The Politics of Fire Management

Presented by

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***Abstract**: Wildland fire has inexorably shaped the Australian landscape. At the extreme end of the fire behaviour spectrum, the most robust preventative and mitigation measures are severely tested. Activities including hazard reduction, creation of asset protection zones and rigorous fire hygiene near vulnerable assets can offer excellent protection during lesser fires. When coupled with partnerships between fire services and communities they offer increased, but not guaranteed levels of protection during "worst case" events.*

Australia has yet to reach the point where partnerships between communities and fire services have reached full potential. Following each severe fire event that causes loss of property, and sometimes, tragically, loss of life, the debate focuses on issues familiar to most members of the community and vested interests. This debate occurs to the detriment of a critical examination of areas where significant advances in protection of life and property can, and have been achieved through full involvement of communities.

It is universally accepted that fire has shaped the Australian landscape, perhaps more so than on any other continent. The interactions between the environment and use and management of fire by recent settlers has barely spanned two centuries, yet there are numerous instances where the two have collided, with sometimes disastrous results. Perhaps these results have flowed from a very poor understanding of the real role of fire in this, the driest of the settled continents, and an almost complete lack of appreciation of the signal role of anthropogenic use of fire, practiced for 40 000 to 60 000 years by Aboriginal inhabitants.

Indeed, it is almost certain that this very fire use over fifty millennia or so greatly helped to sponsor a vegetation pattern that needs and responds to regular occurrence of fire, in order to sustain its health and well-being. The Australian landscape is remarkable – it needs a long time to recover from the effects of the bulldozer and the plough, but a relatively short time elapses from occurrence of fires to the recreation of magical bush settings, perhaps considerably longer for very high intensity fires.

Thirty to forty years ago fire management was relatively simple. The few fire fighting authorities got on with the task of suppressing fires as best they could, often with limited equipment, simple organisational structures and a lot of people who possessed little or no training for what was a very dangerous and arduous task.

The public warmly appreciated the efforts of volunteer brigades, farmers, forestry workers, national park rangers, police and anybody else who lent a helping hand. Sometimes the result was extraordinarily successful but on other occasions, especially when the mercury hit 100 on the old scale, humidity fell below 10% and the wind speed reached 30 miles an hour or more, the full wrath of nature was so powerful that all efforts by people were insignificant. In the stoic fashion typical of early Australia, there was a wry acceptance, that from time to time, the vagaries of the weather would be visited upon the community with such force as to wreak great havoc on property, forests and the environment.

All this was accepted as a part of the way of life and communities got on with rebuilding their lives and businesses after the fires. Resources were scarce and fire services were almost non-existent. Early settlers were very much on their own and it was mostly a case of help yourself, help your mate and help your neighbour, probably in that order.

This acceptance that periodic visitation of fire could be so intense as to be beyond control is no longer the case, and it is a curious quirk of human nature that there now exists a very clear expectation that fire management agencies will be able to effectively manage almost any situation that arises, restricting damage and losses to very low levels, irrespective of the conditions that might prevail. There is almost as clear an expectation that *"all of my neighbours will so manage their land as to prevent fires from encroaching onto my land"*. That expectation is often not matched by like activities on the individual's own land.

Conflagration style fires that have enveloped parts of Australia over the last decade are not unprecedented in the severity of the fire intensity that has been experienced, but many long-term fire managers believe they are unprecedented in their frequency. By way of example, New South Wales has experienced extraordinary fire seasons and fire events in 1993/94, 1994/95, 1997/98, 2001/02 and 2002/03; on average one very severe fire season out of each two years, a far cry from norm of one really tough fire season per decade.

There is a strong recognition, at least within the fire management agencies, that inputs and interactions between the fire services and the communities they serve are crucial if there is to be successful avoidance of substantial losses to infrastructure and property, especially to housing, that abuts forest and shrubland areas. It is no secret that New South Wales lives with the legacy of some very poor planning decisions that were implemented three to four decades ago, exposing many interface housing areas to impact by high intensity fire. As history will show all too graphically, that threat can easily be realised whenever the necessary elements line up. Appropriate planning protocols were not mandated until the mid 1980s. Even then, implementation was placed in the care of local Government and ultimately became something of an ad hoc lottery with diligent Councils placing some emphasis on careful observance of the provisions. Unfortunately that diligent category was very much in the minority and peri-urban development proceeded apace, with few of the necessary development controls.

The situation now exists in NSW that many communities are exposed to the potential impact of high intensity fire at some stage in the economic life of developments. Far from recognising that their property may be in jeopardy under very adverse conditions, and implementing sound fire hygiene on and around assets, many property owners place a huge degree of reliance upon the fire fighting authorities in the hope that the "big red fire truck" will materialise during their hour of need. Mostly it does, but when extensive fire occurrence and adverse weather threatens large areas, available fire trucks and the people to staff them are stretched to the limit.

No doubt this shift in community attitude has stemmed from the emergence of better resourcing of fire agencies with improved communications, equipment, coordination and training. Gone too are the days when the community accepted (and also appropriately insured its assets!!) that periodic fire will eventuate that is capable of destroying property and housing and occasionally causing loss of life.

Following every severe fire event, and definitely those where fires impact into urban and semi-urban development areas, an inevitable debate ensues that now attempts to apportion blame for the event and to point the finger by identifying an agency or agencies that allegedly "*caused*" the event, or whose actions or inactions allegedly "*contributed*" to the losses. Often, the sheer fury of nature is completely overshadowed by an expectation that people and modern technology can defeat even extraordinary events by their preparations and reaction to them. There is an increasing concern that nearly all of those *"preparations and reactions"* should be implemented almost solely by the fire services or by large government agencies responsible for extensive tracts of land.

These debates always centre on a few topics – local knowledge, organization, communications, equipment, and hazard reduction, probably in reverse order. They tend to focus almost exclusively on the pre-suppression activities of the fire services and land managers and the performance of the fire services during campaign firefighting. There is very, very little, indeed sometimes nil, focus on the preparations and pre - suppression activities undertaken by other "*property owners*".

The discussion invariably turns to hazard reduction and it is a topic that is debated at length on each occasion that there is a serious fire event. Commentators who have their own agenda often fuel such discussion, but unfortunately their agenda is rarely matched by any clear and in depth understanding of the real nature of fire, weather or the key elements of community safety. It is usually with an air of total resignation that it can be confidently predicted that they will turn toward the nearest large land owner or manager as "*the culprit*". It has been said before, and no doubt will be again, that hazard reduction is not the sole solution for dealing with high intensity fire under adverse weather conditions. This statement should in no way be construed or accepted as a view that hazard reduction should not be undertaken, but even a simple analysis shows that hazard reduction is a part only of the answer.

The two most recent fire seasons in NSW serve as an apposite example. During those two seasons approximately 2.2 million hectares of land were burnt. Without exception, each fire that was investigated through public inquiries, caused people to present to the inquiry/s and to lay blame squarely at the feet of relevant land management agencies or blame the fire fighting authorities for failing to take "*sufficiently resolute action*", "*insufficiently prompt action*" or in some cases "*no action*". These same people saw no reason why their own property should have been exposed to hazard reduction activities to the same extent they envisaged for public lands. They also clearly have no understanding about intense fire behaviour at a fire danger index between 80 –100 and the futility, indeed sheer folly of attempting direct suppression efforts under those conditions.

Should NSW have been in the fortunate position that it had completed about 2.2 million hectares of hazard reduction, in precisely the areas covered by the 2001/02 and 2002/03 fires, then of course those fires would not have been so serious. Many of them would still have burnt, but at greatly reduced intensities, depending on the age and effectiveness of the hazard reduction. Reality is that NSW is most unlikely to be able to effect hazard reduction over an area of that magnitude just prior to two successive severe fire seasons, and even if it was the quality of modern crystal balls is not sufficient to predict where each fire will break out.

It is worthwhile to briefly explore the real value of hazard reduction. Contrary to what seems to be a fairly popular belief, hazard reduction will rarely stop a fire in its tracks under extreme weather conditions, unless the hazard reduction is about 12 to 18 months old, and is

extensive, with coverage exceeding at least 80% of the area treated. There is no doubt at all that hazard reduced areas make an admirable control barrier under less severe conditions, but under the conditions experienced on an average extreme fire day in Australia, hazard reduction older than about 18 months will not slow the rate of spread, although intensity will be modified.

Some very good examples of young fuels supporting intense fire were evident in 2001/02. Many areas burnt by the extensive 1994 and 1997 fires were affected again in 2001/02. Forest and shrubland areas, burnt by wildfire in 1993/94 and carrying fuels about 8 years old, easily supported intense fire, generating substantial control difficulties. Similarly, areas burnt in 1997 and carrying four-year old fuels, also burnt with some vigour. Whilst not as intense as the 8 year-old fuels these areas also created immense control problems. Those control problems were not figments of imagination, but were very real, as the firefighters charged with very difficult suppression tasks can testify.

Project Vesta research, for which the necessary field-work has recently been completed, has thrown some new light on rates of fire spread versus fuel age. This project aimed to validate and refine the McArthur forest fire spread models. Fires in long unburnt fuels are prone to spread much faster than in fuels where there has been recent modification, but the absolute quantity of fuel is not so critical as previously believed. From a fire suppression perspective a fire travelling at 4 kilometres per hour in 25 year-old fuels carrying 25 tonnes per hectare is unstoppable. Similarly, a fire travelling at 2.0 kilometres per hour in 8-year old fuels carrying only 10 tonnes per hectare is equally unstoppable. The difference in behaviour to a well - equipped and well - trained firefighter is purely academic; there is no ability to stop either fire.

Well trained firefighters operating off sound and well constructed breaks, using heavyweight fire tankers are capable of knocking down and holding forest fires with an intensity of about 3500 kW/m, or a fire with flames about 3 metres high. This is similar to the level of intensity at which aircraft, strongly supported by ground firefighters, can be effective. The table below indicates a sample of rates of spread for different fuel weights, all but one of which are unstoppable by any means.

Table 1 Fire Intensity (kW/m)

Rate of Spread km/hr ►	1.0	2.0	2.5	3.0	3.5	4.0
Fuel weight tonnes/ha ▼						
5	**2 125**	**4 450**	**5 550**	**6 750**	**7 800**	**8 900**
10	**4 450**	**8 900**	**11 100**	**13 300**	**15 600**	**17 800**
15	**6 750**	**13 300**	**16 700**	**20 000**	**23 300**	**26 700**
20	**8 900**	**17 800**	**22 200**	**26 700**	**31 100**	**35 600**
25	**11 100**	**22 200**	**27 800**	**33 300**	**38 900**	**44 400**

It is curious that the hazard reduction debate always centres on activities on public lands and rarely focuses on hazard reduction activities on privately held lands. Often, the very people who are the most vocal are those who have sustained damage and loss to their property along with several of the less well-informed commentators. This curiosity allows the debate to proceed, usually without taking account of the bushfire fuel status on the properties that sustained damage.

In order for a fire to burn it must have fuel to support it. Australia's premier fire researcher, during the 1994 Sydney fires, coined the phrase: "*Whoever owns the fuel owns the fire*". Surely this means that if a fire crosses the boundary between two tenures, and the second tenure has sufficient fuel to sustain and promote the fire, that the new tenure now also "*owns the fire*". There is not any apparent recognition of this principle, as instances abound where property owners who have done absolutely nothing to protect their property from potential fire can be the most vocal.

In the urban interface zone, the State government moved, in the mid 1980's to impose bushfire development controls on new developments. The constraints intended that a physical separation would exist between bushfire fuel and buildings, and that minimal flammable material would be available to fire on and near buildings.

Developers, some Councils and many residents sought ways and means to evade the provisions and many successfully did so, despite the legislative requirement that existed. The value of sensible planning constraints, fuel management and fire hygiene close to buildings can be clearly demonstrated by an excellent example that occurred during the 1994 fires in NSW.

In an area immediately above the Glen Reserve at Como-Jannali, along a housing-bush interface of approximately 1.5 kilometres, 85 houses were totally destroyed when fire spotted across the Woronora River and made a brief uphill run to housing development under extreme fire weather (FDI about 95).

The development in the affected area was some decades old and no specific bushfire protection measures had been built into the subdivision at the time of establishment. Indeed, many houses directly abutted bush and there were examples where individual trees were incorporated into building footprints with parts of the house such as decks constructed around existing large trees.

Many houses in this area were impossible to protect.

Conversely in the two days prior to this impact, on the western side of the Woronora River, under marginally less severe fire weather conditions, (FDI 80-90), along a housing-bush interface of about 18 kilometres, 6 houses were lost to fire, while a similar number sustained varying degrees of damage. The affected subdivisions in this instance had been developed under the provisions enacted by the then Government in the mid 1980s.

A substantial separation of houses and bushland was provided, perimeter roads mainly applied with few houses on the bushland side, and construction standards were of a level that was satisfactory to provide better resistance to ingress of embers, either underneath or into interior cavities within structures.

Consequently housing losses were very significantly reduced in comparison to Como-Jannali. This example provides a stark demonstration of the value of appropriate planning and development measures. Implementation of development and construction standards can never guarantee the survival of a house in a bushfire, but experiences like this obviously demonstrate very clearly that chances of survival are significantly enhanced if sensible standards are observed.

Adherence to these planning provisions was so variable across NSW that following the 2001/02 fires, the Government moved to place the administration of the provisions with the Rural Fire Service rather than with local Government as was previously the case. Consideration of bush fire prone areas by local Government had been encouraged prior to the 2001/02 fire season but few Councils had defined bush fire prone areas. That matter is now mandatory for all local Government areas.

A flow-on effect from the mandatory mapping and identification process is that any land classified as bushfire prone will attract a written notation to that effect on the land register documentation. The intent is to ensure that any prospective purchaser is aware that the land is bushfire prone. It is quite staggering to view the number of residents who object to such a classification being applied to their land. One is tempted to offer a comment about priorities – life and safety versus pecuniary interests.

The formal identification and registration of bush fire prone holdings is a most positive step. There will undoubtedly be property owners and organizations who will protest strongly against these provisions, using a similar line of arguments attracted by "flood-prone" classifications, and potential effect on land valuation, but sound thinking members of the community would agree that this proposal is long overdue.

Many people quite knowingly choose to live in fire prone areas, and some of those recognise the risk and seek no special attention, but there are those who quite happily expect the fire services to provide protection for their assets. There are of course equally many people, who, despite concerted education campaigns, simply fail to recognise the jeopardy in which they have placed themselves. It is not unknown for residents in fire prone areas – exposed ridge tops, high fuel loadings and poor access, to agitate strongly against hazard reduction activities. They do tend to go a bit quiet when disaster strikes, but the opposition espoused against hazard reduction does not seem to eliminate all desire to implement legal action against whoever is in sight when fire damages property, including action by those that were completely ill prepared.

There is an increasing urban/bush interface. Some decades ago, the interface moved more or less with advancing development and bush fire prone areas were completely neutered by the almost complete removal of bushland as areas were developed and given over to housing. One has only to research the older Sydney suburbs to recognise this. With increasing affluence has come a move from the creek bottom to the ridge tops, maintenance within developments of far more significant areas bushland, more esoteric building styles and an increasing zone of house/bush interface. All of these factors contribute to building and people fire safety and must be factored into an increasingly complex equation.

The right of people who choose to live in a bush environment is not challenged, nor is the focus on maintaining more environmentally sensitive surroundings within developments, provided that there is recognition that these decisions engender an increased risk that must be mitigated, otherwise firefighters will be increasingly asked to provide impossible levels of protection, and the residents themselves will be placed in greater peril.

There are members in the community who believe that they hold an inalienable right to live wherever and however they choose. It is now an inescapable fact that whenever homes and lives are threatened by fire, there is a community expectation that the firefighters will turn up

and provide protection. Critical in achieving this, is the requirement that firefighters are not exposed to impossible conditions, so it is imperative that fire agencies unreservedly support sensible planning restrictions on urban and peri-urban development to ensure that the right balance is achieved.

We can never avoid the conditions that generate high intensity fire simply because we cannot control the weather. As desirable as that state might be, it is probably a boon for humankind that it is an impossible state to obtain. If the debate followed even remotely in the path of the hazard reduction debate there would be diametrically opposed views on what sort of weather should be dialled up. The "*finger pointers*" and "*blame gamers*", as well as some of the less erudite commentators would have a veritable field day every time anything went wrong that could be remotely connected to the weather.

In a sensible vein, there has to be an acceptance that periodically very adverse weather conditions will prevail and that any fire not contained within the first 5 to 10 minutes will burn out of control and will stay burning out of control until there is a significant moderation in the weather. That is a scientific fact that people cannot alter no matter how hard they would wish to or try to. Equally impossible is the notion that a very high intensity fire can be "controlled" under extreme fire weather conditions. The simple scientific background is that the energy release caused by the rapid combustion of cellulose in bushfires is so high that there is NO technology capable of effectively dealing with it, and there is no indication that any such technology is even on the horizon. No airplanes, no fire tankers and no firefighters have any hope at all against energy release from fires that move through the forest at what might seem a fairly pedestrian rate of 3 to 4 kilometres per hour, consuming all fine fuels in their path.

There are some serious indications around the entire globe that weather patterns are altering. Whether this is related to global warming or some other cause remains to be seen. In the context of intervals between ice ages, reliable meteorological records are but a small blip on the whole time scale. Indeed some of the oldest records in the world date back for 600 or 700 years, ours in Australia for a mere 152 years. What is clear is that many regions and countries have experienced worst or near worst fire conditions over the last decade or so. It doesn't matter whether it is North America, Mediterranean Europe, Asia, Russia, South East Asia or Australia, the simple fact is that we cannot avoid fire when weather conditions are highly conducive to its development and spread.

As weather conditions deteriorate and fire danger ratings increase, fire ignitions rapidly rise. It doesn't really matter for the immediacy of the situation whether the ignition was natural, accidental, stupid, negligent or a malicious activity, the real problem facing firefighters is that there is a close correlation between the severity of the weather and the number of fires. Evidence from the most recent fire season in Australia shows that even when areas that have very low population, and by association few fire starts caused by people, experience severe drought, nature will oblige with sufficient ignition points in rugged and inhospitable country to render control impossible until weather conditions moderate. It is very easy to pontificate after the event and to claim that "*insufficient resolve in initial attack*" lead to the ultimate outcome. One sometimes wonders how the critics would fare given no access and a fire that is already motoring along shortly after ignition.

The public debate is somewhat unevenly shaped by the people who hold opposing opinions about hazard reduction, and is even further muddied by commentators, mostly self-

opinionated, without any real understanding of what it is that they are talking about. Almost inevitably hazard reduction conjures up visions of the deliberate use of fire, and in practice, fire is the tool most likely to be used over broad areas for effective reduction of fire fuels. The vocal part of the community falls very clearly into two groups – the anti-burners and the pro-burners. Neither group ever really covers itself in glory. If there is no hazard reduction achieved by the use of fire, the anti-burners remain smugly silent and most of the pro-burners remain apathetically silent. If, on the other hand, some hazard reduction is achieved, the anti-burners immediately go up in arms and the pro-burners add a little weight, but not very much, to the argument.

It is interesting to observe the different tactics employed by the two groups. The anti-burners tend be more politically savvy and focusing more heavily on the public, and lobbying Governments to achieve their desired outcomes. The pro-burners display an element of naivety, and tend to focus on lauding their efforts within their own organizations about the value of hazard reduction, with little effort devoted to educating the people who really don't know – the public (and the commentators!)

Neither side is able to reconcile with the view that the most beneficial result lies somewhere between their two extreme views. The heavily polarized debate ensures that the hazard reduction pendulum will continue to swing through wild gyrations that are not productive for the long term good of the community or the environment. Whenever there is serious fire and assets are lost, and sometimes tragically people as well, the pro-burners swing into action. At this same point the anti burners project an image of deafening silence.

The real answer lies somewhere in the middle with neither extreme view taking precedence or being adopted. As the flavour of governments change the pendulum on hazard reduction proceeds through some mighty swings, the end result of which is that sensible, community based fire management is not achieved. Both parties in this debate must find some common ground that will enable the joint goals of public safety, asset protection and environmental husbandry to be soundly implemented.

Until that occurs, we will continue to suffer the consequences of conflagration fires wherever and whenever they occur. The land management agencies must either continue or begin to apply fire to the estates they control, if for no other reason than to reduce the intensity of very hot summer fires and the rather longer period required for the Australian bush to regenerate itself as a result of severe fire during deep drought. There is a secondary reason and that is to embark upon a pragmatic research program to scientifically analyse, over a long term basis, the impacts of more frequent low intensity fire versus that which, on the evidence of the past decade, has become a frequent and regular application of high intensity fire to extensive areas.

All of the evidence from every collision between recent settlers, fire and the flora on this continent indicates with great clarity that we cannot avoid fire. **It is a part of this land that cannot be eliminated, and under very adverse weather, neither can it be tamed.**

Recognition of that principle by all parts of the community must occur before there is a realistic chance for the people on this continent to live in harmony with fire. Understanding the relationship between fire and the environment is not just about achieving hazard reduction over 0.743% of the land mass each year, it is not just about householders making an annual inspection of fuel build up and cleaning out thier gutters, it is not just about more "big red

trucks" or extra aircraft or more firefighters, or more bureaucratic red tape, but it is a whole complex of events that requires a much closer degree of cooperation between individual communities, fire services and land managers, not only for one or two seasons but on a permanent and ongoing basis.

There are examples where communities have engaged productively with fire services to secure a safer environment in their surroundings. It is critical for the wider community that the "fire" debate is not hijacked by vested interests or ill informed argument, but that fruitful dialogue and interaction can be encouraged to enable all fire prone communities to develop a greater understanding of the place that fire occupies in the Australian environment.