Submission to Victoria's Draft Bushfire Management Strategy

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Kinglake Friends of the Forest Inc
Contact: kinglakefriendsoftheforests@gmail.com

Thank you for the opportunity to comment on this Draft Strategy.

Like Regional Forest Agreements and other policies, modernization of Victoria's bushfire strategy will only be possible if the terms of reference allow a completely new way of protecting assets and Country from fire. The whole bushfire strategy needs to be overhauled based on a combination of good recent scientific data, technical advancement, and a nuanced appreciation of Cultural practices. Twentieth century fire management processes are no longer appropriate as the nature of fire has changed and there have been major scientific advances in the understanding of fire behaviour and important advances in early detection and suppression technology.

In the Draft Strategy document, the desired outcomes, and the paths to achieve them are grouped under six headings. We will examine each of these in turn.

Outcome 1.

Communities are safer from and less impacted by bushfires and bushfire management.

Protection of not just human life but human health needs to be considered when choosing fire prevention methods. Currently, a major pillar of bushfire management is the planned burn program The use of planned burns impacts the health of many people due to the volumes of smoke produced. The particulates in this smoke have adverse effects on human health. There is ample anecdotal evidence from local GPs, especially in the Yarra Valley, that planned burns coincide with dramatically increased presentations of patients with serious (sometimes life-threatening) respiratory symptoms. This is backed up by data from Sydney where, for example, during May 2016, prescribed burning activities produced six days of clearly increased $PM_{2.5}$ which was associated with an estimated 14 premature deaths and 87 cardiovascular and respiratory hospitalizations.[1]

[1] Broome R.A., Johnston F.H., Horsley J., Morgan G.G. A rapid assessment of the impact of hazard reduction burning around Sydney, May 2016. *Med. J. Aust.* 2016; **205**:407–408. doi: 10.5694/mja16.00895

The danger is exacerbated by the lack of reliable air quality monitoring. Monitoring does exist but often fails, especially when the air is particularly smoky.

The health impacts from planned burns might seem to be an unfortunate, but inevitable, side-effect of bushfire mitigation if, and only if, the impact from planned burns was genuinely and consistently less than the overall impact of wildfire would have been without them. But this is not supported by the evidence.

Indeed, many studies now show that current fire mitigation strategies (fire breaks, planned burns and forest thinning) do nothing to mitigate severe fire and, at worst, make forests more flammable.

According to Matthias Boer and Ross Woodstock, "In the forested regions of southern Australia prescribed burning is less effective [than in tropical savannahs] in mitigating unplanned fire. To get a hectare less of wildfire you have to burn three to four hectares with prescribed fire." Another study[2] found 12 hectares must be burned by prescribed fire to reduce wildfire area by one hectare. The usefulness of planned burns will be further examined later.

The draft strategy (page 28) refers to the clearing of roadside verges and removal of hazardous trees. No tree should be removed without being assessed by an independent arborist, suitably qualified to identify good habitat trees. Too many trees are removed unnecessarily, and our wildlife is being lost due to this poor practice. Replacement of one mature tree with several young trees does not replace what was lost. With the climate crisis upon us, we require every mature tree, for both their intrinsic values and the benefits to humans such as cooling. We have no evidence that replacement trees will thrive in these changed climatic conditions.

An innovative approach to protecting communities that should be considered is the use of 'green fire-walls'. These are shelterbelts designed to protect buildings and animals from the worst effects of fire by planting fire-resistant native trees strategically. These plantings can deflect the fire and act as a windbreak, while simultaneously increasing biodiversity.

Prevention needs to be considered too. The Independent Assurance Report to Parliament 2020-21:4 (Vic Auditor-General's Report on Reducing Bushfire Risks Oct 2020) shows ignition sources in Victoria. Unattended campfires in contained boundaries were the greatest source of bushfires in Victoria in 2018, igniting approximately 800 fires. Although it would not be a popular decision, these figures suggest that the banning of all campfires from November to March should be considered. The ban period could be constantly reviewed to reflect the current weather patterns. There are many other safer sources for cooking food when camping, and the elimination of these fire ignitions would save on resources and protect our ecosystems.

Outcome 2.

Fire regimes and land management support healthy and resilient ecosystems and nature conservation. Supporting better environmental outcomes means continuously updating our understanding of how ecosystems respond to the impacts of fire regimes.

Again, an excellent goal. But do the focus on "fuel load" and the extensive planned burns and bulldozing of firebreaks support this goal? And is the department continuously updating their understanding of how ecosystems respond to the impacts of fire regimes?

While there is ample research to show that, some (not all) Australian plants respond well to fire, too frequent fire, too hot fire, and fire in the wrong place or at the wrong time can be catastrophic for ecosystems. Yet the Department seems to employ a blunt instrument approach where tens of thousands of hectares are burnt without prior survey for threatened species; or even an assessment of whether the targeted area is one that would normally only burn once every hundred or more years.

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[2] Campbell, T., Bradshaw, S.D., Dixon, K. W. B., Zylstra, P.J. Wildfire risk management across diverse bioregions in a changing climate. Geomatics. Nat, Hazards Risk. 13. 2405-2424 (2022)

In 2018 a "low intensity" planned burn killed 17 out of a local population of 22 endangered Western Ringtail Possums in WA. The fire burned exactly as the managers intended but the science they were using to estimate the potential damage to wildlife was outdated and flawed.

In their paper Long-unburnt habitat is critical for the conservation of threatened vertebrates across Australia, von Tachak et al argue that "to conserve many threatened vertebrate species in Australia, landscape management should emphasise the protection of existing long-unburnt patches from fire, as well as facilitate the recruitment of additional long-unburnt habitat, while maintaining historically relevant age distributions of more recently burned patches."[3]

There are many reasons for this: direct mortality from the fire and smoke, greater ease of access for predators, loss of food supply, ash pollution of watercourses and destruction of hollow bearing trees and logs. According to ecology adviser Michael Feller, "Bushfire management in Victoria is causing biodiversity decline through significant loss of hollow-bearing trees."

Phil Ingamels (VNPA) agrees with this view. When FFMV cuts fire breaks, large old hollow bearing trees are often cut down because they are seen as hazardous to the workers. These will take 100 - 200 years to replace. This destruction of HBTs also occurs if a break is put in place around a planned burn. FFMV personnel have complete autonomy regarding which trees are to be destroyed, even in a National Park. Either protection of wildlife is not a priority or training is inadequate, because in 2022 a large, living tree with an obvious hollow (which was inhabited) was cut down. A letter of complaint was sent to the OCR but when the FFMV assured them that everything had been done correctly, no action was taken.

If they escape being deliberately felled, these habitat trees often collapse after planned burns.

In 2017, in its Final Recommendation on Nomination for Listing (of the Greater Glider as a threatened species) the Scientific Advisory Committee stated:

'In addition to wildfire, 'prescribed burns' pose a significant ongoing risk to the Greater Glider and its habitat. Planned burns in the lowland foothills of Gippsland have caused major destruction of hollow bearing trees, which are required by Greater Glider for denning. Bluff (2016) identified that in areas of mapped fire coverage, prescribed burns destroyed 19% of hollow bearing trees. The policy of burning 90% of bark off trees also frequently results in incineration of the canopy, destroying Greater Glider food resources.'

We need to protect the little biodiversity we have left. To this end, all areas need to be assessed by ground truthing rather than relying on modelling or information from the Victorian Biodiversity Atlas. Unfortunately, the information from the VBA is not up to date as many land managers now tend to use iNaturalist rather than the VBA due to the ease of data entry via iNaturalist.

And again, if these destructive actions led to a net decrease in overall destruction from fire, they might be the lesser of two evils. But, as we will see, this does not appear to be the end result.

On page 36, Section 2.4 is headed "*Improve the effectiveness, consistency, and transparency of environmental value assessment".* It goes on to say, "*The sector will support communities and staff to use adaptive management to minimise the impact of bushfire management activities on ecosystems."*

If carried out, this will be a good development. Recently, one of our committee members struggled to get information about a planned burn close to her property in forest that she knew intimately. She had to resort to the Freedom of Information Act.

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[3] von Takach, B. et al, 'Long-unburnt habitat is critical for the conservation of threatened vertebrates across Australia', 2022, *Landscape Ecology - Springer Press.*

Here is an excerpt from her complaint to the Loddon Mallee Joint Fuel Management Program.

"The Loddon-Mallee bushfire strategy contains statements that ... have been shown to be incorrect about consultation, protection of high conservation values, prioritising high risk (house loss) areas. Statements such as:

"Between November 2017 and September 2019, representatives of CFA, DELWP, Parks Victoria, Emergency Management Victoria and local governments undertook a strategic bushfire risk management planning process. The process was guided by the Loddon Mallee Regional Strategic Fire Management Planning Committee, through the regional Safer Together Coordinating Committee and Working Group. They offered opportunities to stakeholders and the broader regional community to be involved in the planning process through both in-person and online mechanisms."
The Freedom of Information Request that I made in 2022 provided documents about this "consultation" process. The FOI shows that up to June 2022:

- No media release was made about any proposed consultation about the JFMP.
- No letters were sent to residents – even residents of properties that adjoined proposed planned burn areas.
- The Fire Management program of the largest landholder in the area, the Puckapunyal Army Base was not considered in the JFMP. Puckapunyal fire manager was frustrated that their program was excluded from the JFMP. This was despite endeavours by her to get it included and despite the Loddon Mallee office informing me that the planned burn was to mitigate fire coming from the army base.
- There were 2 meetings which included my Council; the Strathbogie Council regarding the JFMP but none included residents nor were there any invitations or advice notices sent to residents about these meetings. The meetings were;

    - FFMV had meetings with the Strathbogie council and selected invitees.
    - The Murray Goldfields District CFA JFMP planning committee met to discuss the JFMP

  After my FOI request, a submission process was initiated, and I was invited to make a submission. I was glad that my concerns were listened to and acted upon, but alarmed that my advice was not sought earlier, and concerned that other residents have been left out of the process."

  and;

  " It appears that consultation is avoided and critical information used to justify burns is withheld. As discussed above, consultation is not sought. Furthermore, I was forced to apply under Freedom of Information for "fuel" hazard ratings that the Loddon Mallee DELWP office used to justify the burns I was seeking to consult on. I had to engage a professional to carry out a full survey of "fuel" hazard, I found (by FOI) that the "fuel" hazard measurement made by Loddon Mallee DELWP and relied upon had been derived from a vastly inadequate survey effort, and the 2 (only) sample areas measured to be non-representative. I found that a large burn was planned in an area of LMZ that had been burnt just 10 years before – so the burn interval would have been well shorter than the tolerable fire interval. Another burn was planned in a LMZ area despite it having high conservation value with 6 threatened species (3 of which were endangered or critically endangered) and the area having the lowest house loss risk rating in the region.
  I know of no hollow bearing tree density data and HBT's that I surveyed in the planned burn area were at risk of destruction."

Outcome 3

Aboriginal self-determination in cultural and bushfire management.

Aboriginal self-determination and ability to live on and care for the land is paramount. Our understanding from the Traditional Owners we've listened to is that any burns they did were very small, very cool (you could walk there with bare feet after it has passed) and not normally carried out in the forested highlands.

Sadly, their sensitive management of the land was apparently upended with the arrival of the White colonisers. S.D. Mooney et al[4] carried out a study of Australasian charcoal deposits over the last 70,000 years. They took 223 sedimentary charcoal records mainly focusing on south-eastern Australia.

The results show that, "The composite Australasian record of biomass burning over the past two millennia is remarkably flat except for the pronounced increase in fire in the past 200 years." Mooney summarises, "There is no distinct change in fire regime corresponding to the arrival of humans in Australia at 50+/- 10 ka [thousand years] and no correlation between archaeological evidence of increased human activity during the past 40 ka and the history of biomass burning. However, changes in biomass burning in the last 200 years may have been exacerbated or influenced by humans."

So, it appears that for the first 50 or so thousand years of human settlement in Australia, there is little evidence of an increase in fire, and no obvious increase to correspond with the archaeological evidence of increased human activity. At least not until the last 200 years. This could be interpreted as a dramatic increase in fire across the landscape since the arrival of Europeans. This suggests First Nations people may have done much less burning than the colonisers did and continue to do.

Additionally, the continent of Australia was inhabited by more than two hundred nations prior to colonization, so obviously one burning strategy does not work for all.

The fact that there is an ancient tradition of highly skilled and sensitive use of fire carried out by people on foot without protective clothing should never be used to try to justify broadscale incineration of the environment.

Outcome 4.

Working together, accountability and shared responsibility. The sector, land managers, communities and industry work together effectively and share responsibility for managing and adapting to bushfire risks across public and private land.

4.2 Address policy and legislative issues, improving accountability and transparency, and clarifying roles and responsibilities for bushfire management.

It is important for all of us to work together responsibly and transparently to face the increasing challenge of climate driven wildfire. From the public's point of view, two important concerns here are the level of the government's accountability and transparency.

[4] Mooney, S.D. et al, 'Late Quaternary fire regimes of Australasia', 2010, Quaternary Science Reviews, Elsevier.

To be accountable and transparent, the government and its departments should provide evidence-based justification for its policies and actions. This is not the case with either broad-scale remote planned burns or most cleared firebreaks. There is merely the assertion that these will mitigate fire risk.

If the government is not being transparent about their justification for these policies, how is the public to have any confidence?

Outcome 5.

Informed decision-making, evidence-based approaches and tools. The sector uses science, innovation and knowledge to support evidence-based decisions.

This is an excellent aim. The fire management industry needs to be much more agile and willing to move with the times and to act upon new scientific understanding instead of persisting with outdated methods, some of which have been shown to do more harm than good.

For instance, under the heading *Deliver fuel management program* on page 24, the Strategy states, "*The fuel management program will continue to deliver precision burning close to assets (such as physical structures, cultural sites and environmentally important locations). This is complemented by burning in larger areas further away from assets*".

The concept of "fuel load" is now known to be far more complicated than previously thought and "burning in larger areas further away from assets" has been empirically shown to be rarely useful, and often counterproductive.

Fuel-load reduction is premised on the idea that the amount of fuel in a forest determines how flammable it is. The idea comes from early attempts at fire behaviour modelling in the US in the 1960s and although there is much more recent research, it has not yet been incorporated into government policy. It's now known that not all plants are equally flammable, that larger trunks and branches are harder to ignite than fine ones, that leafy and twiggy matter on the ground is less dangerous than an understorey of taller but still young plants that are fine (easily ignited) and very numerous - as occurs in forest in the early years after burning or logging.

So, a long unburnt open forest of mixed age trees with a fairly high canopy and the usual ground litter but little understorey, that might be seen as overdue for a planned burn, is likely to be in its least flammable phase and need to be left strictly alone.

In peer-reviewed research published internationally, A/Prof. Philip Zylstra, whose background is in remote area fire management, has established that much large-scale burning is achieving the opposite of its intent. Rather than lessening the likelihood of severe wildfire, it is making forests more flammable and increasing the risk.

It was found that while prescribed burns can have a short-term, suppressive effect, sometimes for up to seven years, that is not always the case, and the risk increases dramatically for the next few decades, before decreasing again over time.

He noted, “It is apparent that the most extreme fire season coincided with the greatest amount of prescribed burning.”

In other words, the oldest, most undisturbed forests are least likely to burn.

There are many examples of where a destructive wildfire has devastated an area that had been subject to a planned burn in previous months or recent years. These include the Gospers Mountain fire, north-west of Sydney, that covered an area burnt six years earlier, and the Werri Berri fire near Bemboka, burnt months earlier and Marysville, 2009, which was surrounded by recent planned burns.

Conversely, the mature forest of Acheron and Maroondah slowed the Black Saturday fire and possibly saved Warburton. Long unburnt forest acts as fire mitigation and is therefore an asset that should be protected as "key infrastructure".

World-leading forest ecologist, Professor David Lindenmayer, has said “Prescribed burning is one of those things that has surprisingly little robust information to support it."

He concedes that it might sometimes be helpful but only when conducted very frequently and very close to homes.

According to Price and Bradstock in 'The efficacy of fuel treatment in mitigating property loss during wildfires: Insights from analysis of the severity of the catastrophic fires in 2009 in Victoria, Australia'[5] “... effects of prescribed burning across landscapes on house loss are likely to be small when weather conditions are severe. Fuel treatments need to be located close to houses in order to effectively mitigate risk of loss.”

Additionally, of course these burns get out of control too often, as well as being immensely destructive even when they don't.

There is little if any evidence for the effectiveness of firebreaks except with very small fires. The Hume Highway was no impediment to the Black Saturday fire, which leapt easily from one hilltop to the next.

Where they are applied to wet forest, they can create wind tunnels and dry out the forest, paradoxically increasing the fire risk. Yet planned burns and firebreaks have been carried out in the Central Highlands going through old, fire-resistant landscapes eg. one site where there's been no fire since 1850.

An example of innovation that deserves serious consideration and financial commitment is the ANU study into the design of a system to attack bushfires early, using satellite technology to pinpoint outbreaks and drones to assess and then drop water on them.

The proponents estimate it would cost $40 million to develop the system, a fraction of what insurance costs in fire-prone areas. It could also be marketed to other countries. They say with wildfires driven extensively by climate and weather, prescribed burning may not work and early, urgent suppression is required.

"Informed decision-making" and "an evidence-based approach" to bushfire mitigation will require greater attention and responsiveness to current science.

Outcome 6.

Enhanced capability and capacity.

It goes without saying that our capacity and capability to fight wildfire must be continually enhanced. The important thing is that this is done in a smart way by investing in research, both forest fire behaviour and technology, to ensure that the actions we take are well-informed and evidence based and that we are using state of the art early detection and suppression and communication systems. This must surely be preferable to the current strategy which often seems to allow fires in remote areas to grow and accelerate unchecked until they become a threat to communities, by which time they are so big that those trying to control them are placed in terrible danger.

[5] The efficacy of fuel treatment in mitigating property loss during wildfires: Insights from analysis of the severity of the catastrophic fires in 2009 in Victoria, Australia. Price and Bradstock 2012. http://dx.doi.org/10.1016/j.jenvman.2012.08.041

Rapid detection and suppression of bushfires in remote areas is of the utmost importance in the context of climate change and in forest landscapes vastly more flammable due to decades of industrial logging and burning.

Conclusion

Victoria's Bushfire Management strategy seems stuck in the 20th century. It needs revision to bring it up to date regarding recent fire science and advances in early detection and suppression technology.

Recommendations

- End broadscale planned burns and limit burns to within 500 metres of assets.
- End construction of large "fuel breaks".
- Allow forests to mature and self-thin allowing ecological controls to reduce forest flammability through natural senescence of the shrubby layer.
- Identify and map long unburnt forest that is critical refugia for flora and fauna, and ensure these are prioritised for protection.
- Focus on protection of fire-vulnerable ecosystems such as rainforest and peat swamps.
- Invest seriously in resources to detect fire early and extinguish it rapidly (drone technology, infra-red mapping, satellite imagery, water bombing capacity).