Forest, and in urban and rural areas. Generally fire is managed according to the land management objectives of the particular region or tenure, however obligations under legislation can require land owners to implement hazard reduction measures to protect neighbours, and problems exist in comparing the value of anthropogenic and environmental assets across all tenures.

However, fires that start in one place, under certain conditions, have a tendency to spread quickly and to move across the landscape in a relatively unpredictable fashion. Therefore, fire management requires a complex interplay of strategies and responsibilities, involving a broad range of stakeholders and groups, and across various tenures.

Environment Groups are of the view that coordination of these fire management strategies is a prerequisite for effective land management and fire protection. Large and small neighbours need to work together to achieve mutually acceptable management practices.

This submission will address the major Terms of Reference provided by the House Select Committee Secretariat. Following this, a series of recommendations for the Commonwealth Government in relation to bushfire management are provided. As the NCC is a New South Wales based organization, this submission is biased towards experiences in NSW and immediate cross border areas (Qld, Vic, ACT, SA). However, many of the findings and recommendations will have relevance for other parts of the Australian continent.

2.0 Terms of reference

2.1 The extent and impact of the recent bushfires in NSW (2001/2002, 2002/2003)

The past two fire seasons in NSW (2001/2002 & 2002/2003) have been two of the worst on public record.

NSW has suffered millions of dollars of damage to both private and public property. Infrastructure including houses, buildings, energy and transport systems, as well as commercial assets such as plantations, crops, and stock were destroyed or damaged by fires in either 2001/2002 or 2002/2003.

Communities had their holiday season affected as evacuations, road closures and emergency operations disrupted recreational plans. Power and water were offline in many districts as a result of fire related damage for several days.

The natural assets of NSW were affected as large areas of forest, heath land and grassland were burnt to varying degrees. However, it is difficult to assess the extent of environmental or ecological damage from such large and variable events. The effects were widespread, but variable and dependent on other locally operating factors. Although natural and environmental assets were in some cases damaged, and many plants and animals no doubt died, the net effect is difficult to assess.

It is also highly likely that the ability of plants and animals to recover form the fires has been compromised by the additional stress of drought conditions.

Environment Groups are of the view that the ecological and environmental effects of any one fire should be considered in the context of past fire events. Size and intensity are secondary to frequency of fire as a critical factor in determining biological impacts[12, 13].

2.2 Causes of, and risk factors associated with the impact and severity of the recent bushfires

ACF and NCC are aware of the following causes (ignition source) of recent major bushfires:

- Lightning strikes,
- Arson
- Hazard reduction burning
- Agricultural burning
- Other (including discarded cigarette butts, unattended campfires, energy and water infrastructure, etc)

However, another human factor involved in the severity of the recent fires is the operational practice of back burning. Environment Groups are aware of several cases were planned back burns escaped and increased fire size and impacts.

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[12] *Threatened Species Conservation Act 1995*
http://www.austlii.edu.au/au/legis/nsw/consol_act/tsca1995323/
[13] Gill, A.M & Bradstock, R. 1995. Extinction of biota by fire. *Conserving Biodiversity: Threats and Solutions*. Surrey Beatty & Sons Pty, ltd, pp 309-323.

The risk factors associated with the impact and severity of the recent bushfires include:

- Weather and any associated greenhouse gas induced climate change[14]
- Lack of preparedness (private and public)
- Lack of stakeholder and agency communication
- Lack of agency coordination, both between and within states
- Imported Incident Managers, and inefficient use of local knowledge
- Inappropriate development and poor urban planning
- Hazard reduction

a. Weather and any associated greenhouse gas induced climate change[15]

13. Williams A. J, Karoly, D. J & Tapper, N. 2001, The sensitivity of Australian fire danger to climate change. Climatic Change 49: pp 171-191:
This report by leading meteorologists has shown that human-induced global warming was a key factor in the severity of the 2002 drought. The report compares the 2002 drought with the four other major droughts since 1950 and has found higher temperatures caused a marked increase in evaporation rates from soil, watercourses and vegetation. The report warns that higher temperatures and drier conditions have created greater bushfire danger than previous droughts. (Drought severity also has increased in the Murray Darling Basin, which produces 40% of Australia's agricultural product).

b. Lack of preparedness

Lack of landowner (also homeowner) preparedness has been identified by repeated inquiries (eg NSW Joint Select Committee on the 2001/2002 Bushfires[16]) as a major cause of fire damage, however few strategies for addressing the problem have been developed.

Both private and public land managers have been under-prepared for the recent fire events.

It seems to be the case that on both public and private property, fuel reduction and other mitigation activities seem to occur most intensively shortly after large fire events and then decrease in proportion over time. Interest among property and homeowners for fire protection and preparedness also tends to diminish with time following the last fire.

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[14] Williams A. J, Karoly, D. J & Tapper, N. 2001, The sensitivity of Australian fire danger to climate change. *Climatic Change* 49: pp 171-191
[15] Ibid
[16] Report on the Inquiry into the 2001/02 Bushfires, Together with the Minutes of the Proceedings, June 2002, Joint Select Committee on Bushfires, NSW State Library

This may lead to a situation where human and other resources are mobilised to perform mitigation projects at a time when threat from fire is at its lowest (knee jerk reaction). This is disastrous not only in terms of inefficient use of resources, but also in that it leads to a chronic and potentially life threatening vulnerability prior to large and destructive fires.

Vigilance by homeowners is likely to be a function of the perceived threat (or lack of threat) from bushfires, the effectiveness of public service fire management as well as an appreciation for the role of the various stakeholders in implementing coordinated risk management strategies. Therefore, we are of the view that community education and awareness campaigns, as well as stakeholder engagement in the planning process, are especially important for mitigating the risk of bushfire damage.

c. Stakeholder engagement in the risk management planning process

Community participation in fire management is vital to achieving better fire preparedness. While government agencies are usually well represented on bushfire management planning bodies, generally the public only has marginal participation.

Community/public involvement in the planning process is essential to community appreciation of bushfire risk management strategies, and to cultivating an appreciation amongst the public of their role in bushfire risk management. Management of hazards on private property should be an integral component of any bushfire risk management strategy.

States and territories should move away from token public consultation on risk management plans and towards genuine community participation in the planning and mitigation processes. This could be achieved through the cooperative development and implementation of property, reserve, village and town level management plans, each of which is a sub set of a larger district or zone plan.

Fire Services and land managers need to develop these and other mechanisms for collecting and utilising knowledge and information from locally acting stakeholders including farmers, volunteer fire fighters, conservationists and the Aboriginal community. The incorporation of these knowledge resources would have the dual effect of developing a comprehensive understanding of fire and its interaction with the environment in particular localities, as well as broadening the scope of risk management and creating a sense of involvement on the part of stakeholders. This would have beneficial outcomes for risk management on both private and public land.

In addition to this, fire managers need to work with and support the efforts of land-holders to mitigate fire risk n their properties while conserving natural resources and agricultural productivity. This is necessary for

effective risk management on private property, as well as coordinated public-private bushfire management (cross tenure).

The development of a framework for property level risk management planning would be an important contribution to these processes. This could be developed in a participatory way by stakeholders, but should include a process for identifying assets, assessing fire hazard, and identifying and describing a full range of mitigation and preparedness strategies for implementation. This data could be shared with the local fire service and/or brigade, and applied at the property level, potentially also informing the development and implementation of Bushfire Risk Management Plans and Bushfire Operational Plans.

An example of a property level risk management planning framework has been developed by the South East Queensland Fire and Biodiversity Consortium (SEQ FABC)[17]. This is included in the appendix for the Committees consideration. It is presented as an example only.

Some Landcare Groups, often in coalition with local, state and federal government agencies and the fire services, have developed reserve level plans for public lands[18]. Village level planning in the Northern rivers is also a promising development, as are the numerous highly localised projects between communities and local volunteer brigade members and professional fire service personnel[19]. Varying degrees and styles of planning and participation are involved in these activities and these organisational techniques are usually adapted to the particular local conditions.

These localised, 'micro' plans provide for a high level of detail as well as land-owner/manager interaction (public-private) and stakeholder participation at the local level.

Therefore we consider that a major challenge in bushfire management is the ability for formal planning processes to accommodate and facilitate local initiatives and capacity. These range from highly informal group partnerships to detailed and formal planning including a data collection phase and the production of documents and maps. Their value is that they develop a combination of coordinated risk management strategies across both public and private land (more often than not multiple tenures).

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[17] South East Queensland Fire and Biodiversity Consortium. *Individual Property Fire Management Planning Kit.* 2001 (attached)

[18] Bomaderry Creek Bushfire Management Plan, produced by Bomaderry Creek Landcare, with the assistance of the Australian Conservation Foundation, Rural Fire Service and Shoalhaven City Council.

[19] The NCC recently visited the Upper North Coast and coordinated field days and workshops. The Clarence Valley and Richmond Valley Bushfire Management Committees, in cooperation with land management and fire service personnel, local brigades, district control centres, environment groups and communities are developing and implementing a full range of strategies for bushfire and environmental management.

*d. Lack of coordination; between agencies and the community, between
agencies, and between districts and states*

Organisations and agencies often do not work well together. This can occur as a
result of rivalries at district, state, and national levels, or as a result of competition
for funding, operational control or management of land (territory). These types of
antagonism can manifest in lack of cooperation through to obstruction or even
confrontation. Hostilities can occur during the risk management phase however,
they are most obvious during emergency fire fighting operations. In some cases
the results are disastrous.

Although cooperation between agencies in NSW has improved dramatically over
the last couple of years, attention still needs to be given to petty rivalries at the
district and zone level, and mostly between land management agencies and
volunteer fire brigades.

The lack of cooperation and coordination that occurs at district, state and federal
levels represents a major problem for effective bushfire management, and should
be of particular concern to the Commonwealth Government.

e. Imported Incident Managers, and inefficient use of local knowledge

Another factor which tends to aggravate the above problems, and create many of
its own, involves the use of non-local personnel in fire fighting, especially at a
decision making level. Imported personnel usually do not have the same
familiarity with local terrain, fire behaviour and other parameters relevant to fire
fighting and management as local fire fighters. Locals are often valuable sources
of knowledge and information however, however, this is frequently overlooked.

The same situation arises during the risk management phase in most bushfire
districts with land-holders and volunteers mainly remaining unengaged. Although
Bushfire Risk Management Plans in NSW go on pubic exhibition prior to
publication, farming and volunteer fire fighting groups need to be involved at an
early stage in the development of these plans.

*f. Bad urban, rural and residential planning and lack of building and development
controls in fire prone areas*

Environment Groups consider that the implementation of significantly
strengthened building and development controls in fire prone areas is critical for
the long-term protection of life, as well as public and private assets, including the
environment.

The likelihood of damage to property from bush fire is directly related to the
proximity of the asset to the fire hazard, design and composite materials, as well
as the ongoing management of hazards in and around the property. The NCC is

confident that an investigation of the location, design, materials and maintenance of properties damaged or destroyed by fires would support this statement.

Overall, the existing codes, regulations and standards have failed to prevent inappropriate development in fire prone areas. In many cases this is simply due to lack of enforcement.

The NSW Government has addressed this failure in the past two years through amendments to the *Rural Fires Act 1997*. These changes have required Local Government to consult and/or seek concurrence from the RFS in relation to development approval in fire prone areas.

Environment Groups consider that neither past nor current administrations of the regulatory frameworks in NSW are satisfactory solutions to the problem at hand. Structures and other assets continue to be established in highly dangerous locations, without consideration for the long term maintenance and protective measures that will be required for the life span of that asset. This includes volunteer fire fighting efforts during emergency scenarios.

Currently numerous dwellings, buildings, and other installations are located in highly vulnerable positions without adequate design, material or other fire protection provisions.

Where there is likely to be a threat to property from bushfire the most conservative approval criteria should be required.

Environment Groups recommend that serious consideration be given to the planning and approval process for developments in fire prone areas, and that the option of banning infrastructure development in extreme fire prone areas completely be investigated.

A range of largely unexplored policy options to address these issues include:

- Stringent building controls in fire prone areas
- Institutional support for appropriate insurance industry reform,
- Buy back schemes and technical assistance to relevant property owners,
- Incentives for retrospectively fitting fire protection measures,
- Innovative urban and peri-urban planning and landscaping,

g. Hazard reduction

Managing fuel in close proximity to the asset, in addition to fuel on the bushland side of the interface, is necessary for effective risk management. In addition to fuel reduction at the interface, strategies to increase the ability of a house,

structure, product or other economic asset to withstand a fire event are necessary.

Bushfire management therefore involves a complex interplay of responsibilities, actions and processes. The NCC and ACF are of the view that bushfire management is most effective when considered within a broad framework of *integrated* mitigation and preparedness strategies. These include hazard reduction strategies.

However, hazard reduction is usually only effective when it is planned and implemented carefully. Safety aspects as well as weather and human resource considerations have motivated a gradual shift to mechanical methods of fuel reduction, especially in bushland-urban interface areas. These include mowing, slashing, clearing and trittering.

Nevertheless if dead or half burnt plant material remains on site (in the case of burning or mechanical activities), fire hazard may not be decreased, even in the short term. For example, cool autumn, winter and spring burning may result in the consumption of ground fuels but often leaves the understorey and crown vegetation scorched and available as fire fuel. Fuels also accumulate to pre treatment levels within a short period of time (months to years), depending on treatment, vegetation type, and environmental conditions[20].

Fuel reduction burning or clearing can in crease fire hazard over the long term if it causes the loss of rainforest (mesic) elements and leads to the establishment of more fire prone vegetation types. It should also be noted that in the past two fire seasons hazard reduction has been found to be of only limited benefit during extreme fire conditions.

Therefore, hazard reduction is of variable efficacy, of limited benefit during extreme conditions and without additional strategies, and can aggravate fire hazard if not properly executed. Hazard reduction therefore needs to be carried out in targeted strategic areas (and in the immediate vicinity of assets), utilised within a broader risk management framework, optimising its effectiveness through integration with other strategies, as well as being carefully planned, implemented and monitored for outcomes.

Environment Groups are of the opinion that hazard reduction should take into consideration the short, medium and long-term impacts of various physical fuel reduction works on fuel loads and fire hazard, as well as biodiversity and wildlife habitat, soil health and land stability, including erosion, water quality and other environmental and cultural assets. Monitoring of works is especially important to assess fuel reduction outcomes.

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[20] McArthur, A.G. (1962). Control Burning in eucalypt forest. *Australian Forestry and Timber Bureau, leaflet no. 80*

The simplistic argument that the answer to severe fire events is widespread, untargeted controlled burning needs to be dismissed. Effectively what is being advocated is the removal of the understorey and leaf litter layers of bushland, especially our least disturbed bushland - National Parks. This would mean the removal of the most critical food and habitat for most of our species as well as leading to massive soil and nutrient loss with resultant loss of water quality. "

2.3 Appropriate land management policies and practices

Environment Groups believe that increased funding and resources should be provided for community, locality and property level fire management plans. Such plans should be produced in conjunction with district *Bush Fire Risk Management Plans* and in conjunction with all of the relevant authorities.

Within this multi level framework of inclusive planning, Environment Groups believe that the following strategies should be employed to achieve better bushfire management:

- *Strategic planning* that is designed to facilitate community and stakeholder involvement, interagency coordination and federal, state and local government collaboration.

- *Community education and awareness* campaigns to achieve risk management objectives including self reliance, as well as coordinated preparedness and emergency strategies.

- Development and implementation of *property, reserve, street, village and town level risk management plans*

- *Involvement* of Indigenous peoples and traditional owners and respect and recognition for their knowledge, interests, rights and cultural values

- *Assistance for volunteer and professional personnel* to achieve effective delivery of appropriate management objectives through provision of adequate training and resources.

- *Building and development controls* that are effective in preventing the inappropriate location and /or construction of structures that pose a risk to life and property in fire prone areas.

- *Strategic hazard reduction activities* that are effective in protecting natural, built and commercial assets in fire prone areas. Hazard reduction activity should be focused in those areas directly adjacent to assets.

- *Monitoring of the effects of hazard reduction* on fuel loads and distribution. This would involve mapping treated areas.

- *Fire fighting operations* which have been *forward planned* to maximise operational preparedness and minimise unnecessary environmental damage.

- Development and application of the best available *research and spatial information* to risk management planning and fire fighting operations.

- provision of leading *information technology and mapping software* to land and fire management agencies, as well as non government stakeholders to enable the effective achievement of management objectives.

- the establishment and use of integrated web based mapping systems, with centralisation of data of conservation and strategic values to guide hazard reduction works and fire fighting operations;

- adequate *monitoring, auditing and review* processes to ensure that operational and suppression activities are linked to bush fire risk management plans.

- incorporation of *adaptive management principles* into all phases of the bush fire risk management process to ensure that both errors and successes are fully reflected in future strategies and activities.

Specifically:
- Increased funding and resource assistance to Volunteer brigades and community safety officers, Fire Services, Land Management Agencies, as well as conservation, land-holder groups and Indigenous land management services for the purpose of enhanced planning, coordination and implementation of bushfire management strategies, including:

  - micro planning,

  - integration of local knowledge into planning

  - enhanced stakeholder communication and coordination

- Increased funding, monitoring and research for hazard reduction, focusing on outcomes and effects of various methods and management regimes, as well as short and long term ecological and hazard reduction effects.

- Increased funding, monitoring and research into post fire rehabilitation strategies.

- Access to leading edge mapping technology for all stakeholders in bushfire management.

- National standards for building and development controls in fire prone areas.

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- Incentives, including vulnerability based insurance thresholds (including the use of rate rebates, insurance discounts, revolving funds and other innovative fiscal instruments), to encourage the upgrading of homes in fire prone areas.

- Research into the fire resistant properties of certain Australian native plants and the development of a database containing information on fire resistant Australian native plants, including application in the field.

- Trans-disciplinary research, which aims to integrate the work of policy makers, scientists and sociologists, with the aim of developing holistic strategies that address the challenge of fire management across the Australian landscape.

- The development of Commonwealth capacity to support and assist State Government Agencies in technical, scientific, legal, logistical and other areas of bushfire management.

- Ratify the Kyoto protocol and reduce green house gas emissions

3.0 Bushfire Management and the Commonwealth Government

Although land and fire management is traditionally the responsibility of state governments, the NCC and ACF believe that the Commonwealth Government should play a greater role in bushfire management across the country. Environment Groups believe that the Federal Government is well placed to assist the states in key areas of reform, and that intervention and support is necessary in light of the apparent increase in the severity of fire events, and in the more frequent occurrence of extreme fire weather.

3.1 Research

Environment Groups welcome the establishment of a Bush Fire Cooperative Research Centre (CRC) and endorses the research areas outlined in the March 2002 document *Major Australasian Fire Authorities Council (AFAC) R&D Project Themes.*

In particular, the NCC and ACF would like to reiterate support for research into community self-sufficiency through education and awareness, and also for the development of planning and development strategies that provide the highest level of protection for people and buildings.

The NCC has also developed a list of additional research priorities in consultation with senior fire researchers and with conservation organisations including the National Parks Association of NSW, Greening Australia and the World Wide Fund for Nature (WWF).

The NCC submitted the following six research priorities to the Minister for Science and Technology (McGauran) in 2002, in a letter that endorsed the establishment of a bushfire CRC. However we have not as yet received a reply.

1.   The development of web based mapping systems:
Integrated web based Geographic Information System (GIS) maps that centralise natural resource data including that of strategic and conservation significance, across all land management agencies, within an area or district,

2.   The ecological effects of hazard reduction strategies:
The comparative ecological effects of different hazard reduction activities including the short and long term effects on biodiversity, as well as effects on vegetation structure and composition.

3.   The fire resistance of Australian native plants:
The fire resistant capability of key Australian native plants and the investigation of the potential for the strategic use of fire resistant Australian native plant species at the urban-bushland interface,

4.   The effects of fire and fire fighting operations on the environment:
The effects of fire and fire fighting operations on the environment including physical and biological effects of fire, also the effects of aerial delivery of water, emergency clearing of containment lines and fire breaks, back burning, etc.

5.   Post-fire rehabilitation and restoration strategies:
Post-fire rehabilitation and restoration strategies including strategies for repairing ecosystem damage from both fire and fire fighting operations,

6.   Impacts of climate change on wild fire incidence:
Potential effects of climate change on weather conditions and wild fire incidence including the frequency, intensity and spatial extent of wild fire events.

In addition to these 6 priorities provided to the Minister, we would like to include the following project:

7.   Aboriginal fire management
Collaborative and Indigenous controlled research with Indigenous people focused on Indigenous knowledge, values, approaches and interests in fire management

3.2 Centralising information

The NCC and ACF believe that Environment Australia, in conjunction with the Bushfire CRC, should develop a **national information clearing house**, which would be useful to fire management practitioners. These would include:

- A comprehensive *national database on species and ecological communities* response to fire, and

- A current *bibliography of scientific publications on fire ecology.*

- A *database* containing information on *fire resistant Australian native plants*, including application in the field.

The development of a comprehensive national database on species and ecological communities response to fire would be an invaluable tool in planning risk management activities by integrating with web based GIS mapping systems. Along with a bibliography of scientific publications on fire ecology and related matters, the database would also serve as a useful information resource for fire agency and land management personnel. The NCC has been informed that CSIRO has a database with some of this information.

Furthermore, the development of a central bibliography of fire ecology literature would be a cost-effective resource in that it would reduce repetitive research and assist in identifying research gaps. A bibliography of fire ecology publications has in fact already been established in Australia (Fire Net[21]), but is currently unavailable due to lack of resources. Fire Net is a self organised group of professionals providing knowledge and information services in a voluntary way to stakeholders in fire management

The information database on the properties, characteristics, home ranges and maintenance of fire resistant Australian native plants should be made available to all fire managers, as well as home and property owners.

Centralising this information and providing access to stakeholders and practitioners would be a highly practical contribution to fire management in Australia.

3.3 Technical Assistance

The Commonwealth could also assist state and territory based land and fire managers by assisting with the storage and dissemination of other research and natural resource information. For the research products of the new CRC to reach public and private practitioners, provisions for the rapid transmission of research

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[21] The International Fire Information Network (FireNet), http://sres.anu.edu.au/associated/fire/index.html

findings should be made. The Commonwealth should also provide assistance for the implementation of new developments and technology.

In need of particular attention is mapping and remote sensing technology. Mapping technology is currently fragmented and inadequate, even at a state level. Serious efforts need to be made to unify and centralise data sets, as well as enable access to all manner of land and fire managers. This should be done at a federal level.

Fire history, vegetation types, topography, fuel loads, ignition probability, as well as natural and commercial assets should all be mapped on a National basis and provided to state level practitioners. This map based information system would be an invaluable tool during both risk management and fire fighting operations.

The NCC has become aware of a proposal for an Earth Observations CRC. The NCC and ACF feel that this would be an excellent opportunity for synergy with the bushfire CRC in regards to remote sensing and mapping research and development.

The NCC and ACF would be interested in discussing with the Commonwealth the capacity of its environment agency, Environment Australia, to assist state based practitioners with such legal, technical and scientific support. We feel that Environment Australia may be the most suitable location for the development of Commonwealth - State bushfire assistance capacity.

However, much more is needed. The Commonwealth should consider providing leadership in a range of other areas relating to bushfire management. For example, the Commonwealth is perhaps the only level of government that has the capacity to adequately address the problem of lack of coordination and cooperation between agencies and between states. The Federal Government should also review options for tax and insurance industry reform.

3.4 Greenhouse pollution

Increasing average temperatures are perhaps the biggest risk factor associated with bushfire management in Australia[22].

However, Australia is the world's largest per capita green house gas producer and has declined to ratify the Kyoto protocol. The Kyoto protocol represents the

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[22] Williams A. J, Karoly, D. J & Tapper, N. 2001, The sensitivity of Australian fire danger to climate change. Climatic Change 49: pp 171-191: This report by leading meteorologists has shown that human-induced global warming was a key factor in the severity of the 2002 drought. The report compares the 2002 drought with the four other major droughts since 1950 and has found higher temperatures caused a marked increase in evaporation rates from soil, watercourses and vegetation. The report warns that higher temperatures and drier conditions have created greater bushfire danger than previous droughts. (Drought severity also has increased in the Murray Darling Basin, which produces 40% of Australia's agricultural product).

best opportunity the international community has of averting long term and potentially irreversible consequences of climate change.

However, Australia, under federal leadership, should also develop a domestic program of pollution reduction. This should include the introduction of a carbon tax and/or an emission trading scheme, as well as a 10% by 2010 renewable energy target and a doubling of energy efficiency by 2020.

Australia should ratify the Kyoto protocol and implement a pollution reduction program with the above elements.

4.0 Aboriginal burning

Many advocates of frequent and broad scale burning make presumptions about the nature of pre-European Aboriginal burning to support their arguments. Ryan et al[23] argued that the Australian landscape consisted mostly of grassland and grassy woodland at the time of European settlement and that lack of fire after European settlement lead to thick regrowth and the development of a dense shrubby understorey[24]. In an effort to support their argument Ryan et al selectively quote the journals of early European explorers, arguing that Aborigines burnt the landscape of south eastern Australia annually[25, 26].

However, this hypothesis and method has been the subject of serious criticism from a range of researchers and practitioners including Benson & Redpath (1997). Indeed, the hypothesis of annual pre European broad scale burning by Aboriginals is not supported by a growing body of scientific evidence (eg Mooney 2001[27], Keith 1996[28]), while the strategy of selectively quoting the anecdotal observations of early explorers has been dismissed on methodological grounds[29, 30].

[23] Ryan, D.G., Ryan, J.E. & Starr, B.J. 1995. *The Australian landscape - observations of explorers and early settlers* (Murumbidgee, Catchment Management Committee: Wagga Wagga NSW).

[24] Ryan, D.G., Ryan, J.E. & Starr, B.J. 1995. *The Australian landscape - observations of explorers and early settlers* (Murumbidgee, Catchment Management Committee: Wagga Wagga NSW).

[25] Benson J & Redpath P. *The nature of pre European native vegetation in south-eastern Australia: a critique of Ryan, D.G, Ryan J.R & Starr B.J (1995) The Australian Landscape – observations of explorers and early settlers.* Cunninghamia **5** no 2, 1997.

[26] Benson J & Redpath P. *Vegetation and Fire: Reply to Vic Jurskis.* Australian Forestry **64** (1): 64-65, 2001.

[27] Mooney S, Radford K & Hancock G. Clues to the 'burning question': Pre-European fire in the Sydney coastal region from sedimentary charcoal and palynology. *Ecological Managment and Restoration* **2** no 3, 2001.

[28] Keith D.A. Fire-driven extinction of plant populations: a synthesis of theory and review of evidence from Australian vegetation. *Proceedings of the Linnean Society of NSW.* 116, 1996.

[29] Benson J & Redpath P. *The nature of pre European native vegetation in south-eastern Australia: a critique of Ryan, D.G, Ryan J.R & Starr B.J (1995) The Australian Landscape – observations of explorers and early settlers.* Cunninghamia **5** no 2, 1997.

[30] Benson J & Redpath P. *Vegetation and Fire: Reply to Vic Jurskis.* Australian Forestry **64** (1): 64-65, 2001.

Nevertheless, despite the impact of European colonisation, Aboriginal people have remained strongly connected to country throughout Australia including south-eastern Australia, and current European-driven fire regimes have a range of negative impacts on important cultural values, which often exacerbate the other degrading processes. For example, important rock formations with high cultural value experience rapid erosion from the combined impacts of cattle grazing and prescribed burning. A key opportunity is to work with Aboriginal peoples in collaborative processes that enable protection of both natural and cultural values, and draws on the strengths of the Indigenous knowledge systems associated with fire.

The fact is that very few European people know, with any degree of certainty or accuracy, how Aborigines applied fire to the landscape of south-eastern Australia prior to European arrival. Even if this knowledge was available, these patterns of fire usage would not necessarily be relevant to current land management practices, as many changes have occurred to the Australian environment over the past 214 years. Fragmented landscapes and protecting built assets from fire are only two considerations that concern us now but would have had no relevance to the Aborigines of the south-eastern coast, prior to 1788.

Environment Groups recommend the development of collaborative processes to work with Aboriginal people in generating two-way knowledge about and practices of fire management. Any input from Aboriginal culture into fire management should be in partnership with Aboriginal people.

However, opinions relating to the nature or effect of pre-European burning should not be qualified as a basis for promoting or prescribing land management practices, in particular hazard reduction burning.

5.0 Summary

Lack of homeowner preparedness is a frequently cited cause of destruction to property during bushfires, and community education programs are usually identified as the solution to this problem[31]. However, bushfire education should go further than simply reminding people that they need to clean the leaves out of their gutters.

Engaging and involving Australian communities in mitigating the risk of bushfires is critical to the successful and sustainable management of bush fire risk. Environment Groups believe that both private homeowners in urban/ semi-urban areas and rural landholders need to be equipped to take responsibility, to a large degree, for their own protection. This requires public understanding and

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[31] Report on the Inquiry into the 2001/02 Bushfires, Together with the Minutes of the Proceedings, June 2002, Joint Select Committee on Bushfires, NSW State Library

appreciation of the fire risk they face, and a willingness to work together with neighbours and authorities to prepare themselves for fire attack.

As part of this process, the public needs to come to terms with the reality of periodic fire as well as appreciate the value of various risk management strategies. Moreover, the public needs to work with land and fire management agencies, in a coordinated way, to achieve a higher level of community and property owner fire preparedness.

On the other hand, land and fire management agencies, as well as non-government stakeholders, should endeavour to work together in a more productive and cooperative way. Environment Groups are of the view that his can only be achieved through genuine dialogue and regular communication.

Risk management planners should aim to engage private property owners with the appropriate government authorities to coordinate mitigation and suppression efforts. Bushfire education programs should be evaluated and reviewed for their behavioural outcomes, rather than on quantitative performance indicators for example number of books distributed. New programs should be established which aim to coordinate the activities of the various education providers and increase capacity to deliver real outcomes with the public.

The NCC and ACF would be pleased to elaborate on any of these points by appearing before the House Select Committee.

Appendix 1.

Australian Council - International Union of Conservation Nature (IUCN), resolution 1.24, February 2003.

1.24   Impacts of Human-Induced Fire Events on Biodiversity Conservation

RECOGNIZING that both protected areas and non-protected natural and modified habitats on public and private lands make a vital contribution to the conservation of biodiversity and ecological integrity;

RECOGNIZING that many ecosystems are highly sensitive to fire, for example wetlands, rainforests and alpine areas, and that their ecological integrity may be destroyed, degraded or significantly altered as a result of inappropriate fire regimes; and that other ecosystems such as prairies are dependent on fire to maintain natural processes;

RECOGNIZING that fire is required to renew or to maintain the natural ecological characteristics and functions of ecosystems such as natural grasslands, brush lands, pine forests and the boreal forest, and can be an appropriate landscape management tool;

NOTING that in many parts of the world the natural vegetation is highly flammable under certain conditions and that where land-use patterns are inappropriate this creates risks to life and property;

NOTING that urbanization (residential, recreational, tourism, etc.) increasingly extends into natural or semi-natural areas of value for biodiversity and that protected areas may receive large numbers of visitors;

NOTING that in many such areas the incidence of human-induced fires is increasingly more common than naturally-caused fires because of arson, accidental fire and planned fire events;

NOTING that in both protected and non-protected areas the optimum strategy is one that utilizes a better balance of techniques including planned fire events and non-fire-based risk reduction strategies;

NOTING that in some protected and non-protected areas the current management focus on the use of planned fire events for fuel reduction is giving rise to an increasing reliance on fire-based techniques at the expense of more ecologically and economically sustainable non-fire-based risk reduction strategies; and in some ecosystems the absence of fire-based management techniques may lead to the irreversible loss of biodiversity;

BELIEVING that all human-induced fire management strategies should place emphasis on ecological sustainability when implementing strategies to reduce risks for life and property;

The World Conservation Congress at its 1st Session in Montreal, Canada, 14-23 October 1996:

1.   REQUESTS the Commission on Ecosystem Management to identify the types and extent of ecosystems subject to frequent occurrences of human-induced fire events, and to identify and consider the implications of human-induced changes to natural fire regimes for the biodiversity and ecological integrity of such ecosystems;

2.   CALLS upon all governments to have regard for the ecological sustainability of affected ecosystems when implementing bush fire risk management strategies in relation to both public and private lands.

ADDITIONAL INFORMATION HELD BY THE COMMITTEE

ATTACHMENT TO SUBMISSION NO.500

ATTACHMENTS, APPENDICES AND PHOTOGRAPHS PROVIDED WITH
SUBMISSIONS ARE HELD IN THE COMMITTEE OFFICE