



Submission No.255

Submission to the House Select

Committee Inquiry into the Recent

Bushfires


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House Select Committee Inquiry into the Recent Bushfires

Terms of Reference

The Select Committee on the recent Australian Bushfires seeks to identify measures that can be implemented by governments, industry and the community to minimise the incidence of, and impact of bushfires on, life, property and the environment with specific regard to the following.

- (a) the extent and impact of the bushfires on the environment, private and public assets and local communities;
- (b) the causes of and risk factors contributing to the impact and severity of the bushfires, including land management practices and policies in national parks, state forests, other Crown land and private property;
- © the adequacy and economic and environmental impact of hazard reduction and other strategies for bushfire prevention, suppression and control;
- (d) appropriate land management policies and practices to mitigate the damage caused by bushfires to the environment, property, community facilities and infrastructure and the potential environmental impact of such policies and practices;
- (e) any alternative or developmental bushfire mitigation and prevention approaches, and the appropriate direction of research into bushfire mitigation;
- (f) the appropriateness of existing planning and building codes, particularly with respect to urban design and land use planning, in protecting life and property from bushfires;
- (g) the adequacy of current response arrangements for firefighting;
- (h) the adequacy of deployment of firefighting resources, including an examination of the efficiency and effectiveness of resource sharing between agencies and jurisdictions;
- (i) liability, insurance coverage and related matters;
- (j) the roles and contributions of volunteers, including current management practices and future trends, taking into account changing social and economic factors.

Recommendations

This submission recommends that the Commonwealth Inquiry into the recent Black January bushfires acknowledges;

- the folly of policies which promote fire exclusion or extremely low levels of prescribed burning in forest areas;
- that prescribed burning in known lightning strike areas (no matter how remote) by reducing the fuel loads increases the likelihood that fires will be rapidly and efficiently suppressed before they grow in size to the point that they run uncontrollably across hundreds of thousands of hectares, or as was the case this summer, millions of hectares of land; and
- that the environmental impacts of wildfires on the scale of the 2002/2003 fires are much greater and longer term than the environmental impacts that would have occurred had substantial hazard reduction burning programs been conducted in the affected areas over the last 20 years.

The 1984 Commonwealth Inquiry into Bushfires and the Australian Environment

In August 1984 after an exhaustive inquiry the House of Representatives Standing Committee on Environment and Conservation released its report *Bushfires and the Australian Environment*. The main findings of the inquiry were that:

- Fire has long been a part of the Australian environment and has played an important role in shaping the flora and fauna
- European settlement resulted in significant changes to fire regimes and changes to plant and animal communities
- The flora and fauna is generally well adapted to natural fire regimes and populations usually recover to prefire levels in a comparatively short period, but the impacts of bushfires on soils may be significant
- Bushfire prevention and suppression activities can have environmental impacts, frequent low intensity hazard reduction burning to reduce fuel accumulation is the activity causing most concern
- In many situations hazard reduction is the only effective and efficient technique that is available and must be used but, wherever it is used there is a need to consider the environmental impacts
- Alternative protection and suppression techniques need to be considered and in some cases it may be appropriate that no action be taken to prevent or contain bushfires
- Authorities need to take more care in fire prevention activities and should do more post fire rehabilitation, particularly in the area of soil conservation

- Extensive damage to property and loss of life will continue to occur unless property owners and authorities recognise the inevitability of bushfires and take proper action to protect their own property and to prevent unsound land use
- The Australian community has largely ignored, or is ignorant of, the advice given by the authorities about bushfire survival and property protection and does not appear to have learnt the lessons of Ash Wednesday
- The volunteer rural brigades make a very significant, and in many instances an essential contribution to the welfare of the Australian community
- The type and amount of training given to bushfire protection professionals and volunteers is inadequate in several respects
- There is great scope to improve our knowledge of bushfires and the part played in the Australian environment
- Continuing research will result in a decrease in the loss of life and the amount of property damage
- The Commonwealth is a significant land holder with a direct interest in bushfire mitigation the Commonwealth has a role to play in providing resources and assisting the States

Even though twenty years have passed since the Ash Wednesday fires and the Commonwealth Bushfire Inquiry, most of these findings are still valid.

However, I disagree with the following aspects of the 1984 report;

- The idea that in some cases it may be appropriate that no action be taken to prevent or contain bushfires;
- The excessive concern of the 1984 report with the potential environmental impacts of hazard reduction burning as opposed to the environmental impacts of wildfires; and
- the Committee's conclusion on page 14 of its report that;

The approach advocated by the Committee should lead to a reduction in broadscale aerial control burning in remote areas. In locations far removed from inhabited places or from valued assets there may be no economic justification for carrying out control burning. It would be more effective and more environmentally acceptable to concentrate protection works closer to the assets to be protected. The Committee can see no justification for control burning where the only effect would be to reduce the intensity of bushfires in remote areas that are not commercially managed.

The McIntyres Hut fire started in a remote area and eventually resulted in the death of 4 people, the loss of 500 homes (and other infrastructure) and a vast area

of commercial pines. The Kosciuszko fires started in remote areas and eventually burnt out an extensive area of the park and surrounding pastoral land. Many of the fires in north eastern Victorian started in remote areas and by the time they were contained had burnt out over 1.1 million hectares (these were the largest fires in Victoria since the 1939 bushfires that burnt more than 1.5 million hectares).

Prior to the expansion of the Alpine National Parks system in the ACT and Victoria, and the assumption by NPWS of fire management responsibility in Kosciuszko National Park, broad scale aerial hazard reduction burning was conducted in remote (and less remote areas) in order to reduce fuel loads so that fires such as those which occurred in 2002/2003 would be easier to control and extinguish. The Forestry Commission of NSW in evidence to the 1984 Commonwealth Inquiry stated (p863 of Hansard) in relation to aerial hazard reduction burning that *the area so treated varies annually according to suitable weather but a target of about 200 000 hectares per annum is established. The actual area burnt on the average falls between 20% and 40% of the treated area.*

Park management agencies chose to conduct much less hazard reduction burning, or in the case of the ACT negligible burning. Roger Good in A basis for fire management in Alpine National Parks in Australia's Alpine Areas Management for Conservation, National Parks Association (ACT), Ed K.J. Frawley states that *prescribed burning has as a consequence been removed from the greater part of Kosciuszko National Park without abrogating the commitment to fire control and endeavours to prevent the spread of fires to neighbouring lands.*

The removal of prescribed burning from the greater part of KNP made it extremely difficult for NPWS to prevent the spread of fires to neighbouring lands this year. The drought and the weather made fire control more difficult than in a "normal" fire season, however an extensive prescribed burning program over the last 20 years would have been of immense benefit to endeavours to control the recent fires. The behaviour of wildfires on days of extreme fire danger during periods of extended drought is well known and fire prevention programs should be designed to cater for "bad" fire years not just "average" fire years.

Unfortunately, the view has tended to prevail in some land management and fire control agencies that wildfire, irrespective of intensity, poses little threat to life and property if it is deep within a park. Such a view can influence the vigour of first attack operations on remote fires and can influence the extent to which aircraft and fire fighters are re-allocated from existing fires to more recent ignitions.

In its written submission to the 1984 inquiry NPWS stated (p924 of Hansard) that *The Aborigine lived in close proximity with the bush at all times before the arrival of European man and it would appear that they used fire for a wide range of purposes such as encouraging the growth of food plants for themselves and herbage for food animals, to*

ease passage through the bush, for cultural purposes and in all probability to ensure their safety by preventing excessive fuel build up.

NPWS also stated (pp927-928 of Hansard) *The Service is reviewing the value of burning solely for fuel reduction in remote areas. The concept of reducing fuels over broad areas by burning was first introduced for forest management and its purpose was twofold. Firstly it was considered that subsequent bushfires would be more controllable and secondly as the intensity of all fires would be reduced the damage to commercial values of forests would be reduced.*

While the latter purpose is not particularly relevant in nature conservation areas, the former is of value. Unfortunately, over the years some individuals and fire authorities promoting this technique have led people to believe that its application in remote areas will provide protection for distant urban areas. Experience has shown over and over again that during severe fire weather fuel reduced areas will not stop the spread of bushfires (unless a bare earth policy has been adopted but this is rare due to the practical and environmental constraints). Relying on fuel reduction in remote bushland areas to protect urban areas can be disastrous particularly when adequate protection measures are not undertaken in and adjacent to areas where people live.

NPWS also said that (p936 of Hansard) *The Service sees little value in fuel reduction burning, fire trail and fire break construction being undertaken solely for the protection of living areas in locations remote from those areas. The Service supports the establishment of fuel modified zones and if necessary construction of trails and breaks in bushland adjacent to living areas.*

It is possible that NPWS subsequently conducted a review of the value of fuel reduction burning in remote areas and decided to abandon or vastly reduce the amount of prescribed burning in remote areas. So much so that in the article *Angry embers still burn* in the Sydney Morning Herald (SMH) on 18 April 2003 Daniel Lewis reported that of the 1.6 million hectares under the control of the southern directorate of the NPWS, only 22,000 hectares had been hazard reduced in the 4 years prior to the Black Christmas fires. This is approximately 0.3% of the total area per annum!

In NSW NPWS and the Rural Fire Service have adopted strategic hazard reduction around assets and what is essentially linear strip burning further away from assets. This change in emphasis from broad area fuel reduction burning to risk management, which was advocated by the conservation movement, is fundamentally flawed. This policy has resulted in a reduction in the annual area of forest which is prescribed burnt and consequently an increase in area burnt by intense wildfires during the fire season.

An article in the SMH on 18 April 2003 titled *The perfect flame* reported on a "textbook" HRB in the Dooral Creek area near Sydney conducted by Cameron Wade of the NSW Rural Fire Service. Cameron wanted the SMH to see what it would take to professionally conduct huge amounts of hazard reduction burning. The reader can be forgiven for concluding that HRB is an extremely time consuming and difficult thing to do. HRB at the urban interface or in semi urban areas can vary from being extremely difficult to relatively straight forward, however HRB in remote locations should not be difficult.

If undertaking HRB at the periphery of urban areas is so difficult why have NPWS and the Rural Fire Service staked so much of their fuel management theory and fire suppression strategy on controlling fires when they move into fuel reduced areas adjacent to urban areas, areas in which it would be appear that so little HRB is being done? Surely it makes more sense to maximize the chances of extinguishing wildfires when they are small by reducing the fuel loads in known ignition areas.

It is also important to note that the strategic fuel management areas (not to be confused with broad scale HRB areas) which are located some distance from the urban edge are often too narrow to be of great assistance in halting wildfires.

From the point of view of fire suppression the reasons why (ie because it is "too difficult", or it is ineffective, or it has unacceptable impacts on biodiversity) the amount of HRB being conducted is woefully inadequate doesn't matter. The key point is that it results in increased difficulty in suppressing wildfires and subsequent losses in lives, homes and social and economic disruption.

In 1984 the Forestry Commission of NSW had a substantially different approach to fire prevention to the NPWS stating (p832 of Hansard) that *management of fuel loading over broad areas is consequently held by the Commission to be the most indispensable of forest fire management tools in NSW as far as a basis for the development of safe and cost/effective firefighting in severe weather.*

The Forestry Commission also stated (p832 of Hansard) that *Spatial variability is, and always will be, an essential component of low intensity fire use and is often held to be an ecologically desirable end in itself. This complements the argument that active fuel management and the development of a spectrum of fire-age classes over some 30-40% of the forest estate, when placed within the broader mosaic produced by other forms of land use will sufficiently modify the fire environment to give suppression measures a chance to do the rest.*

It is a worthwhile examining State Forests fire suppression tactics on lightning fires which started on 8 January 2003. The same lightning storm which started the Brindabella fires and fires in KNP ignited 26 fires in and around NSW State Forests pine plantations near Tumut, Batlow and Tumbarumba and in adjoining Bago and Maragle alpine ash State Forests. The fires were contained by ground

crews using bulldozers, helicopters and an observation aircraft. The Rural Fire Service assisted State Forests in containing the fires.

At 1800 hours on 8 January State Forests indicated that even though strong winds were creating difficulties the fires were being successfully controlled. State Forests said that; "Every minute counts especially during a fire season as severe as the one we are now experiencing. A quick response from a helicopter with water bombing facilities and backup from ground crew can be crucial in stopping a fire from spreading and becoming uncontrollable".

On 10 January 2003 State Forests indicated that 18 of the fires were out and the others were either controlled or contained. By the evening of 9 January a fire that had burnt 150 ha of alpine ash near Tumberumba had been controlled.

In 1984 Mr Yorston from the Victorian National Parks Service was asked how he would describe the natural fire regime of the State and to what extent does control burning conform to this regime, he said (p1223 of Hansard) *that it is very difficult to answer your first question on what the natural regime is but there is plenty of evidence that would indicate, at least in the drier forests, that in the early days they basically had a grassy-type understorey.....One would conclude from that in all probability fire was very frequent and by being frequent one did not have a large build up of fuels and consequently the fires were not very severe. That ties in with lightning strike patterns we get and the sort of weather patterns that we get and that would not be unexpected. In other words, before the fuels had a chance to build up to such quantities that they would produce a very intense fire, in the drier forests we probably had regular, large but not so intense fires.*

In his opening statement Mr Catford from the Australian Conservation Foundation (ACF) expressed substantially different views to the previous witnesses stating (p586 of Hansard) *that Fire management in natural areas should be on the basis of natural ecology, that is, we manage primarily to maintain natural ecosystems. The protection of life and property is vitally important but should be treated in a subsidiary way, that is, as a superimposition over the general need to conserve environment.* The ACF submission also stated (p573 of Hansard) *that Fire trails should be rare in national parks and completely absent in designated wilderness areas.*

Some observers have suggested that during the 2 decades that have elapsed since the last Commonwealth bushfire inquiry the ideology of extreme conservation interests has been allowed to dominate bushfire management in the ACT and NSW. This may or may not be the case.

What is important is that the current inquiry has the wisdom to see the folly of policies which promote fire exclusion or extremely low levels of HRB in forest areas. It is also important that the inquiry acknowledges that prescribed burning

in known lightning strike areas (remote or less remote areas) by reducing the fuel loads increases the likelihood that fires will be rapidly and efficiently suppressed before they grow in size to the point that they run uncontrollably across hundreds of thousands of hectares, or as was the case this summer, millions of hectares of land.

Wilderness fire management

Malcolm Gill in *Management for Fire-prone Vegetation for Plant Species Conservation in Australia Search Vol 8 No 1-2, Jan-Feb 1977* in looking at fire management philosophies and fallacies says that the *let nature take its own course* philosophy has been well stated by Lamprey (1974) p241 *the policy of allowing nature to follow its own course... appears to have operated advantageously in most national parks in the past and continues in many at present. If there is doubt about the course to follow and if there are apparently no immediate management problems it seems better to do nothing, trusting in the self regulatory properties of nature to maintain the status quo.* Gill notes that many observers would accept this policy.

Wilderness management in Australia has borrowed heavily from overseas wilderness management theories, where the *let nature take its own course* philosophy was dominant. Catastrophic fires in Yellowstone National Park and elsewhere in the USA forced authorities to rethink their approach to fire management, in particular fire exclusion policies.

The let nature take its own course approach is not appropriate in Australia due to the omnipotence of fire. A wildfire doesn't recognise boundaries between wilderness areas and the rest of a national park, nor does it recognise boundaries between the national park and freehold land. As Stephen Pyne says "fire is not listening. That it really doesn't care, that it will respond only to the logic of wind and fuel and terrain. If a proposal does not see the problem as fire does, then those implacable flames will ignore it".

The proposition that *the alternative of not doing anything should always be considered as an acceptable management approach*, is in my view not an acceptable fire management option in conservation reserves in Australia. This approach was adopted in Namadgi NP (over a 20 year period) in relation to hazard reduction burning with disastrous results. Fire management decisions have to be made with less detailed knowledge about the response of ecosystems to fire than fire ecologists might deem necessary.

Fire management in wilderness areas should be reviewed both from the point of view of access for fighting purposes and the use of prescribed burns to reduce fuel loads.

Desirable fire thresholds

The following fire thresholds table is taken from the draft Kosciuszko Fire Management Plan.

Vegetation communities	Desirable fire thresholds
Wet sclerophyll forest	Fire frequency is currently too high. No fire event is desired in any part of this community for at least another 30 years if more than 50% of this community is to meet the lower threshold value.
Moist/dry sclerophyll forest (High montane forest)	Fire frequency is currently too high. No fire event is desired in any part of this community for at least another 30 years if more than 50% of this community is to meet the lower threshold value.
Dry sclerophyll forest	Current fire frequency is acceptable for the conservation of biodiversity. However, most of this community is in the lower end of the threshold range.
Woodland	Current fire frequency is acceptable for the conservation of biodiversity. However, most of this community is in the lower end of the threshold range.
Sub-alpine woodlands	Fire frequency is currently too high. No fire event is desired in any part of this community for at least another 60 years if more than 50% of this community is to meet the lower threshold value.
Sub-alpine swamps	Fire frequency is currently acceptable for meeting biodiversity objectives.
Sub-alpine frost hollows	Fire frequency is currently too high. No fire event is desired in any part of this community for at least another 65 years if more than 50% of this community is to meet the lower threshold value.
Alpine complex	Total fire exclusion is imperative for meeting biodiversity objectives.
White cypress pine	Fire frequency is currently too high. No fire event is desired in any part of this community for at least another 80 years if more than 50% of this community is to meet the lower threshold value.
Acacia scrubs	Fire frequency is currently acceptable for meeting biodiversity objectives. Need to determine what sites, if any, have reached the upper threshold limit.
Exotic forests	Fire as required to meet program objectives.
Cleared/modified vegetation	Areas not maintained for other purposes should be treated as per surrounding or former community if known. Maintained and remnant areas have not been differentiated in the database for assessment here.

Desirable fire thresholds for aggregated vegetation communities in KNP

* Desirable fire thresholds in some areas may be exceeded in asset protection and fire management zones where justified.

Given that one of the main reasons national parks are created is to conserve the ecosystems within their boundaries it would seem logical that a park such as KNP would be managed so that all ecological stages of its vegetation communities are represented from the post fire communities to the mature stages. This would maximize biodiversity in the park and ensure that the majority of the park is not burnt as happened recently. Hazard reduction burning would be the main method of achieving this state.

However, if my interpretation of Table 4.4.2 *Desirable fire thresholds for aggregated vegetation communities in KNP* is correct it would appear that NPWS's goal was to exclude fire from most of the communities in the park for lengthy periods of time in order to manipulate the ecosystems in the park into the more mature successional stages. (However, the plan does state that desirable fire thresholds may be exceeded in asset protection and fire management zones where justified).

For example, the plan states that the desirable fire threshold for sub-alpine woodlands is currently too high and no fire event is desired in any part of this community for at least another 60 years, if more than 50% of this community is to meet the lower threshold value. Given that the majority of this community regenerated after the 1939 wildfires it would seem that NPWS was attempting to exclude fire from sub-alpine woodlands for a period of 120 years. NPWS wanted to exclude fire from white cypress pine communities from the present time for an additional 80 years or 140 years in total.

In the absence of extensive and frequent HRB in surrounding vegetation communities NPWS had little chance of achieving these goals. Hopefully, NPWS will be prepared to review the ecological theory which underpins their current approach to fire and vegetation management and come up with more realistic management plans which will ensure that the fires on the scale of the 2002/2003 fires do not occur again, and that active measures are taken to protect neighbouring landowners, and more distant communities, from intense wildfires.

Environmental impacts

It is not surprising that the 1984 Commonwealth Inquiry put so much emphasis on the potential environmental impacts of hazard reduction burning because many commentators have been overly concerned with the potential impacts of prescribed burning, at the same time glossing over the environmental impacts of intense wildfires on the scale of fires such as those in 2002/2003.

The environmental impact of prescribed burning versus wildfires is a complex issue because of variations in the season, frequency and intensity of any particular fire regime. Suffice it to say that in my view the environmental impact of fires on the scale and intensity of the 2002/2003 fires is much greater and longer term than the would have been the case had extensive prescribed burning been conducted over the last 20 years.

For example the recent fires were so hot that over vast areas the soils will have been incinerated to the point that the humus layer no longer exists. Amongst other impacts, this results in an increased risk of erosion and the loss of soil invertebrates. I have never seen the entire humus layer removed over a substantial area in a prescribed burn.

Intense wildfires remove the forest canopy and it can be many years before the trees recover to the point that they flower and provide food for nectar dependent species such as honeyeaters. The impact of prescribed burning on birds is much less significant than that of intense wildfires, usually being confined to species which inhabit the ground and understorey of the forest.

At this stage very little information is available about the impact of the fires on endangered fauna species however it is possible that the populations of some species will have been so severely impacted that their long term survival will be uncertain. The biggest fire threat to endangered species and biodiversity is not prescribed burning but massive wildfires such as the 2003 fires.

Comparisons with the 1939 bushfires in Victoria

It is possible that some submissions will argue that fires on the scale of the 2002/2003 fires are inevitable and that they occurred periodically prior to European settlement. On the other hand a number of commentators have claimed that the fires this year were unprecedented.

I doubt if fire behaviour (for example rates of spread and intensity) this year was unprecedented, however fires on the scale of the 2002/2003 fires in south-eastern Australia don't appear to have occurred since 1851, when some reports suggest that up to 25% of Victoria burnt, however in 2003 it is not possible to ascertain if such reports are correct or not. It is likely that the main reason such extensive areas were burnt in 2003 was due to the high to very high fuel loads through National Parks and some State Forests, due to a reduction in the amount of fuel reduction burning being conducted.

It is also likely that consistently high fuel loads across the landscape is the one aspect of the fire season that was unprecedented. Even though prior to the 1939 bushfires the Forests Commission in Victoria had been carrying out little or no prescribed burning (and Judge Stretton the judge conducting the Royal Commission into the 1939 fires criticized the Forests Commission for this) substantial areas had been burnt by prospectors, farmers, mountain cattlemen, fishermen and timber workers.

Consequently, the fuel loads across the landscape would have been quite variable. The 1939 bushfires burnt huge areas and caused so much loss of life and property damage because limited efforts were made to put them out early in the season when they were small. In addition, fire fighting equipment was

primitive consisting primarily of implements such as rakes, beaters and wet bags. There were few roads into the mountains with the main access being along timber tramlines and horse trails.

The main weapon in forest fire fighters armoury was backburning at the right time. It is likely that the 1939 fires would have been worse if the fuel loads which existed prior to the 2002/2003 fire season had been consistent across the mountain forests in Victoria in 1939.

Conversely, if the current fire trail and fire tower network, aerial fire fighting capacity, communications and command and control system, weather forecasting ability (particularly precise information about wind changes) and back-up services had existed in 1939, and fuel loads had varied across the landscape, I suspect the 1939 fires would have burnt a much smaller area.

This year by contrast, even with all our modern equipment and technology, and the expenditure of what may well be hundreds of millions of dollars it appears that there were few places where an effective stand could be mounted against the fires. I suspect because of the high fuel loads.

In the last 60 years a vast body of knowledge has been gathered about bushfire behaviour. Sophisticated fire prevention, fire fighting techniques, command and control arrangements and fire fighting equipment have been developed. However, due to community concerns about the impact of prescribed burning on endangered species and biodiversity, and changing economic priorities, fire fighting agencies and public land management agencies have been unable to take advantage of the full potential of these developments in the areas of fire prevention and fire suppression.

(As an aside, I doubt that the massive fire winds that occurred on 18 January 2003 in the ACT were unprecedented. During the 1939 fire season in Victoria, huge areas of mountain ash forests were flattened and twisted by gale force winds generated by the fires. Giant mountain ash trees weighing hundreds of tons were ripped from the earth and strewn on the ground).

Conclusion

The massive scale of the wildfires during the 2002/2003 fire season was in my opinion mainly due to the accumulation of high to very high fuel loads across the mountains of south eastern Australia due to a reduction in the amount of prescribed burning over recent decades (or in the case of the ACT negligible burning apart from pine slash burns). The extended drought and the periods of extreme fire weather contributed to the difficulty of fire control operations, however extensive prescribed burning programs over the last 20 years would have been of immense benefit to fire control efforts.

It is also possible that due to a reduction in staff and fire fighting equipment (such as bulldozers) some public land management agencies (possibly in the ACT) were not able to mount rapid and effective first attack operations.

Recommendations

It is recommended that the Commonwealth Inquiry into the recent bushfires acknowledges;

- the folly of policies which promote fire exclusion or extremely low levels of HRB in forest areas;
- that prescribed burning in known lightning strike areas (no matter how remote) by reducing the fuel loads increases the likelihood that fires will be rapidly and efficiently suppressed before they grow in size to the point that they run uncontrollably across hundreds of thousands of hectares, or as was the case this summer, millions of hectares of land; and
- that the environmental impacts of wildfires on the scale of the 2002/2003 fires are much greater and longer term than the environmental impacts that would have occurred had substantial hazard reduction burning programs been conducted in the affected areas over the last 20 years.

THE BRINDABELLA FIRES JANUARY 2003

Some of the fires which started in the Brindabellas on 8 January 2003 were not rapidly controlled and extinguished. Why were these fires not rapidly controlled and extinguished?

Part of the answer may be that some of the fires burnt with great intensity in the first 24 hours, because of the high fuel loads, which were the direct result of 20 years of a policy of fire exclusion. It is also possible that the response time of the initial attack on the fires was slow, or that insufficient resources were allocated to the fire suppression operation in the initial stages (and on subsequent days), or that the suppression strategy was flawed.

The standard approach to bushfire fighting is to control fires as quickly as possible and to minimise the area burnt. The longer a fire burns, the greater the chance that extreme fire weather will eventuate, resulting in the rapid and uncontrollable spread of the fire, as happened on 18 January 2003.

Newspaper reports indicate that 6 fires started in the Brindabellas on 8 January. Scant information is available about the NSW McIntyres Hut Fire, even though it burnt the greatest area prior to 18 January. This raises questions about the allocation of resources regionally by the NSW National Parks and Wildlife Service (NPWS) and Rural Fire Service (RFS).

The location of the fires in the Brindabella to the west and north west of a major urban area, with a western suburban boundary of over 50 kilometres, meant that these fires had far greater potential to cause serious loss of life and property than other fires burning at the same time in southern NSW. Unfortunately, the view has tended to prevail in some land management and fire control agencies that wildfire, irrespective of intensity, poses little threat to life and property if it is deep within a park. Such a view can influence the vigour with which these fires are attacked initially and can influence the extent to which aircraft and fire fighters are re-allocated from existing fires to more recent ignitions.

At dawn on 8 January large fires were already burning in Victoria and NSW. In Victoria 13 helicopters, 11 fixed wing aircraft, 1 sky crane and 20 bulldozers would be engaged in fire control operations by 10 January. In Kosciuszko National Park, 9 aircraft were being used to fight fires which had burnt out 33,000 hectares since 20 December. The region was in the middle of an extended drought (some commentators have claimed that it was a 1:100 year drought), the westerly winds on 8 January reached up to 40 km/hr and the maximum temperature was 34.3 degrees Celsius. The objective should have been containment of the Brindabella fires within a maximum of 24 hours.

Given the weather conditions and the period of extended drought, rapid containment of these fire would have required, at the very least, the rapid deployment (during daylight on Day 1) of at least 6 bulldozers ranging in size from Case first attack dozers to D6 and D7 machines, and ideally a total of 6 water bombing aircraft (fixed wing or helicopters) plus reconnaissance aircraft and at least 100 firefighters on the ground. A shortage of water bombing aircraft could have been compensated for, to some extent, by deploying more bulldozers on the first day.

It may have been possible to directly attack some of the fires using bulldozers and ground crews, allocating the water bombers to the fires that could not be attacked directly. The objective of the water bombing being to reduce the rate of spread of the fires until such time as fire behaviour moderated to the extent that direct attack was possible.

The Canberra Times reported that 2 water bombing helicopters were deployed on 8 January and 30 firefighters were on the fireline overnight. It was not stated how many firefighters, tankers and slip-on units were on the line during the first day. Nor was it stated how many bulldozers had been deployed by nightfall on the first day. If the total number of on the ground firefighters during daylight on Day 1 was only 30 this was grossly inadequate.

However, RFS in commenting on fires started by the lightning storm stated that *all the fires were small and none were of a major concern*. Any fires that had not been contained within control lines by mid-morning on 9 January should have been of major concern and the scale of the fire suppression operation should have been vastly increased at this point.

Where terrain and fire behaviour permitted, bulldozers should have been used to create trails around the fires. Where this was not possible they should have been used to brush up existing tracks and to widen firebreaks along key roads such as sections of the Mt Franklin Road in preparation for back burning operations.

On 10 January ESB said that though the fires were not contained, the Bendora and Corin dams and the Cotter River stood between them and the nearest property. Given the ability of fires to spot vast distances, particularly during drought years, it would not have been valid to draw much comfort from the fact that Bendora and Corin dams and the Cotter River stood between the fires and the nearest property.

The Canberra Times reported on 15 January that *the out of control fires in Namadgi National Park might continue to burn for weeks*. It was highly unlikely that in a period of extended drought, with extreme fire weather likely in the short term, and with over 10,000 ha yet to be burnt out within the containment lines, that the

fire would burn for weeks within the control lines and not escape on a large scale.

This situation required deployment of resources on a massive scale. A large number of bulldozers should have been constructing control lines from the outset, with the number of bulldozers being progressively increased commensurate with the increasing size of the fires and the increasing risk that the fires would not be contained.

It isn't clear why more backburning had not been completed, a week after the fires started, but it is possible that it was limited by the rate of fire line construction or widening of existing tracks. It is also possible that this meant that a considerable amount of backburning had to be done as the weather deteriorated towards the weekend of 18/19 January. If the fires had been attacked with adequate resources from 8 January backburning would have been completed many days prior to 18 January, allowing in depth blacking out to be conducted prior to the arrival of extreme fire weather. The rate of fire line construction and back burning appears to have been very low.

Attempting major backburns on the day or night prior to a blow-up day is fraught with risk. There is a good chance that the backburn will escape as it is lit, and even if this does not happen, many logs and trees remain alight (or re-ignite in areas that appear to have been blacked out) close to the edge of the containment line the next day. Spot overs are inevitable as the wind strengthens. Considerable turbulence and major updraughts may occur as the backburn and the main fire are drawn together with bark and other burning material being lifted to great heights and moving some distance laterally before dropping to the ground and starting spot fires.

Earlier in the week the ACT Emergency Services bushfire director said that between 13,000 and 16,000 ha of land would be burnt out before control lines were in place. *"The conditions out there are very dry and we are trying to keep these fires as small as we can"*.

It would appear from newspaper reports that by the evening of 14 January approximately 10,000 ha of land within the proposed control lines remained to be burnt. It is likely that the strategy would have been to continue constructing control lines and igniting and burning out the unburnt areas within the control lines as quickly as possible, given the severe fire weather predicted by the Bureau of Meteorology (BOM) for later in the week. However, as stated earlier it would have been reasonable to conclude at this point that there was a very real possibility that the fires would not be contained on the next day of extreme fire danger.

On 16 January the Emergency Services Bureau (ESB) declared a Total Fire Ban for the next 5 days because BOM had issued a Bushfire Weather Warning for the ACT that indicated hot and windy conditions, which placed the bushfire danger indices in the Very high to Extreme ratings.

Also at midday on 16 January, 8 days after the fires had started, in a media update ESB welcomed the deployment of 200 NSW Rural Fire Service firefighters to the Brindabellas to immediately commence backburning operations. By this stage the Bendora and Stockyard Spur fires had burnt out approximately 5600 ha's. It is likely that thousands of ha's remained unburnt within the control lines, less than 48 hours before the fires commenced their major run to the east. The McIntyres Hut Fire had burnt out 9100 ha and the map released by ESB shows this fire, with a long south-eastern edge, poised slightly to the north west of the ACT border. Fire was actively burning over an extensive area of the Brindabellas with extreme fire weather forecast.

At midday on 17 January ESB stated that Bendora and Stockyard Spur fires had burnt out approximately 7193 ha's. If ESB was still relying on the control lines which were reported in the Canberra Times on 15 January this left a minimum of 5800 ha's to be burnt within the containment lines. Six kilometres of backburning had been completed around the south-eastern sector of the Bendora fire on Thursday night, however, some breakouts had occurred to the north and south.

Planned backburning operations on the Stockyard Fire had not taken place because of damage to a bridge preventing access to the south east area of the fire. If the bridge was damaged because a tanker fell through, it is reasonable to ask how frequently the various land management agencies carry out bridge worthiness inspections. The full range of forest bridges from major bridges on secondary roads through to earth fill bridges with logs as stringers should be subject to annual inspections and repair or replacement as required.

The ESB media release on 17 January stated that backburning operations were planned for Friday night with extreme fire weather predicted over the weekend. It would seem that the scale of the resources allocated to the fires was too little, too late.

The predicted burnout perimeter map for 17 January shows that substantial areas inside the proposed control lines for the Bendora fire and Stockyard Spur Fire remained to be burnt out.

An article in the Canberra Times on 8 March said that on 17 January the Bendora, Stockyard Spur and McIntyres Hut fires started to break their containment lines. The next day they began to move east into the pine forests of the ACT.

Claims have been made that no-one could have predicted events on 18 January. To the contrary it was quite clear that the fires were going to spread rapidly across the countryside, burn with great intensity and cause considerable damage. The behaviour of bushfires on days such as 18 January is well documented.

It is possible that a view prevailed that the probability was not high that the fires would reach Canberra. I don't understand how this conclusion could have been reached when so much data is available about the rate of spread of fires, spotting behaviour, fire intensity and fuel loads. By this stage fires had burnt out extensive areas of Kosciuszko National Park and in alpine areas in Victoria and had not been controlled.

It is difficult to understand the lack of preparation for a large fire impacting on the western edge of Canberra when a report in the Sydney Morning Herald on the 17 January stated *that bushfires are expected to threaten parts of Canberra today*, the ACT's chief fire control officer was quoted as saying that conditions resembled those that preceded the Ash Wednesday bushfires in Victoria and South Australia in 1983. In addition, the NSW Rural Fire Service Commissioner said that "The current weather forecast and the fact that vegetation in the southern part of NSW and the ACT is extremely dry, means the potential for fire to impact on increasingly more populated areas is high".

As an aside it is important to note that most of the Ash Wednesday fires started on the day, at a time of extreme fire danger. Fire fighting agencies did not know where the fires would start nor at what time. The concentration of fire fighting forces takes time. By contrast the Brindabella fires in January 2003 had been burning for 10 days and the fire chiefs from the ACT and NSW had correctly identified the potential for serious impacts. They had plenty of prior notice and the opportunity to concentrate substantial forces if they thought conditions warranted it.

There was so much actively burning fire in the Brindabellas that it was inevitable that the fires were going to escape the containment lines and run hard to the east.

If the comments attributed to the ACT and NSW fire chiefs in the Sydney Morning Herald on the 17 January are correct it would appear that the potential for serious impacts was clearly recognised, unfortunately appropriate measures do not appear to have been taken on a sufficient scale to reduce the severity of these impacts. The emergency services appeared to be unprepared for the arrival of the fire in Canberra's suburbs. It has even been suggested that as late as midday on 18 January ESB didn't think it likely that the fires would reach Canberra.

By the evening of 17 January;

- the fires had been burning for 10 days;
- it would appear that backburning had not been completed around some of the fires;
- large areas within proposed containment lines were unburnt; and
- and extreme fire weather was imminent.

The situation had all the ingredients for a major disaster.

Senior Fire Chiefs had publicly expressed serious concern about the potential for the fires to impact on populated areas. If they had acted on their concerns, a large taskforce of urban and rural tankers could have been assembled in the south western suburbs of Canberra. This had been done by NSW fire agencies on a number of occasions over the last decade, particularly in the Blue Mountains. Many of the ACT urban fire fighters could have been recalled to duty during the morning when the fires commenced their run. Urban pumpers could have been brought from Sydney.

Some public land management agencies need to make substantial changes in their approach to fire protection and fire suppression if they are to avoid bushfire disasters such as the ACT fire on 18 January. The approach needs to be much more sophisticated than simply purchasing fire tankers.

An appropriate balance must be reached between funding for fire protection and funding for fire suppression. More resources and funds should be allocated to fire protection works. Most of the effort has been concentrated on fire fighting rather than reducing the likelihood that major fires will occur.

I am certain that the events of 18 January could have been avoided, if over the last 20 years, a major prescribed burning program had been conducted on an annual basis in the Brindabellas. Excluding fire from extensive tracts of forest, for long periods of time, is an extremely risky policy. The high fuel loads which result increase the difficulty of rapidly suppressing bushfires and minimizing the area burnt, and increases the likelihood that firefighters will die or be injured in the process.

The ACT, for example, will always require assistance from NSW with the longer campaign fires. However, it takes time for resources to arrive from further afield and fires must be rapidly and vigorously attacked with local resources from the outset. Therefore, prior to the next bushfire season, the ACT must develop an adequate first attack capability. All options should be considered, including the training of sufficient numbers of helicopter rappellers for rapid attack in multiple lightning fire events.

In NSW and the ACT less reliance should be placed on volunteers in mounting first attack operations on forest fires on public land. Volunteers usually have to be called from work, travel to their brigades fire shed and then drive considerable distances to the forest fire which increases the time taken to concentrate adequate fire fighting resources on a fire. Volunteers have been, and always will be, an essential part of fire suppression operations but they should not be used to fill gaps in initial attack capability created when land management agencies reduce the size of their workforce.

It is possible that some fire controllers and fireline section bosses do not fully understand fire weather cycles and the importance of effectively using the short periods of less severe fire weather between the periods of bad fire weather to bulldoze firebreaks/containment lines, and to conduct back burning operations and to widen backburns where the initial burn did not burn in a sufficient distance. It is also possible that the relationship between weather, fuel loads, terrain and fire behaviour is not fully understood by fire fighters.

It has been suggested that in recent fire seasons in NSW, fire controllers have been unwilling to conduct back burning operations or that backburns have been delayed because of concerns that fire fighters might be injured. Such a policy is likely to result in more fire fighters being injured because;

- Where backburns are not conducted it increases the chances of the wildfire burning out of control across containment lines, during the next period of severe fire weather; and
- Where delays of even 24 hours occur, the backburn is conducted closer to the next period of bad fire weather, resulting in more severe fire behaviour during the backburn (and the possibility that fire crews won't be able to contain the backburn), less time for successful blacking out and thus an increased likelihood that the main fire will escape on the next day of extreme fire danger.

It is inevitable that occasionally backburns will be lost due to the arrival of stronger than predicted winds or wind changes that weren't forecast, but these can be minimised if fire leaders have a better understanding of fire behaviour and fire weather and backburn at appropriate times. It is possible that a significant decrease in the amount of prescribed burning in south-eastern Australia in recent decades has resulted in a decline in the numbers of highly experienced fire practitioners, both leaders and crew, compared with the situation 20 years ago (obviously the 2002/2003 fire season has increased the experience levels of many people). The increased exposure to, and knowledge of fire behaviour, that prescribed burning provides contributes to a greater willingness to backburn at appropriate times during fire suppression operations.

By participating in regular fuel reduction burning operations, during the cooler months, staff become familiar with fire behaviour and as a result are more likely to make the right decisions during the fire season regarding crew safety and timely and appropriate use of fire to contain wildfires. Decisions such as;

- whether it is safe to directly attack a fire started by lightning, by walking in from a four wheel drive track;
- conditions under which it is safe to backburn;
- at what point on the perimeter should the backburn commence;
- varying the ignition rate according to fuel loads, terrain, weather conditions, the speed with which the wildfire is coming out and the resources available to contain spot overs; and
- when is the backburn getting too hot

The only way to become competent at making these decisions is through experience preferably by being taught by experienced operators and through careful observation.

All public land management agencies should be prepared, when a fire is first reported to immediately deploy earth moving equipment, such as bulldozers and graders, in sufficient numbers to rapidly brush up tracks and create mineral earth firelines around outbreaks. Greater use should also be made of water bombing fixed-wing aircraft and helicopters.

I recommend that public land management agencies, if they don't already do so, clearly state in their fire management documents that;

- The protection of human life is the highest priority of bushfire management;
- The protection of property is an important but lesser objective;
- Prescribed burning is a major component of fire management programs in forest areas; and
- Prescribed burning is the most efficient and effective method of reducing the impacts of wildfire by modifying fuel loads in forest areas.

In addition, the community should be better educated about prescribed burning, fire prevention around the home, wildfire behaviour, appropriate action if a wildfire is imminent, and the ecological impacts of fire (both prescribed and wildfire).

The reasons for excluding fire from specific areas should be clearly explained and fire control tactics to be used should wildfire start in these areas should be clearly set out.

An alleged lack of knowledge about the potential impacts of fire on particular species or ecosystems should not prevent prescribed burning where it is

identified as being essential to reduce the fire hazard (These concerns can be addressed to some extent by creating a mosaic of burns across the landscape in terms of season, frequency and intensity).

Access roads, bridges and filling points, such as dams, should be regularly inspected and maintained.