25 July 2016

The Secretary,
Legislative Council Environment and Planning Standing Committee
Parliament House, Spring St
EAST MELBOURNE VIC 3002

Dear Ms/Sir,

Inquiry into Fire Season Preparedness

Submission from the Institute of Foresters of Australia (IFA)

Accompanying this letter is a submission to the Inquiry into Fire Season Preparedness from the Institute of Foresters (IFA).

I was travelling interstate on Friday 22 July and the submission was electronically submitted by Mr Tony Blanks, on behalf of the Institute.

This letter is to advise you that Mr Blanks was authorised to send the submission, which is identical in content to that accompanying this letter, other than that the accompanying text has now been signed, as required, and bears the advice that the text has been approved at National level by the Board of Directors of the Institute of Foresters of Australia.

Consequently I ask that this text be substituted for that submitted on Friday by Mr Blanks. The IFA does not wish this submission to be treated as confidential.

Yours sincerely

R L Gordon
CEO
Parliament of Victoria Inquiry into Fire Season Preparedness

Overview:

The Institute of Foresters of Australia (IFA) is a professional body with over 1100 members engaged in all branches of forest science, including land, resource, and conservation management. Since 1935, the IFA has represented all segments of the forestry profession, including public and private practitioners engaged in many aspects of forestry, nature conservation, resource and land management, scientific research, administration and education.

The IFA advocates actively managing fire in Australian forests and woodlands in a way that considers risk, ecological and forest management requirements, and protects life, property and other assets. Further to this, the IFA advocates the need for a better appreciation of the important and complex role of fire in the evolution and maintenance of Australian ecosystems. This includes the need for the collection and analysis of scientific research into fire use and the distribution of information to policy makers, land managers and the community.

The IFA notes that this Inquiry only covers the fire risk to public lands. Unfortunately, this is only approximately one third of the State of Victoria. Given that bushfire respects no boundaries and that history has shown that most catastrophic bushfires have burnt through both public and private lands, we believe that this Inquiry’s terms of reference are too limited in scope to adequately analyse the fire season preparedness for the safety of all Victorians.

Too often bushfire risk analysis is restricted to a limited land status. Engagement of all parties, private and public, is essential if the State intends to conduct adequate mitigation (reducing the bushfire risk) and preparedness (readiness for the incidence of bushfires) activities so that Victorians are able to be better prepared to live with bushfires.

The IFA support fostering good cooperative arrangements amongst communities, agencies and governments in relation to understanding and managing the impacts and use of fire in Australian ecosystems. A collective approach is seen as the most beneficial approach, where actions and responsibilities are agreed and acted upon, in order to manage the bushfire risk and reduce the inevitable losses from future bushfires.

Victoria has a long history of disastrous bushfires. Consequently there have been many bushfire inquiries. The 2009 Victorian Bushfires Royal Commission (VBRC) which followed the tragic Black Saturday bushfires, made 67 important recommendations which the IFA supports. The Commission commented that

‘...if fire agencies are to lift their capability and performance and improve the response capacity of individuals and communities, they need to become true evidence-based learning organisations. The Commission proposes that the fire agencies adopt and fund a culture of reflective practice that routinely pursues current research, searches for best practice, and habitually evaluates policies, programs and procedures with a view to improving internal practice and that of the communities they serve.’

1 http://www.forestry.org.au/ifa-policies
The IFA strongly supports this VBRC finding and the research conducted by the former Bushfire Cooperative Research Centre\(^3\) which is being continued by its successor, the Bushfire and Natural Hazards Cooperative Research Centre\(^4\). It also supports the National Burning Project\(^5\), being undertaken by the Australasian Fire and Emergency Service Authorities Council, to reduce the bushfire risk by prescribed burning at the landscape level, balancing the ecological, operational and community health risks.

The IFA recognises that Victoria is using different terminology from the nationally accepted terminology for bushfire management. This is Victoria’s judgement call but the IFA cautions that in using the term ‘preventative burning,’ Victoria could unwittingly be providing the public with a false sense that these burns will prevent bushfires. Clearly, they will not even though they will reduce the impacts.

Using ‘preventative burning’ may also create a false dichotomy between the use of fire for fuel management and for the broader range of land management purposes including silviculture and habitat management.

The IFA understands that Victoria’s use of preventative burning is what others refer to as prescribed burning for hazard reduction. It encourages Victoria, in future, to use the nationally and internationally accepted terminology of prescribed burning. This term indicates that the burning shall be under specified environmental conditions, within a predetermined area, to attain planned resource management objectives.

The IFA believes that all good policies are based upon sound scientific evidence and evidenced-based learning experiences and recognises that:

- Fire plays an important role in the maintenance of Australian ecosystems, but that uncontrolled fires pose a serious threat to life, property and forest values;
- Prescribed burning is an appropriate and effective tool for managing fuel accumulation, maintaining ecosystem processes and achieving silvicultural outcomes in forests and woodlands; and
- Comprehensive fire behaviour knowledge is the key to effective fire management.

Further to these principles, the IFA considers that:

- Management plans for forests and woodlands should recognise the role of fire and provide strategies to ensure fire regimes complement land management objectives and ecological requirements;
- Forest managers have a responsibility to minimise adverse impacts on society caused by uncontrolled bushfires, and should allocate resources to manage fire risk in an effective and safe manner;
- There is a need to manage the fine fuel hazard (litter, bark on eucalyptus and understorey fuels) in areas of forest to limit the intensity and difficulty of suppressing fires in a mosaic across the landscape;
- Public awareness of the important and inherent role of fire in the landscape is essential;

\(^3\) www.bushfirecrc.com  
\(^4\) www.bnhcrc.com.au  
Communication, consultation and involvement between forest managers and all stakeholders is vital to the successful planning and conduct of fire management activities; and

Forest fire suppression requires active involvement by well-trained forested land managers with considerable experience in prescribed burning.

Clearly the bushfire environment is changing. Climate and weather variability is altering Victoria’s bushfire prone environment. The State is also witnessing demographic changes which are resulting in an increased population living in high bushfire risk locations and a concurrent reduction in the available fire suppression resources in remote rural locations due to an ageing population.

Victoria is fortunate to have considerable research knowledge; extensive knowledge gained through experience, and adaptive management approaches available to improve bushfire mitigation, preparedness and response. However, many gaps in knowledge exist and further research investment is required. In addition, more effort is necessary in translating research outputs into improved on-ground practices to improve community safety and to manage the forest health and greenhouse gas emissions.

In 2011, the Council of Australian Governments endorsed the National Bushfire Management Policy Statement for Forests and Rangelands which was prepared by the Forest Fire Management Group under the auspices of two Ministerial Councils, in consultation with land management and rural fire agencies. By setting the high level strategic direction for all agency fire plans across Australia and New Zealand, it provides an inspiring vision where fire regimes are effectively managed to maintain and enhance the protection of human life and property, and the health, biodiversity, tourism, recreation and production benefits derived from Australia’s forests and rangelands.

It is worth noting that Victoria’s Code of Practice for Bushfire Management on Public Land, (2012) and the National Bushfire Management Policy Statement for Forests and Rangelands (2014) are consistent with the existing United Nations Food and Agriculture Organisation’s (FAO) Fire Management: Voluntary guidelines (2006) which support the United Nations’ Sustainable Development Goal 7 number 15 which is to:

Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss.

This goal highlights that the United Nations regards forests as being key to combating climate change and protecting biodiversity. Hence, it is entirely appropriate that Victoria manages its forests appropriately under the Code of Practice for Bushfire Management on Public Land, in accord with the international and national policies. This Code commits Victorian fire agencies to the protection of life as the highest priority and to actively reducing the risk of bushfires to human life through sound forest management practices. It also paves the way for an increase in prescribed burning. IFA supports adherence to the Code.

IFA wishes to provide this Parliamentary Inquiry with comments, from a national context, to aid its deliberation of the fire season preparation and planning by the Department of Environment, Land, Water and Planning and its agencies including Parks Victoria. Comments to the specific terms of reference follow.

6 www.ifa.org.au
7 http://www.un.org/sustainabledevelopment/biodiversity/
The amount and nature of preventative burning undertaken to date.

The Code of Practice for Bushfire Management on Public Land 2012 recognises the impact that fire can have and supports delivery of an annual burning program through risk-based planning, where human life is afforded the highest priority. It provided for an expanded burning program to reduce forest fuel levels and consequently risk to human life from bushfires.

It is an unfortunate fact that Victoria will never be free from bushfires. Its climate and vegetation make it one of the three most fire-prone areas in the globe. Hence, Victorians must learn to live better with bushfires. We cannot control the weather and the only factor humans can manage to reduce the intensity of bushfires and make suppression easier and safer is the fuel. The main fuel factors that determine the speed and intensity of a bushfire are the load and structure of the surface litter and the understorey shrubs. The fuel factor that most effects the initiation of crown fires and the propensity to throw firebrands and thereby determine suppression threshold is the bark on the trees. The only practical and ecologically appropriate way to reduce these factors is with prescribed fire.

Suitable land management which includes forest fuel management is essential for Victoria’s public estate. Melbourne Water, and Parks Victoria learnt the hard way in recent history. No matter the level of funding incurred to fence out bushfires from Melbourne’s water catchments; and how much effort was put into fire response the 2006 bushfires burnt within the catchments and threatened Melbourne’s water supplies and its economic future.

Burning forests adjoining high-valued assets is considered essential and important to reduce the bushfire intensity when a bushfire arrives. Many individuals will argue that the prevention program should be focussed only on such areas. However, to do so would ignore some obvious facts including:

- the huge boundary of the public forest estate and the huge cost involved;
- preparedness of the lands on the other side of the boundary to withstand ember attack during the burns;
- risks of escape from these prescribed burns;
- requirement to manage landscapes for healthy natural ecosystems in a fire prone environment;
- protecting tourists travelling and camping within our public forests and parks from bushfires;
- protecting Victoria’s water catchments from devastating bushfires causing large-scale erosion, siltation and deterioration in water quality;
- reducing the risks to paid and volunteer firefighters who place their lives at risk when suppressing bushfires in Victoria’s forests;
- the possibility of spot fires igniting high valued assets through long range spotting (10 to 20 km) across these ‘castle wall’ type prescribed burns on major fire weather days such, as Total Fire Ban days; and

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• mega fires developing in the more remote forests when forest fuels build up rather than being managed to acceptable levels like those which contributed to the 2003, 2006, 2009 bushfires.

While prescribed fire may reduce fire behaviour for up to 15 years, fine fuels do accumulate rapidly. Operational evidence from the south-west forests of WA is that prescribed fire has to be applied to 8 percent of the burnable forest estate annually to have a substantial effect in reducing the area burnt by summer wildfire. This figure was recommended by the expert group asked to advise the Victorian Bushfires Royal Commission. The Royal Commission recommended that that this figure be 5%.

Levels of prescribed burning should be determined for each forest vegetation category. However, Victoria has only limited long term prescribed burning ecological studies. Further studies, similar to those conducted in the Wombat State Forest, are required to better define the appropriate prescribed burning program across Victoria.

Managing the forested estate, public and private, needs a holistic approach based on the application of contemporary risk management principles, policies and practices. Bushfire risk reduction should be applied to the whole landscape not selected or privileged areas. Currently, there are too many unresolved conflicting priorities within government and between government and other stakeholders.

To properly manage Victoria’s forest vegetation requires considerable scientific knowledge, diligence, and agreement from governments, industries and communities. Further research is required to improve upon the Victorian Bushfires Royal Commissions’ considered recommendation on prescribed burning for hazard reduction. The Bushfire and Natural Hazards Cooperative Research Centre’s research on costs and benefits of bushfire risk reduction treatments should help determine where are the best locations in Victoria and scale of prescribed burning for hazard reduction.

The IFA supports the strategic direction by the Government of Victoria as outlined in its Code of Practice for Bushfire Management on Public Land 2012, and recommends Victoria conducts further prescribed burning long term effects studies, in the meantime, prescribed burning be applied to 5% of the burnable dry public land forests.

The IFA encourages further prescribed burning for hazard reduction and other fuel reduction measures on private lands involving municipalities, associated industries and communities.

1b The measures in place to ensure preventative burning is undertaken safely

What is the Victorian Government’s measure of safely? If it is defined as taking an action without risk to the public then Victoria the result would be no prescribed hazard reduction annual burning operations.

There is no doubt that prescribed burning is not an activity without a level of risk. However, should the Government put a stop to this activity, it would have the undesirable effect of increasing the bushfire risk and personnel exposure to all Victorians. More lives would be lost, the fabric of local communities can be further eroded, and the community and natural environment would suffer more.


10 Fantina Tedim, Vittorio Leone, Gavriil Xanthopoulos: International Journal of Disaster Risk Reduction; A wildfire risk management concept based on asocial-ecological approach in the European Union: Fire Smart Territory
regional communities would be exposed, natural ecosystems would be more vulnerable and may be permanently altered, assets could be destroyed and the economic stability of Victoria would be constantly challenged.

Prescribed burning is not just a science but an art. It requires skilled operators to make field judgements on many factors that have varying degrees of uncertainty. To become skilled in this activity requires training supported by experience in field application.

In the current political climate of ‘blame laying’ when things go wrong and a prescribed burn escapes often it appears that the upper level view within the Public Service is to seek someone’s ‘head’. It is expected that malicious or intentional actions by all individuals should always be punished. However, to attack a Public Servant who is trying to protect the public from future tragic bushfires shows little understanding of the complexities of prevention burning. This ‘blame laying’ attitude demonstrates poor leadership and has the unintentional consequences of adversely impacting on staff morale. It is often an easy option at an executive management level to encourage others to find excuses not to conduct prescribed burns and reduces the prevention burning program’s outputs. It does nothing to assist in a mature learning culture or make Victoria a safer place.

In evidence to a national Inquiry by the Australian Senate into the incidence and severity of bushfires across Australia, Professor Peter Kanowski (an author of the 2004 Council of Australian Governments national Inquiry on bushfire mitigation and management, the first such Inquiry in the nation’s history) said that his Inquiry had identified...

...a repeated cycle of response by [State] governments and the community to major fire events: first, suppression and recovery processes are always accompanied by assertions, accusations and allocations of blame, even while the fires are still burning; second, inquiries are established and reported; third, recommendations are acted upon, to varying degrees; fourth, the passage of time sees growing complacency and reduced levels of preparedness ... and the cycle begins again with the next major bushfire event...12

Hence, it is appropriate that Victoria reviews it preparedness and implements the appropriate recommendations from the lessons learnt during previous inquiries before complacency occurs.

It appears that Victoria may have conflicting legislation in regards to prescribed burning which may end up in future court action to bring about a resolution. While the Code of Practice for Bushfire Management on Public Land 2012 supports delivery of an expanded planned burning program, the Occupational Health and Safety Act 2004 has as an Object:

to ensure that the health and safety of members of the public is not placed at risk by the conduct of undertakings by employers (Part 1-2(1c))13.

Depending on the interpretation of this OHS legislation, it could bring about an end to prescribed burning. Unless legislative clarity is provided the future of the Government’s prescribed burning program could be determined in court. A clear hierarchy of possible conflicting legislation in relation to prescribed burning would be beneficial. Alternatively, court action may bring a temporary or permanent halt to prescribed burning. Unintentionally, this would lead to more human lives being at risk from uncontrolled wildfires burning through contiguous vegetation involving high fuel loads. As time goes by, with no prescribed burning, the adverse risks of greater social, environmental and economic impacts would be hard felt in Victoria.

11 2004, COAG, National Inquiry on bushfire mitigation and management
12 2010, Senate Committee report: The incidence and severity of bushfires across Australia. 2.14 Page 6
The IFA encourages prescribed burning based upon the best available sound scientific knowledge; clear legislation; burning prescriptions appropriate to the forest vegetation; good community involvement; and rigorous monitoring and recording to improve future burning operations.

1c The effectiveness of preventative burns in achieving community safety;

Prescribed burning for hazard reduction is only one measure, albeit a very effective and efficient tool, to provide for community safety. Many tools are required to provide the level of safety for Victorian communities, including mechanical hazard reduction, access tracks, education, and communications and planning laws. However, Mega-fires are now occurring in Victoria. These are extraordinary bushfires - in terms of their size, complexity, and resistance to control. Although few in number, these bushfires exhibit fire behaviour characteristics that exceed all efforts at control, regardless of the type, kind, or number of firefighting assets that are brought to bear.\textsuperscript{14}

Experience with mega-fires in recent years, in Victoria and the USA, indicates that there are four key factors that need to be addressed if the bushfire threat is to be managed in fire-prone regions:

- Ongoing rapid and effective suppression of all forest fires;
- More active land management, including prescribed burning, pre-suppression activities and access maintenance, in fire dependent forests;
- Improved planning, cooperation, and control of the growth of developed assets in the urban interface zone; and,
- Active community involvement before, during and after bushfires.

While swift, active suppression is fully supported during the summer months, it must be realized that there are times on bad fire weather days when all fire agencies, no matter how well resourced, find that they have insufficient capability to swiftly suppress all the uncontrolled bushfires that are burning. Victoria’s history has shown that its agencies, even when working collectively and with interstate and overseas resources, are not able stop all the bushfires from becoming tragic events.

Prescribed burns are seen by the majority of field practitioners to be the most effective and efficient operational tool available to mitigate the social, environmental and economic adverse impacts of bushfires and for providing sustainable environmental outcomes. Research has also shown that prescribed burns do reduce the forest fire risk.

The science behind prescribed burning has been well documented\textsuperscript{15,16,17} and was acknowledged during the 2009 Victorian Bushfires Royal Commission. In particular, the fire spread simulator, PHOENIX RapidFire (developed by Dr. Kevin Tolhurst from the University of Melbourne with funding assistance from the Bushfire Cooperative Research Centre and DELWP) was highly regarded. Its use

\textsuperscript{15} Tolhurst KG and Cheney NP, 1999, Synopsis of the Knowledge Used in Prescribed Burning in Victoria, Department of Natural Resources and Environment, East Melbourne
\textsuperscript{16} Adams MA and Attiwill PM, 2011, Burning Issues: Sustainability and Management of Australia’s Southern Forests, CSIRO, Collingwood
\textsuperscript{17} AFAC, 2015a, Overview of Prescribed Burning in Australasia, Report for National Burning Project–Sub-Project 1, Australasian Fire and Emergency Service Authorities Council, Melbourne
by DELWP as a tool to involve communities in planning prevention burning programs is commendable.

The effectiveness of prescribed burning should be measured against the expected bushfire conditions that Victoria will face in the future. The negative impacts from drought, climate change and degrading forest health exacerbate future bushfire risks. The intensity of bushfires under any of these conditions will increase and they will be harder to suppress. The Climate Change council does not anticipated that the conditions of today will be the same in the future. If it is accepted that ‘today’s’ levels of prevention are adequate in meeting the current environmental conditions then they will be inadequate to meet the anticipated increased bushfire risk environment for ‘tomorrow’.

Jerry T. Williams, former National Director of Fire & Aviation Management, United States Forest Service, advocates that that governments and their citizens can neither take a “hands-off” approach to managing fire-prone forests, nor rely on suppression capacity alone to preserve them, without imperilling the very values they hope to protect.

A strategic view, necessary to protect Victorians post 2016, should take into account an assessment of the effectiveness of prescribed burning for community safety to meet the predicted future environmental conditions.

Although there is an increased appreciation world-wide that fire protection should be a shared responsibility, this has not been fully adopted by all Victoria agencies. The continual increase in developed assets in Victoria’s forested urban interface is a prime example where planning instruments are not fully accepting their responsibility for community safety from bushfires. While how people are building in these areas is being guided through the Australian Standard AS3959 Construction of buildings in bushfire prone-areas, permitting structures to be built in high risk areas continues. Unfortunately, there is no evidence that all planning instruments are involving all relevant stakeholders in bushfire community safety.

IFA firmly supports Victoria’s prescribed burning program and DELWP’s use of the fire spread simulator, PHOENIX RapidFire, particularly during planning with communities for prescribed burning, as important measures in achieving community safety and evaluating the potential benefits of various fire management options.

1d and 1e The impact of preventative burns on forest ecology

IFA recognises that:

- Fire is an ecological process, which has an important and ongoing role in maintaining biodiversity and ecological values and functions in Australian forests and woodlands;
- The ecological effects of fire vary according to the season, frequency, intensity and scale of burning in a landscape; and

- Extensive high-intensity forest fires can have detrimental effects that are significant at local, regional and global levels.

IFA supports the direction of AFAC’s Risk Framework for Ecological Risks Associated with Prescribed Burning (AFAC 2016b) published as part of the National Burning Project which provides a framework for managing ecological risks associated with prescribed burning. The Ecological Risk Framework\(^{23}\) states that...

> ‘It is well understood amongst professional fire managers that fire has been part of most Australian landscapes for a very long time and that most native plants and animals have adapted strategies for either coping with or benefiting from fire. Most prescribed fires will not, as individual events, have permanent ecological consequences. Rather, it is the fire regime – that is, the frequency, season, intensity, patchiness and size of fires, as well as the ongoing combination of these factors – that affects ecological values and which is more likely to pose an ecological risk.’

The IFA also supports Victoria’s approach to fire and adaptive management\(^{24}\). There is often imperfect ecological knowledge, but this shouldn’t necessarily be a barrier to prescribed burning as the consequences of not burning are likely to be massively greater in Victoria’s vegetation that has co-evolved with bushfire. All too often management has been confronted with what may be seen as conflicting priorities. Life and property objectives against species-conservation objectives. Managers can strive for the protection of life and property and through adaptive management provide for conservation biodiversity.

Biotic communities and organisms continue to evolve in this fire prone environment and therefore display a variety of physical, chemical and behavioural adaptive traits and response strategies that enable them to persist, and in many cases, depend upon a variety of fire regimes and fire scales.

The Victorian ecology has evolved in an environment of frequent disturbance through natural and man-made fires over many thousands of years. The impact of prescribed burns on threatened species and ecological vegetation classes can be managed by ensuring there is a mosaic of burning within the landscape. This will include varying the frequency, the extent, the intensity and season of burning.

It is understood that no fire event or fire regime is optimal for all organisms at any scale. Some species will be rare without frequent fire, and other species will be rare if fire is too frequent. Specific fire prescriptions are needed to regenerate desired species and to manage habitats for desired fauna.\(^{25}\) At the landscape level, fire diversity can benefit biodiversity, but some fire regimes, including extensive high-intensity fires, attempted fire exclusion, together with threatening processes such as fragmentation, invasion of weeds and other exotic pests, can threaten biodiversity. Where the need for specific prescriptions are not known biodiversity is best maintained with a regime of frequent low-intensity fire.

The choice of fire interval will enhance some species and disadvantage other species. Each choice has an effect\(^{26}\). While mosaic burning with adaptive management provides a safety net when


\(^{24}\) Gill, A.M. 2008 Victorian Government Department of Sustainability and Environment Report 73, Underpinnings of fire management for biodiversity conservation in reserves.


managing biodiversity and providing for life and property, clearly experienced managers who are in tune with the lands that they manage are vitally important for Victoria.

Species that are unable to cope with frequent burning will exhibit relictual distribution patterns, being confined to naturally less flammable sites, such as wetter sites, permanent water bodies, rocky areas and some offshore islands. It is the scale, patchiness and intensity of fire that are important factors affecting the impact of fire on the biota, including mobile elements of the biota such as birds and mammals.

Prescribed burning for hazard reduction should be well planned and properly implemented to avoid or mitigate undesirable impacts on threatened species. This includes excluding habitats and species from planned burns, managing the season and intensity of burning, implementing environmental hygiene measures to avoid spread of weeds and introduction of plant disease, and measures to minimise soil disturbance an erosion.

Importantly, this Inquiry should seek an analysis of the detrimental impacts of bushfires that burn large hectares in one summer where 99% of the terrain is burnt. The effects on fauna, flora, timber production, soil nutrition, and erosion siltation of water supplies should be compared with any possible losses from prescribed hazard reduction burning for the protection of life and property.

Large scale intense bushfires have huge impacts. If repeated in a short time interval these bushfires may bring about major shifts in ecological vegetation classes. Worthy of assessment by this Inquiry are the ecological impacts following the 2006 bushfires that burnt over the areas burnt in 2003.

**IFA acknowledges the role of prescribed fire in maintaining biodiversity and encourages sustainable land management through active land management practices including ecological burning and recognises that frequent prescribed burning manage fuels have ecological benefits by maintaining a diverse fire environment.**

**The IFA supports ecological burning and recognizes that prescribed hazard reduction burning operations may have ecological benefits.**

1f The impact of preventative burns on the climate

Burning of fossil fuels and deforestation are the main drivers of greenhouse gas accumulation in the atmosphere which drive climate change.\(^\text{27}\) Therefore, to have an impact on climate, prescribed burns must increase greenhouse gas emissions to the atmosphere compared with management scenarios that do not include prescribed burning. If we assume that prescribed burning reduces the occurrence, area and intensity of wildfire then the reference landscape condition for comparison with prescribed burning is a landscape with more wildfire.

There are conflicting reports in the literature on the greenhouse gas emission outcome of prescribed burning versus no prescribed burning. It has been claimed\(^\text{28}\) that for temperate eucalypt forests,


repeated prescribed burning has relatively low potential for mitigation of carbon emissions from wildfires. However, these studies have been surpassed by more detailed analysis. Now empirical evidence\textsuperscript{29} clearly shows significant benefits of prescribed burning, with almost half the emissions released to the atmosphere from bushfires where prevention burning was conducted when compared with emissions from bushfires on non-fuel reduced forests. Accounting for production of long-lived black carbon\textsuperscript{30} and carbon redistribution from live to dead trees\textsuperscript{31} are also important components of an objective review of prescribed burning impacts on carbon loss and subsequent emission.

The inclusion black carbon production further supports the case for prescribed burning. Significant benefits have been found\textsuperscript{32} from prescribed burns on carbon release to the atmosphere from a decade long empirically study of prescribed burns.

In Victoria, it is understood that prescribed burns are only applied to vegetation that is allowed to fully recover over the ensuing years. Therefore, the function of vegetation in sequestering carbon from the atmosphere is not impeded. This is in contrast to a landscape where prescribed burning is not applied. In this landscape bushfires are likely to be more frequent, more intense and have more impact on vegetation recovery time.

The IFA does not include prescribed burning amongst Victoria’s main drivers of greenhouse gas emitters to the atmosphere which drive climate change. It notes that current research indicates that reducing the prescribed burning program would add to the overall longer term emissions from Victorian forests due to more frequent hotter uncontrolled summer bushfires.

\textbf{1g) The targeting of preventative measures state-wide}

The IFA is not in a position to assess Victoria’s targeting of prevention measures. However, IFA encourages bushfire risk analysis engaging all stakeholders, on private and public lands, to determine where; how; the level; and by which stakeholder prevention activities are conducted.

A collective approach is seen as the most beneficial approach, where actions and responsibilities are agreed and acted upon, in order to manage the bushfire risk and reduce the losses from the inevitable bushfires. The targets set in this approach should acknowledge the latest scientific knowledge and the experience of professional prescribed burning practitioners.

\textsuperscript{29} Volkova L., and Weston C. (2013). Redistribution and emission of forest carbon by planned burning in Eucalyptus obliqua (L. Hérit.) forest of south-eastern Australia. Forest Ecology and Management, 304(0), 383-390.


The resources available to ensure that adequate preparation is undertaken

The IFA does not wish to make comment on the adequacy of Victoria’s resourcing as this is viewed as a matter of priorities and collective agreement by Government, industry and communities at risk. However, IFA expects that decision makers will be cognizant of the possible worsening bushfire threat in Victoria associated with climate change. The Climate Council listed its key findings for Victoria in its report - Be prepared: Climate change and the Victorian bushfire threat, 2014 as:

1. Climate change is increasing the risk of bushfires in Victoria and lengthening the fire season.
2. Victoria is the state most affected by bushfires and is on the frontline of increasing bushfire risk.
3. Recent severe fires in Victoria have been influenced by record hot, dry conditions.
4. In Victoria the economic cost of bushfires, including loss of life, livelihoods, property damage and emergency services responses, is very high.
5. In the future, Victoria is very likely to experience an increased number of days with extreme fire danger. Communities, emergency services and health services across Victoria must prepare.

The co-ordination of such planning and preparation with other departments and agencies across government

IFA does not wish to make comment on the coordination arrangements as there have been many previous inquiries that have provided guidance in this regards and the matter of successful implementation of government coordination would require detailed independent analysis.

The nature and level of emergency response

Once the Victorian Government determines its budget allocations, based upon its overall responsibilities, the nature and level of emergency response should rest with the people who have the legislative responsibility for bushfire management. It is the skilled and experienced leaders in Victorian fire and land management agencies who should be allowed to make this judgement. Hence, IFA will not comment further.

The relevant administrative and organisational structures in place within the Department and with other relevant government departments and agencies

This is not a matter for the IFA to comment upon.

1. The impact of land tenure on the ability to provide fire prevention activities and the differences between types of land tenure such as National Park, State Forest, Regional Park and others

Experience over several decades has shown that public land tenure is strongly correlated with the capability to effectively manage forest fire. The transfer of former multiple use State Forests into the national parks estate over the past 20-years has typically been accompanied by the immediate loss of revenue-generating and employment-supporting commercial activities, usually timber production. This is also accompanied by the loss of the former imperative to maintain as many roads and tracks which were required for log cartage, and a reduction in readily available earth-moving machinery required for road building and maintenance which is also essential for efficient fire suppression.

The ethos of park management towards greater community access has improved in recent years. However, Parks Victoria’s budgets have been severely restricted to much lower levels, on a per hectare basis, than when the forest estate was managed for timber harvesting. This has reduced the funding for roads and tracks, including bridges. The access network has degraded within Victoria’s parks and reserves.

As the road and track network is critical to the capability to undertake both prescribed burning and to quickly access and control bushfires, the capability to effectively manage bushfire in parks and reserves has suffered.

It is of concern that there is apparent differing bushfire outcomes achieved adjoining Victoria, in the NSW State Forests compared to adjacent NSW National Parks under the same weather conditions and over the period, 1993 to 2003. There was less prescribed burning in parks and greater area burnt by bushfire compared with forests. This provided an example where a land management philosophy which minimises the area and extent of fuel reduction burning did not achieve the objective of minimising bushfire impact. It was a fact well recognized in recent years and led to park managers increasing their efforts of prescribed burning for hazard reduction.

*The IFA supports adequate bushfire risk management to protect life and property across all land tenures.*

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Bl. Gordon  
CEO