

Supplementary submission to

Bushfire Inquiry

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Introduction

This supplementary submission has been hastily prepared at to assist with further input to my submission of 9 May 2003.

I would have preferred to have prepared a submission that was more considered, more researched, addressed more aspects of the fire problem and been more polished in its presentation. I apologise for the shortcomings that I am aware of and for those that have escaped my attention. My only excuse is that I am with out any time or resources and as such this is the best that I can afford.

The bushfire problem that we have created by forcing a Eurocentric view of fire on the Australian landscape is simple in principle but very complex in detail. The difficulties have been generated by changing the role of fire in maintaining a healthy and safe environment. The indigenous people aided by lightning ensured that frequent mild fires punctuated by areas of high intensity fire burnt throughout most of the year including and especially the summer and autumn in Victoria. The resulting landscape was one of diversity, low average fuels and considerable native animal grazing. . The solution is to return fire to this environment.

Such a return of fire is as difficult as any other problem facing the environment such as salination, loss of natural landscape due to development and environmental flows in our rivers. The changes have not only been the removal of the pre-European fire regime but the insertion of blackberries, foxes, rabbits and vulnerable and badly designed human assets. The reversal of this damage is not easy and perhaps impossible due to a lack of political will and the personal agendas of some in our agencies of government.

The laws of thermodynamics know nothing of these difficulties and just ensure that if there is fuel it will burn sooner or later. If there are less regular mild fires there will be more fuel and an infrequent hotter, faster and damaging fire. The decision not to burn is in reality a decision to burn much less but much hotter. Rather than reiterate this historical analysis I refer the inquiry to Tim Flannery's book "the future eaters" and Tom Griffiths "Forests of Ash".

There is a lot of information around in the scientific literature. McArthur and Luke, "Bushfires in Australia" at least 300 pages, "Fire in the Australian Biota" which must be another 300+ pages, an American text of two volumes, a decade of the International Journal of Wildland Fire would cover a lot of what is relevant here. In this submission I cannot cover more than a monolayer of the knowledge available.

Many aspects of my suppressed report to the coroner on the Linton Inquest are relevant to recommending a better approach to the Victorian fire threat. The report is not available so to support this short contribution I have included some appendices to that report all which are in the public domain. The appendices can be found in the CD of the Coroners report at PACKATT1, PACKATT2 and PACKATT3. The contents of these files and page numbers are attached to this submission. I have reproduced three of these attachments and included them with this submission.

The Risk

The major risk to Victoria from bushfires has been the failure of the responsible authorities and the urban public to understand the scale of the bushfire threat. Even now that is not fully recognised except for those who have seen or experienced the recent fire disaster and was aptly described with a voice of awe by the Inquiry Chairman as "inhuman". This understanding gained either by seeing the aftermath or living through it or internalising the boffin figures and calculations is a necessary first step to providing solutions. In July 2002 I wrote the enclosed letter to the weekly times a section of which was published in the Sun. I received no feed back or comment from the authorities or for that matter from anybody else. I stand by the content of that letter and suspect that on 31 July if no good rains fall I could send it of again with 2002 changed to 2003. The drought and fuel dryness is still with us. There is more moisture up north, which could save the bacon somewhat.

In the absence of a drought break the State faces a threat greater from fires than other external activities. Unless of course the external threats realise how vulnerable we are and take advantage during the next summer.

The scale of large fires.

The use of fire for fuel management has been well stated by Robinson et al ("Cleaning up the Country", attached) and also by the head of the US forest Service, Jack Thomas (Concerning the Health and Productivity of the Fire-Adapted Forests of the Western United States, attached).

The quasi scientific argument for fuel management is based upon Byram's line fire intensity index (not an index at all but a rigorously derived physical parameter) $I = H w r$, where I is the fire intensity (Mega watts per meter of fire edge), H the calorific value of the fuel (17 Mega joules per kilogram) w the fuel concentration (Kg per square meter)

and r the rate of spread (meters per second). There is also a relationship between the r and w , which means that I is proportional to the square of the fuel concentration. Hence reducing the fuel by one quarter reduces the fire intensity to one sixteenth. The lower rate of spread also decreases the area burnt by between one quarter and one sixteenth depending on wind speed.

The 1.3m ha of Gippsland and the NE that has just burnt probably had 30 tonnes per hectare of available fuel, that is about 40 million tonnes of fine fuels were consumed in the flame fronts (and at least the same amount of heavy fuels later). That is an energy release equal to almost 3000 Hiroshima fission bombs.

Experiments in Nowa-Nowa during the 1980's showed that the maximum fire intensity that could be controlled at the head is 2.5 Mega watts per meter. Fuel reduction fire intensity must be below 0.5 Mw per m and crowning fires start at about 10 Mw per m, The Linton tanker was over run by a fire of about 10 – 12 Mw per m and Ash Wednesday in Victoria averaged about 50 – 70 Mw per m.

The fires in eastern Victoria this year spread over about 10 hours of fire spread per day with a spread rate of about 3 kilometres per hour. The resulting average fire intensity was about 14 mega watts per metre. Peaks of fire spread as it ran up slopes and troughs as it burnt down hill would be around 60 and 4 Mw per m. All of which will overwhelm any firefighter or aircraft.

A few more helicopters will have little impact once the first few minutes of acceleration had occurred.

This is just not boffin talk but the realities of the physical world. Natural fuels will burn if weather and ignitions coincide. The heat stored in the fuels will be released and often at a rate that is beyond human control. The resulting fires will have a mass of undesirable results. The areas burnt in 2003 will be a fuel management problem for 15-20 years.

The conclusions based upon physics, thermodynamics and the laws of chemistry. Control of the fuel by burning is the only effective strategy.

Fuel reduction

Fuel reduction by burning can generate a "fire proof" dry forest. The West Australian experience was that a 4 – 5 year rotation which took a decade to achieve after we introduced it created a very safe and healthy environment. A ten-year rotation is the longest that can achieve any protection.

It is unfortunate that the evidence for the above assertions is sketchy and lacks a proper review. A review at a rigorous and objective level will give more objective advice for the future. In the meantime an immediate start by aerial ignition could achieve a useful level of protection especially for our water supplies if next summer is as bad as the last.

An expert advisory and auditing task force team is required immediately to ensure that the burning targets are met before next fire season. There are many excuses for not burning (see Cheney, attached) and whilst safety is important the operational activity to achieve responsible fuel loads will occasionally involve escapes (see Thomas conclusions, attached and emails from Florida and Tasmania, attached). The greater irresponsibility is to maintain our current catastrophic fuel levels.

Community Involvement

A fire even on a bad day will begin and remain below the 2.5 Mw per m level for some time. It may take 5 or 10 minutes to exceed the control level. In that time fast community based initial attack can provide predictable success. The probability of successful initial attack can be calculated (Tolhurst) and it is clear that community based fire brigades are an important first line defence. Their success is greatly increased with fuel management especially on extreme days. Issues of fire behaviour are relevant here and the application of the McArthur models of fire behaviour is all that is needed to prove this assertion.

The current destruction of community fire brigades by centralising control, devaluation of local experience and skills will in the next decade reduce this capability.

A level of safety is required for community firefighters and the current situation on the CFA fire tankers where plastic is used for heat shields and water tanks is likely to lead to further deaths as experienced at Linton. The current tankers in the CFA are unsafe and to not fix the problem is to invite accusations of deliberate negligence. They must be grounded until metal heat shields are fitted.

Research

Fire research is the basis for successful fuel and fire management as well as professional and public education. Fire research can have an applied, coal face component more akin to development but fire research can also have a far-reaching and sometimes uncomfortable component. It is the latter that has been suppressed in Australia over the last twenty years and has seen us left well behind the world that we once proudly led. It has been suppressed because results can sometimes challenge current policies and require an unwelcome rethink by agencies of government.

Independent research needs to be supported. It does not need to be co-ordinated (read "controlled" for that is what "co-ordinators" have in mind).

The proposed CRC will if it survives produce only "correct" results under strict supervision by the strongly directive board.

National consensus and guidance must come from many sources to be creditable. Without creditability fuel management will not be achieved. It will need governmental support and leadership to achieve the necessary diversity in research.

A research fund in Emergency Services with an independent and representative committee would oversee grants for projects in Universities and the community. Other activities could be to host conferences open to all and fund visiting guests both internationally and locally. A million dollars will achieve a lot.

Fire Control

I am concerned with the replacement of local experienced fire controllers by the incident management system. Let not my critics say that I do not understand it for I do. I do not like it. My examination of Linton caused me to conclude that the IMS may be suitable for a professional agency with a slowly developing situation but for a rapidly moving fire it failed and will continue to fail. It is slow to establish and takes no account of how a community actually works, a little time spent with some good anthropologists and social psychologists would bury it quickly.

It fails to take account of local knowledge, relationships, trust and most importantly networks. It has no place in a community based fast initial attack fire brigade service. Its failure in Linton in my opinion was a major contribution to the placing of firefighters in harms way.

Conclusion

Fuel management has a sound basis within the physics of fire behaviour. Fuel management is an effective strategy to remove the extreme threat to Victoria, its residents and infrastructure. An immediate program may avert a similar disaster to 2003. Before next season with aggressive and experienced management, government and public support and the use of resources from around the nation a program of 300,000 – 500,000 hectares for a start (probably 5-10% of the dry forests) could protect our wetter and more sensitive forests, catchements and interfaces this year. Some reference and special areas would need to be excluded from the program.

Independent research needs to be supported and encouraged.

An immediate return to local and community based fire protection by volunteers is essential if community support is to continue.

The Incident management system needs to be scrapped for volunteers and a community acceptable fire management system developed.