

**SUBMISSION TO THE
AUSTRALIAN GOVERNMENT'S
SENATE INQUIRY**

INTO

**LESSONS TO BE LEARNED FROM THE
AUSTRALIAN BUSHFIRE SEASON 2019-20**

by

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Glossary

A feature of the public discussion over bushfires is the interchangeable use of terms which essentially have similar meanings. Understandably, this inconsistency can be confusing for those not already steeped in knowledge about the topic. The notes and definitions below are an attempt to clarify any confusion that may otherwise arise in the reading of this submission.

Bushfire or wildfire?

The Inquiry's Terms of Reference uses the term '**bushfire**', and our responses refer to bushfires for consistency, but also at times we use our preferred term '**wildfire**' when talking more generally about principles, practices, and operational experiences.

Bushfire is an Australian term for any unplanned landscape fire in grassland, woodland, heathland or forest. However, it is sometimes only used to mean "forest" fire and so has an element of ambiguity about it. **Wildfire** is the international term used for any unplanned fire in grassland, woodland, heathland or forest. However, it is sometimes taken to imply fires are of high intensity, when wildfire can be low and/or high intensity, but are all "unplanned". Wildfire is a less ambiguous term and is internationally understood and is therefore the preferred term for a professional association of forest scientists.

Reducing future bushfire risk or wildfire mitigation?

The term '**reducing future bushfire risk**' is used in the Terms of Reference, and in our responses for consistency, but also at times we use the term '**wildfire mitigation**' when talking more generally about actions that directly improve the protection and resilience of the community and the environment.

The term **wildfire mitigation** refers to pre-season actions, primarily fuel reduction burning, that can mitigate the extent and severity of wildfires. But it can also include road and track maintenance that enables rapid first attack on wildfires therefore also limiting their extent. This is really only a subset of **reducing future bushfire risk** which also includes community education, warnings, and emergency messages.

Prescribed burning/ fuel reduction burning

The terms '**prescribed burning**' and '**fuel reduction burning**' both describe low intensity fires planned and lit to reduce fuel levels during the cooler and more stable weather of autumn or in spring.

The preferred term is "**prescribed burn**" for fires which have been carefully planned and documented before implementation with a clearly stated set of management objectives and carried out under clearly prescribed conditions based on fire science.

In the context of this submission, **prescribed burning** is used interchangeably with **fuel reduction burning**, but **prescribed burning** can also describe other deliberately planned and controlled burning undertaken for other reasons, such as to remove logging debris and create an ash seed-bed for tree regeneration, or for ecological reasons to maintain or renew specific vegetation communities.

Forest fire management

All activities associated with the management of fire-prone forested land, including the use of fire to meet land management goals and objectives. There are seven distinct components: Research (and application); Prevention (regulation, warnings, education); Preparedness (fuel reduction, training, infrastructure maintenance); Detection (fire spotting); Emergency Response (operational wildfire suppression); Recovery (post-fire rehabilitation); and Landscape Maintenance (use of fire to maintain biophysical and ecological processes).

Executive Summary

Our submission

The Institute of Foresters of Australia and Australian Forest Growers (hereafter referred to as the 'Institute') is Australia's independent national body representing forest scientists, technicians, growers and managers with professional and practical expertise in private and public forest and plantation management.

Members are engaged in many aspects of forestry, nature conservation, resource and land management, research, administration and education. Fires are a day-to-day preoccupation of many of the Institute's members either through their practical work in native forests or plantations; through involvement in research; or in the administration of forest/plantation management agencies or companies.

The Institute's 1,000 plus members have led the field of fire management and research in Australian forests over many decades. We advocate balanced land use that meets society's needs for sustainable forest management, including timber supply and biodiversity conservation, while addressing the fire and conservation issues arising from a changing climate.

Most foresters have had personal responsibility for bushfire mitigation and suppression at some stage during their careers. They have generally also gained far more experience and understanding of fire in the natural environment than any other firefighters, largely through the operational use of fire prescribed for silvicultural or conservation purposes, and for fuel reduction.

The Institute would welcome the opportunity to present in person to the Inquiry or to provide more detailed written information. We would be pleased to respond to any questions this submission may raise.

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Overall concerns about forest fire management in SE Australia

The Institute is deeply concerned that the current primary focus of forest fire management on wildfire suppression (also referred to as emergency wildfire response), in lieu of bushfire preparedness (chiefly prescribed burning to mitigate wildfire intensity and severity), has unintentionally increased human and wildlife deaths, caused greater damage to human and community assets, increased environmental degradation, and led to spiralling total fire costs.

In the short term, a fire suppression focus drives down the area burnt by wildfire. However, over time, it allows forest fuel levels to increase over the majority of the forest, thereby increasing the intensity

of wildfires when they occur. These wildfires then burn hotter and faster, are harder to control and invariably cover greater areas. Human, environmental and economic costs spiral with increased area burnt at high intensities. Over time, a primary focus on fire suppression is a flawed management strategy.

Contrary to much of the public narrative surrounding the 2019-20 bushfires which blamed them solely on climate change, the Institute firmly believes that the fires were primarily a consequence of decades of poor fire management and a more recent shift to a risk-averse firefighting approach exacerbated by an over-reliance on aircraft.

Concern over lack of fuel management

Victoria's bushfire Royal Commissions of 1939¹ and 2009² both recommended a greater focus on bushfire preparedness, particularly through prescribed burning to reduce forest fuel levels. After the 2009 Victorian Bushfires Royal Commission, this direction was initially heeded, but over time expenditures on fire season wildfire suppression, especially on using aircraft, has substantially increased relative to expenditure on off-season bushfire preparedness (mainly prescribed fuel reduction burning).

Furthermore, the diminished levels of prescribed burning still being undertaken to reduce forest fuel levels has shifted from across the broad forested landscape to a focus on strategic 'fence-line burning' adjacent to privately-owned built assets in order to reduce community fire risk³. This shift has been driven by political and social factors, including more people living close to flammable forests, and the evolution of a more risk-averse and litigious society, as well as ill-conceived concerns about the supposed damage of periodic low intensity fire on environmental values across the broader landscape.

While protecting human life and property is paramount, as a dominant focus it becomes problematic if it allows fuel levels to build across the bulk of the forested landscape to an extent that enables resultant wildfires to burn at intensities beyond fire-fighters' capability to control them. As should be evident from the 2019-20 fires, these circumstances can lead to exponentially greater damage to life and property than prescribed cool season fuel reduction burns could ever do.

The Institute believes that forest fire management in SE Australia is now too focussed on emergency asset protection at the expense of extensive wildfire mitigation (i.e. through broadacre prescribed burning), especially on public lands where fire-adapted vegetation requires more frequent low intensity fire to maintain biodiversity and to prevent catastrophic high intensity wildfires. Into the future, as expected warmer and drier conditions have greater impact on native forests, State governments need to give a higher priority to managing forest fuel levels across the entire forested landscape if the number and costs of wildfires are to be reduced⁴.

Despite this imperative, public debate over the benefit of fuel reduction burning persists. Almost all public commentary adversely questioning the value of prescribed fuel reduction burning emanates from environmental activists and academic ecologists with no personal experience of planning and conducting prescribed burns and no experience of fighting forest fires to gain an appreciation

¹ Stretton LEB. 1939. Report of the Royal Commission to Inquire into the Causes of and Measures Taken to Prevent the Bush Fires of January, 1939, and to Protect Life and Property Melbourne, Victoria: Victorian Government.

² Teague B, McLeod R, Pascoe S. 2010. The 2009 Victorian Bushfires Royal Commission Final Report (Summary). Melbourne, Australia: Parliament of Victoria.

³ G.W. Morgan, K.G. Tolhurst, M.W. Poynter, N. Cooper, T. McGuffog, R. Ryan, M. Wouters, N. Stephens, P. Black, D. Sheehan, P. Leeson, S. Whight and S.M. Davey (2020), *A History of Prescribed Burning in South-eastern Australia*. Australian Forestry, Vol. 83:1, 4-28, April 2020, DOI: [10.1080/00049158.2020.1739883](https://doi.org/10.1080/00049158.2020.1739883)

⁴ Williams J.T. (2013), *Exploring the onset of high-impact mega-fires through a forest land management prism*, Forest Ecology and Management, Volume 294: 4 – 10, April 2013, <http://dx.doi.org/10.1016/j.foreco.2012.06.030>

of the benefit of such burns in mitigating wildfire intensity and reducing environmental impacts. This includes the most outspoken members of the 'former fire chiefs' climate change activist group, who mostly have urban or rural fire backgrounds, as distinct from forest fire management experience. Nevertheless, the media opportunities that these critics are given creates real concern that public policy will be shaped by impractical ignorance rather than informed expertise.

During the 2019-20 bushfires, there have been many examples showing the benefit of fuel reduction burning, and it is expected that these will be highlighted in submissions to the inquiry from persons living closer to the affected forests in Victoria and NSW. However, it must be acknowledged that these benefits are limited because there are far too few forests being fuel reduced each year, and this in-part underpins the criticism being levelled against prescribed burning.

Concern over firefighting strategies, tactics and practices (including an over-reliance on aircraft)

Despite some media emphasis, south-eastern Australia's fire management problems are not wholly due to high fuel levels. An equally important area of concern is the risk-averse strategies, tactics and practices now being used to fight major fires. In particular, an over-reliance on aerial water/retardant-bombing in lieu of aggressive ground-based attack on fires which is ultimately the only way to ensure that they can be safely controlled.

For some years, our members have been concerned at the declining use of formerly standard practices such as night-time construction of fire containment lines either by hand or machine; hand-trailing of remote area fires where machinery access is problematic, and thorough ground-based blacking-out especially on remote area fires. These shortcomings are exemplified in recently documented instances of very small and easily accessible lightning strikes near Wye River (2015) and Harrietville (2013) and Geeveston (2018) being allowed to develop into large, damaging conflagrations which collectively did enormous damage to the environment and human assets.

The Institute is concerned that these shortcomings are being misrepresented in the public arena as unavoidable consequences of climate change. For example, former Victorian Emergency Management Commissioner, Craig Lapsley, remarked on Channel 9's *Sixty Minutes* program of 9 February 2020, that: "We are getting to the point where the traditional tactics being deployed are no longer effective."⁵ However the observations and anecdotes of our members suggest that the former 'traditional tactics' have long since been replaced by a diluted, indecisive and hopeful version that is far more likely to fail. Of particular concern is the partial shift away from direct attack on the fire edge at every opportunity to a far more commonly used indirect attack strategy of falling back to distant control lines, with or without backburning, and relying on aerial water/retardant bombing (in the mistaken belief that it will extinguish fires).

Specific recommendations to the Inquiry in response to selected Terms of Reference:

TOR (a): Pre-season advice about the level of bushfire risk (see p. 11)

Recommendation A1:

That the Senate Inquiry acknowledges in its findings that the underlying cause of Australia's tragic 2019/20 tragic wildfires is poor land management (on public and private lands) over a long period, coupled with an over reliance on emergency wildfire suppression to safeguard our communities.

⁵ It is acknowledged that Craig Lapsley no longer has a formal role in the Victorian Government's emergency management agencies, although he may do occasional consulting or contract work. However, he was interviewed on *Sixty Minutes* because his former role earmarked him as an expert on Victorian forest firefighting even though his background expertise is in rural and urban fire.

This ill-informed approach led to the emotional, environmental and economic losses sustained during 2019/20 bushfire season.

Recommendation A2:

That this Senate Inquiry acknowledges in its findings that, while firefighting aircraft are important for property damage mitigation and wildfire suppression, expanding their numbers and/or size will not materially reduce the incidence, extent, and severity of large forest fires. The way forward to reduce the impacts of wildfires is to implement sound land management practices in accord with COAG's National Bushfire Management Policy Statement for Forests and Rangelands.

TOR (b): Roles and responsibilities of and within different levels of Government (see p. 13)

Recommendation B.1:

That more government funding, education, and support be provided to increase extensive fuel reduction burning and other wildfire mitigation activities on privately-managed lands. This could include:

- developing management standards to provide guidance for appropriate wildfire mitigation in fire-prone areas; and
- developing a regulatory framework for property owners who do not conduct adequate hazard management for wildfire mitigation.

Recommendation B.2:

That the Commonwealth Government continue funding the coordination and collaboration of independent applied wildfire research and development to ensure continuity of effort and expertise beyond the life of the successful Bushfire and Natural Hazards CRC.

Recommendation B.3:

That the Commonwealth Government funds and directs the Bureau of Meteorology to provide free-of-charge prescribed burning weather forecasting services to State Governments as it does with fire suppression services.

TOR (c): Federal Government response to previous bushfire inquiries (see p. 15)

Recommendation C.1:

That before this inquiry makes any further recommendations regarding wildfire, the Commonwealth Government audits the implementation of the 58 bushfire inquiries, reviews and Royal Commissions held since 1939, specifically checking the implementation of the 29 recommendations made by the Council of Australian Government's (COAG) 2004 National Inquiry on Bushfire Mitigation and Management, and COAG's response to the Inquiry Report.

TOR (d): Adequacy of existing Federal Government policies and measures (see p. 17)

Recommendation D.1:

That the Federal Government develops performance measures for each of the four Strategic Objectives and 14 National Goals within the *National Bushfire Management Policy Statement for Forests and Rangelands* (2014) and conducts annual performance audits of the States' and Territories' progress towards meeting these goals.

TOR (e): Funding models and policy measures to reduce future bushfire risk (see p. 18)

Recommendation E.1:

That the Federal Government conduct an independent evaluation of the cost-effectiveness and efficiency of the aerial fire suppression resources used on the 2019-20 bushfires, including the potential for savings to be generated for use in improving bushfire preparedness.

Recommendation E.2:

That State and Territory Governments be encouraged to increase expenditure and commitment to off-fire season fuel management to mitigate the adverse impacts of wildfires and to reinstate a more equitable resourcing balance with in-season emergency response to wildfires.

TOR (g): Providing scientific advice to the Federal Government and Parliament (see p. 20)

No recommendations were made with respect to this TOR

TOR (i): Any related matters – general concerns about forest fire management (see p. 21)**Recommendation I.1:**

That State and Territory Government be encouraged to redirect expenditure and commitment towards improving emergency response to remote area wildfires. This may necessitate a re-evaluation of what constitutes acceptable risk, given that striving to eliminate firefighting risks can often lead to fires growing larger with exponentially increased risks to greater numbers of fire-fighters and the broader community.

Recommendation I.2:

That the Commonwealth Government encourages State and Territory Governments to:

- reinstate permanently decentralised professional land management staffing levels in smaller townships distant from large regional centres to maintain a cohort of locally based agency personnel with detailed geographic and fire knowledge of our parks, forests and Crown lands; improve engagement with local communities; and help safeguard rural and remote economies;
- rearranges command and control functions for emergency wildfire response based on the principal of subsidiarity whereby decision-making is best undertaken from as close as possible to the emergency location.

Recommendation I.3:

That the Commonwealth Government standardises national minimum competencies and currencies for the training and experience of accredited Incident Controllers, Operations Officers and Planning Officers with wildfire responsibilities.

Recommendation I.4:

That State and Territory Governments be encouraged to recognise the importance of retaining viable timber industries to maintaining an efficient and cost-effective ground-based firefighting capability.

Recommendation I.5:

That State and Territory Governments be encouraged to increase expenditure and commitment to off-fire season forest management to mitigate wildfires, especially through increasing the annual level of fuel management and by reinstating and upgrading road and track networks, especially in remote area forests.

Recommendation I.6:

That State and Territory Governments be encouraged to rebuild their in-house fleet of heavy machinery and invest in training experienced operators to restore its forest firefighting capability.

Introduction

The Institute of Foresters of Australia and Australian Forest Growers

The Institute of Foresters of Australia and Australian Forest Growers (hereafter referred to as 'the Institute') is the independent national body representing Australia's forest scientists, technicians, growers and managers with professional and practical expertise in forest and plantation management.

The Institute is governed by an elected voluntary Board and has active members and in all Australian States and Territories. A requirement of professional level membership is tertiary qualifications in forest science or a closely related scientific discipline, or alternatively, extensive practical experience in forest or plantation management or forest science. The age and experience profile of the Institute's 1,000-plus members ranges from new graduates to retired men and women with over 50 years of experience in land and park management in Australia.

The Institute's members are employed in a wide variety of positions including in native forest, plantation and national park management, research, bushfire management, land care, education, public service administration, private land forestry, and associated wood-based industries. Fires are a day-to-day preoccupation of many of the Institute's members either through their practical work in forests or plantations; through involvement in research; or in the administration of forest/plantation management agencies or companies.

Foresters and forestry practitioners have led the field of fire management and research in Australian forests over many decades and there are linkages and collaboration with professionals engaged in these activities elsewhere in the world. Most foresters have had personal responsibility for bushfire mitigation and suppression at some stage during their career. They have generally also gained far more experience and understanding of fire in the natural environment than other fire-fighters, largely through the operational use of fire during prescribed burning operations for silvicultural or conservation purposes, and for fuel reduction.

The Institute is fortunate to have amongst its members some of Australia's more knowledgeable and experienced State forest and national park fire managers, and fire researchers.

Our support for the Inquiry

The Institute welcomes this Inquiry as an opportunity for long overdue improvements to forest fire management. We believe that state government policies on forest fire management, over at least the past 20-years, have been overly influenced by urban-based political imperatives rather than the need for responsible land management that minimises the threat of fire.

We would also point out that we have made similar submissions to a number of previous inquiries and a Royal Commission and have subsequently watched with concern as recommended changes have not been fully implemented. We sincerely hope that this Inquiry leads to effective improvements to forest and fire policies.

This submission

This submission provides specific recommendations in response to the Inquiry's Terms of Reference from the perspective of professional forest managers and scientists. If required, it can be supported by a verbal presentation to the Inquiry. If this was to occur, the Institute would be pleased to respond to any questions that this submission may have raised.

Background

The Institute and fire

The Institute is one of the few organisations to have developed formal national policies on bushfire/wildfire management and the ecological role of fire in Australian forests and woodlands. These policies have evolved since they were first developed 40 years ago. The current Policy Statement 3.1, "The Role of Fire and Its Management in Australian Forests and Woodlands" represents our thinking and approach to forest fire and underpin this submission (see attached Appendix 1).

The Institute also publishes a quarterly peer-reviewed scientific journal – *Australian Forestry* – which includes many fire related research articles, thereby adding to the store of fire science knowledge.

The basis for this submission

Our contribution to this Inquiry is founded on the following factors:

Training, experience and responsibility

Since the early 1900s fire management in Australian forests (including woodlands) has predominantly been the responsibility of forestry agencies managed almost exclusively by professional foresters. Most Institute members have received university-level training in the science underlying bushfire behaviour, fire suppression and prevention, as well as in fire ecology, and land use planning which incorporates forest fire management.

Many Institute members spend their entire careers in field-based forest, park and plantation management roles where wildfire prevention and suppression are day-to-day preoccupations. This includes practical experience with prescribed burning for ecological, silvicultural, or fuel reduction purposes.

Pioneers in bushfire research and operational application

Professional foresters have pioneered and become leaders in nearly every aspect of forest fire research and applied management under Australian conditions. This includes research into fire behaviour and fire prevention, and its application via prescribed fuel reduction burning, fire suppression, bushfire safety, fire training, fire ecology and fire weather forecasting.

Historical lessons learned

Australian foresters know the history of wildfire disasters in this country – from Black Friday in 1939, Ash Wednesday in 1983, the 2003 Alpine fires; the Black Saturday fires of 2009, the Eyre Peninsular and south-east forest fires in South Australia in 2006, the Dwellingup and Karridale Fires in Western Australia in 1961, and the Hobart (1967) and Sydney (1994) fires. Many Institute members fought these fires, and took part in subsequent inquiries that have aimed to improve forest fire management to minimise their re-occurrence.

Professional concern for environmental and community values

Foresters have a professional concern for Australia's forested lands and parks and the values that are threatened by high intensity wildfires. At the same time, we are also members of the community, and wish to see land management practices which effectively strive to protect human life and property from the ravages of fire.

Response to selected Inquiry Terms of Reference

Note: The Institute has made no response to the following Terms of Reference:

TOR (f): Existing structures, measures and policies to assist community recovery

TOR (h): An examination of the physical and mental health impacts of bushfires

Lessons to be learned in relation to the preparation and planning for, response to and recovery efforts following the 2019-20 Australian bushfire season, with particular reference to:

TOR (a) advice provided to the Federal Government, prior to the bushfires, about the level of bushfire risk this fire season, how and why those risks differed from historical norms, and measures that should be taken to reduce that risk in the future.

The Bureau of Meteorology provides fire and land management agencies with good climate advice prior to each fire season and good fire weather forecasts during the fire seasons. However, to reduce the bushfire risk requires reduction of the forest fuels. This requires good meteorological forecasting during the periods when prescribed burning maybe undertaken, generally in the spring and autumn. It is an activity that the Bureau of Meteorology should be providing free of charge to the fire and land management agencies if Australia is to address its bushfire risk. (see TOR (b), p. 13)

The Bushfire and Natural Hazards Cooperative Research Centre (BNHCRC) developed and publicly released its *Bushfire Seasonal Outlook* in August 2019⁶ and an update in December 2019⁷. These forecasts accurately predicted the possibility of above normal fire potential for the east coast of Australia.

In 2004, the *National Inquiry on Bushfire Mitigation and Management*⁸ provided the Council of Australian Governments (COAG) with many findings and recommendations to highlight the need for a common understanding of and approach to bushfires across Australia. COAG acknowledged that while bushfires are an inherent part of Australia's environment, the governments can reduce the risks that they pose to life, property and the environment.

COAG's Inquiry identified 14 national goals, including that land managers use prescribed burning to maintain appropriate fire regimes, balance the environmental impacts of fire, promote Indigenous Australians' use of fire and mitigate the risk of wildfire risk and manage risk (see TOR (d), p. 16).

One of the key elements to reducing the risks is to undertake extensive landscape-scale prescribed burning for wildfire mitigation. In Victoria, this was acknowledged in a parliamentary inquiry which reported in June 2008⁹ and again in the 2009 Victorian Bushfires Royal Commission into the 'Black Saturday' fires which reported in 2010.¹⁰ Both of these major inquiries recommended a tripling of the then level of prescribed fuel reduction burning for wildfire mitigation, as a means to reduce community and environmental risks. This direction was consistent with the COAG recommendations.

⁶ <https://www.bnhcrc.com.au/hazardnotes/63>

⁷ <https://www.bnhcrc.com.au/hazardnotes/68>

⁸ Ellis S, Kanowski P, Whelan R. (2004). *National Inquiry on Bushfire Mitigation and Management*. Canberra, Australia: Council of Australian Governments, Commonwealth of Australia.

⁹ *Impact of Public Land Management Practices on Bushfires in Victoria*, report of inquiry by the Environment and Natural Resources Committee, Parliament of Victoria (June 2008). The Government responded to its recommendations on 4th December 2008. Can be viewed at www.parliament.vic.gov.au/enrc/inquiries

¹⁰ Teague B, McLeod R, Pascoe S. 2010. *The 2009 Victorian Bushfires Royal Commission Final Report (Summary)*. Melbourne, Australia: Parliament of Victoria.

Leading into the 2019 / 20 fire season, the Bureau of Meteorology reported that Australia experienced the following climate during 2019:

- Warmest year on record, with the national temperature 1.52C above average.
- Both mean annual maximum and minimum temperatures were above average for all States and Territories.
- Annual national mean maximum temperatures were the warmest on record (2.09C above average).
- Widespread warmth throughout the year; January, February, March, April, July, October, and December all amongst the ten warmest on record for Australian mean temperatures for their respective months.
- Significant heatwaves in January and December.
- Australia's driest year on record.
- National averaged rainfall 40% below average for the year at 277.6mm
- Rainfall above average for parts of Queensland's northwest and northern tropics but below average for most of Australia.
- Drought in many areas with NSW and southern Qld. Under severe drought.
- Widespread severe fire weather throughout the year; the national annual accumulated Forest Fire Danger Index was the highest since 1950, when records began.
- El -Nino neutral throughout the year but the strongest positive Indian Ocean Dipole events on record.

On the back of this BOM reporting, a group of 23+ 'Former Fire Chiefs' blamed Climate Change for the 2019-20 bushfires and wrote a public letter calling on the Prime Minister to bring in more firefighting aircraft. The Institute believes that this was primarily a political stunt used to highlight Australia's need to take a greater stand on Climate Change. Many of the 'Former Fire Chiefs' agreed with the need to take Climate Change more seriously, but opted not to sign the letter to the Prime Minister.

The Institute disagrees with the contention that taking action on Climate Change and hiring more firefighting aircraft will solve Australia's bushfire problems. However, the media appears to be fascinated by very large firefighting aircraft and seems incapable of appreciating that more of the same approach to an above normal fire season will not solve a problem that is endemic to a fire-prone nation such as Australia.

In Australia, over the years, we have increased the numbers of aircraft for fire suppression yet wildfires continue to get bigger. Aircraft although important, are not a panacea for forest firefighting. In early January, 2020, the firefighting aircraft sat on the airstrip due to dense smoke. At this stage aircraft were useless for fire suppression, as the severe fire weather drove the fire towards Mallacoota.

Similarly, Cal Fire (the California Department of Forestry and Fire Protection in the USA) has more equipment and aircraft than most fire agencies in the world and yet they continue to have huge catastrophic wildfires. They continue to boost their fire resources yearly but the results are not improving. So why should Australians think that we will succeed where others failed?

In recent decades, our land management practices have altered our fire-adapted environment to such an extent that we now more often experience high intensity wildfires that are difficult to control, regardless of the amount of available firefighting resources. Australia was warned that 2019/20 was going to be a bad fire season so additional fire suppression resources and early preparation was important. However, the land had not been sufficiently managed over the

preceding decade to reduce the severity and extent of the wildfires which ignited during the 2019/20 bushfire season.

There is no reason to expect that a continuation of current land management practices, with a reliance on expanded firefighting forces, will safeguard our communities and our natural and built environments (see also TOR (e), p. 18; and TOR (i), p. 21).

Recommendation A1:

That the Senate Inquiry acknowledges in its findings that the underlying cause of Australia's tragic 2019/20 tragic wildfires is poor land management (on public and private lands) over a long period, coupled with an over reliance on emergency wildfire suppression to safeguard our communities. This ill-informed approach led to the emotional, environmental and economic losses sustained during 2019/20 bushfire season.

Recommendation A2:

That this Senate Inquiry acknowledges in its findings that, while firefighting aircraft are important for property damage mitigation and wildfire suppression, expanding their numbers and/or size will not materially reduce the incidence, extent, and severity of large forest fires. The way forward to reduce the impacts of wildfires is to implement sound land management practices in accord with COAG's National Bushfire Management Policy Statement for Forests and Rangelands.

TOR (b) the respective roles and responsibilities of different levels of government, and agencies within government, in relation to bushfire planning, mitigation, response, and recovery.

Improve government funding and support for wildfire mitigation on privately-managed lands

Land tenure determines differences in who carries responsibilities for these roles. On public lands, bushfire planning, mitigation, response and recovery are state government responsibilities carried by land management and emergency services agencies.

However, on privately-managed lands (ie. privately-owned and leasehold public lands) state government involvement is typically limited to enforcing building codes and emergency bushfire response.

In NSW, Queensland and the Northern Territory, a substantial majority of the land carrying flammable vegetation is privately managed.¹¹ Currently there is only very limited support for conducting active fire management on such lands, despite such areas typically containing the highest risk interface by being close (within 100 metres) of private and community assets.

If bushfire planning and mitigation is to significantly improve in those states there is a need to expand government roles into educating and supporting private land managers in fuel management, including providing support for cultural burning on Traditional Owner-managed lands. This would both mitigate the wildfire threat and improve the ecological health of their native vegetation.

This would include expanded roles for local government, as well as government-funded independent land management agencies such as Regional NRM and under the National Landcare Program¹² to support fire management on privately-managed lands, including prescribed burning, mechanical fuel; management and firebreak maintenance.

¹¹ *Australia's State of the Forests Report 2018*, Criterion 1.1a, Tables 1.6 and 1.7, p.55.

¹² <http://www.nrm.gov.au/regional/regional-nrm-organisations>

Recommendation B.1:

That more government funding, education and support be provided to increase extensive fuel reduction burning and other wildfire mitigation actions on privately-managed lands. This could include:

- developing management standards to provide guidance for appropriate wildfire mitigation in fire-prone areas; and
- developing a regulatory framework for property owners/managers who do not conduct adequate fire management for wildfire mitigation.

Improve land management through more wildfire research and development

Bushfire research in Australia has undergone major changes in scale and scope over the past two decades. National research collaboration increased substantially with the establishment of the Bushfire Cooperative Research Centre (CRC) in 2003, reflecting an expanding research agenda with greater emphasis on social and health sciences and a more active role for the Bureau of Meteorology in climate and weather research.

The Bushfire CRC also provided an expanded role for the university sector and supported post-graduate students to develop into the next generation of researchers. Linkages to the fire and emergency management sector were strengthened through engagement with the Australasian Fire and Emergency Service Authorities Council (AFAC) which also represents urban fire services and other emergency response agencies. Major wildfires in south-eastern Australia in 2003, 2006/07 and 2009 sharpened the focus for delivery of research outputs from the Bushfire CRC.

The Institute considers that the Commonwealth Government has a key role to play in co-ordinating and supporting wildfire research nationally.

Post the 2009 Black Saturday fires, the Senate's resolution, on the 11th February 2009, noted,

- (a) *the extensive and internationally-recognised work of the Bushfire CRC and*
- (b) *recommends the Government assess the value of upgrading the centre to be a global wildfire research facility.*

This Senate support reinforced the bushfire research-related recommendations of the 2004 COAG Inquiry on Bushfire Mitigation and Management¹³.

In 2014, the Bushfire CRC ceased operation and was succeeded by a broader Bushfire and Natural Hazards CRC (BNHCRC). The BNHCRC's broader all-hazards approach has translated into a stronger research focus on emergency response at the expense of fire behaviour and ecosystem management. However, this all-hazards approach has strengths in research and research translation into practice, including collaboration on shared issues around climate and weather modelling, public warnings, remote sensing, and the impact of multiple hazard events.

With the BNHCRC's current funding due to terminate in mid-2021, there is considerable urgency to determine appropriate new arrangements that ensure on-going co-ordination and collaboration of independent applied wildfire research and technology development.

The Institute acknowledges the highly significant achievements of the Bushfire CRC and the BNHCRC but remains open to considering alternative funding models to continue the success of this research coordination.

¹³ Ellis S, Kanowski P, Whelan R. (2004), *National Inquiry on Bushfire Mitigation and Management*. Canberra, Australia: Council of Australian Governments, Commonwealth of Australia.

Recommendation B.2:

That the Commonwealth Government continue funding the coordination and collaboration of independent applied wildfire research and development to ensure continuity of effort and expertise beyond the life of the successful Bushfire and Natural Hazards CRC.

Improve wildfire mitigation by directing the Bureau of Meteorology to give greater priority to providing weather services to assist forest managers engaged in prescribed burning

The Meteorology Act 1955 Section 6 (1) (c) designates functions of the Bureau of Meteorology (BOM). These include issuing warnings of weather conditions likely to endanger life or property, including those likely to give rise to floods or dangerous wildfires. The BOM has always met this requirement by providing free-of-charge weather services to emergency service agencies and the community. On the other hand, weather services relating to planned fuel reduction burning for wildfire mitigation, or other land management purposes, have been considered as commercial services charged for on a cost recovery basis.

BOM has a strong track record of providing high quality and responsive services to fire and land management agencies. The Institute believes that the Commonwealth Government should direct BOM to provide free-of-charge weather services for planned burning as it already does for emergency wildfire response.

This would go some way to addressing the findings of the Productivity Commission's 2014 report into Natural Disaster Funding which found that governments over-invest in post-disaster reconstruction but under-invest in mitigation actions that would limit the impact of natural disasters in the first place. Accordingly, natural disaster costs have become a growing, unfunded liability for governments. The Productivity Commission recommended that Australian Government post-disaster support to state and territory governments should be reduced, while support for mitigation actions should be increased.

The Institute urges the Commonwealth Government to provide appropriate additional resources to the BOM to enable it to provide land managers undertaking fuel reduction burning with high resolution weather forecasting, including smoke dispersal modelling and predictions of unstable atmospheric conditions that are likely to result in dangerous fire behaviour.

Recommendation B.3:

That the Commonwealth Government funds and directs the Bureau of Meteorology to provide free-of-charge prescribed burning weather forecasting services to State Governments as it does with fire suppression services.

TOR (c) the Federal Government's response to recommendations from previous bushfire Royal Commissions and inquiries.**Separate politics from wildfire mitigation and learn the lessons of the past**

The implementation of wildfire mitigation strategies can be shaped by the political climate of the time. This has been evident for at least 80 years given that in his 1939 bushfires Royal Commission report, Judge Stretton observed of the then Victorian Forests Commission chairman, AV Galbraith, that:

... if his Commission were placed beyond the reach of the sort of political authority to which he and his Department has for some time past been subjected, he would be of greater value to the State.

His meaning was clear: good fire and land management needs to be based on long-term perspective, rather than a short-term political focus.

Judge Stretton also observed the need to have public support, because:

.... without their approval and goodwill, there can be no real plan.

While our changing climate is exposing the weaknesses in our land and forest fire management, adapting this management to meet the challenges ahead must have bipartisan political support and broadly-based community support. The polarised public debate over what caused the 2019/20 bushfires (i.e. climate change or inadequate land and forest fire management practices) demonstrates the difficulty in getting strong consensus on how best to move forward.

However, past bushfire inquiries (i.e. 58 since 1939)¹⁴ represent positions taken under past State and federal governments of all persuasions and, for current-day observers, their recommendations collectively represent a bi-partisan position on bushfire mitigation that's hard to argue against. Accordingly, the Institute believes this current inquiry should, as a starting point, be reviewing the degree of effective implementation of the recommendations and their intended outcomes from these past inquiries, reviews and Royal Commissions to potentially reinforce thinking about how to address the concerns arising from the 2019/20 bushfires.

For example, we contend that the recommendation to implement a 5% fuel reduction burning target made by both the 2009 Victorian Bushfires Royal Commission and an earlier 2008 Victorian Parliamentary inquiry, is still highly relevant to addressing the concerns arising from the recent 2019/20 fires.

We also contend that past fire management policies developed by governments with considerable foresight and the best intentions, have yet to be fully implemented. For example, the 2014 National Bushfire Management Policy Statement for Forests and Rangelands, which, if adhered to would provide a sound direction towards dealing with the problems that have been highlighted by the 2019/20 fires.¹⁵

Recommendation C.1:

That before this inquiry makes any further recommendations regarding wildfire, the Commonwealth Government audits the implementation of the 58 bushfire inquiries, reviews and Royal Commissions held since 1939, specifically checking the implementation of the 29 recommendations made by the Council of Australian Government's (COAG) 2004 National Inquiry on Bushfire Mitigation and Management, and COAG's response to the Inquiry Report.

TOR (d) the adequacy of the Federal Government's existing measures and policies to reduce future bushfire risk, including in relation to assessing, mitigating and adapting to expected climate change impacts, land use planning and management, hazard reduction, Indigenous fire practices, support for firefighters and other disaster mitigation measures.

¹⁴ G.W. Morgan, K.G. Tolhurst, M.W. Poynter, N. Cooper, T. McGuffog, R. Ryan, M. Wouters, N. Stephens, P. Black, D. Sheehan, P. Leeson, S. Whight and S.M.Davey (2020), *A History of Prescribed Burning in South-eastern Australia*. Australian Forestry, Vol. 83:1, 4-28, April 2020, DOI: [10.1080/00049158.2020.1739883](https://doi.org/10.1080/00049158.2020.1739883)

¹⁵ National Bushfire Management Policy Statement for Forests and Rangelands. ISBN: 978-0-646-58481-2 https://members.professionalsaustralia.org.au/Forestry/About_the_IFA/forest_fire/National_Bushfire_Management_Statement_Policy_Statement.pdf

The Federal Government already has a sound policy statement to reduce future wildfire risk. This policy was agreed to by all mainland States and Territories through the Council of Australian Governments (COAG). To date, the Federal Government has not audited the implementation of this policy. Unfortunately, when it does, the results will reveal that much more work needs to be undertaken by the States and Territories.

Meet the objectives and goals of the National Bushfire Management Policy Statement for Forests and Rangelands (2014)

In response to the 2009 Victorian Bushfires Royal Commission and various other inquiries, land and fire managers from government agencies, in all mainland States and Territories, prepared a *National Bushfire Management Policy Statement for Forests and Rangelands*¹⁶. Though approved and signed by all COAG members by early 2012 and published in 2014, there has as yet been little action to implement it.

The *National Bushfire Management Policy Statement* is underpinned by the following broad vision:

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.

Central to this vision is:

The role fire plays in maintaining and enhancing biodiversity. Sustainable long-term solutions are needed to address the causes of increased bushfire risk.

To achieve the intent of the policy, 14 National Goals were identified within the following four Strategic Objectives:

- A. Effectively managing the land with fire;
- B. Involved and capable communities;
- C. Strong land, fire and emergency partnerships; and
- D. Actively and adaptively managing risk.

The first of the National Goals was to maintain appropriate fire regimes with the right combination of size, intensity, frequency and seasonality required to sustain Australia's forest and rangeland ecosystems.

Another important goal was to promote Indigenous Australians' use of fire and to further integrate Traditional burning practices and fire regimes with current practices and technologies to enhance wildfire mitigation and management in Australian landscapes. This effectively recognises the benefits of widespread, low-intensity, and patchy fires in creating sustainable landscapes resilient to climate extremes.

Further to this, the policy's goal to create employment, and foster workforce education and training in wildfire management, recognises the importance of fire as an integral part of our lives.

While these three goals — along with the 11 others contained in the policy statement — still need to be developed into measurable outputs and/or outcomes, they do set a foundation for a comprehensive and sustainable national forest fire management strategy.

¹⁶ National Bushfire Management Policy Statement for Forests and Rangelands. ISBN: 978-0-646-58481-2 (https://members.professionalsaustralia.org.au/Forestry/About_the_IFA/forest_fire/National_Bushfire_Management_Statement_Policy_Statement.pdf)

The Institute believes that implementing the policy's Strategic Objectives is in the nation's interest. Hence, it shall be hosting a Virtual Fire Forum¹⁷ on the 23rd, 24th and 25th of June 2020, from 1030 to 1200 AEST. The third session is structure around these key COAG strategic objectives. Presenters have been asked to propose criteria to measure the successful movement towards achieving these national objectives.

This Virtual Fire Forum will begin the Institute's process towards developing draft measurable criteria that would assist the Federal Government when developing its criteria for auditing the implementation of its *National Bushfire Management Policy Statement*.

Recommendation D.1:

That the Federal Government develops performance measures for each of the four Strategic Objectives and 14 National Goals within the *National Bushfire Management Policy Statement for Forests and Rangelands* (2014) and conducts annual performance audits of the States' and Territories' progress towards meeting these goals.

TOR (e) best practice funding models and policy measures to reduce future bushfire risk, both within Australia and internationally.

There is currently a major problem with funding for future bushfire risk both in Australia and internationally. It is due to the dominance of funding for emergency wildfire response, particularly the increasing use of aircraft at great expense, which then reduces the budget available for reducing future bushfire risk.

Traditionally, forest fire management was approximately equally focussed on off-season wildfire mitigation activities and in-season emergency response to suppress wildfires. In the mid-1990s, when this was arguably still the case, a University of Melbourne study concluded that every \$1 spent on forest fire management (i.e. wildfire mitigation and suppression) by the then Victorian Department of Sustainability and Environment, was generating a \$24 saving in averted wildfire loss.¹⁸

Since then, the resourcing balance has shifted firmly towards emergency response in lieu of forest management (i.e. wildfire mitigation), largely by spending more on the use of very expensive aerial firefighting technology. This has followed the lead of the USA and other fire-prone countries in the Mediterranean region. Internationally acclaimed, US fire historian, Stephen Pyne, has argued since the mid-1990s that the shift to greater use of expensive aircraft in lieu of land management (mostly fuel reduction burning) largely explains why the US now annually endures very large forest fires that were far less common in the past.¹⁹ Others, including former US Forest Service National Director of Fire and Aviation Management, Jerry Williams, have also endorsed this view.²⁰

Pyne argues, the domination of emergency response over forest management in the US has fostered a self-sustaining cycle of massive wildfires, which reinforces the dominance of emergency response by fuelling demands for greater expenditure on more firefighting aircraft after each fire.

¹⁷https://www.forestry.org.au/Forestry/Events/Fire_Forum_June_2020/Forestry/Events/Fire_Forum_June_2020.aspx?hkey=7435ac6e-76d4-46d8-a259-f8c4b2ad70f4

¹⁸ *An Economic Evaluation of Bushfire Prevention and Suppression*, by J. Bennetton and P. Cashin, Research Paper No. 598, Department of Economics, University of Melbourne (1997)

¹⁹ Pyne, S., *The Still Burning Bush*, Scribe Publications (2006)

²⁰ Williams, J.T. (2013), *Exploring the onset of high-impact mega-fires through a forest land management prism*, *Forest Ecology and Management*, Volume 294: 4 – 10, April 2013

Recent research from Mediterranean Europe refers to this phenomenon as a 'firefighting trap' that enshrines a future of larger and more severe fires.²¹

That Australia has fallen into this trap is exemplified by the Morrison Government's commitment to spend \$11 million on four additional large aerial water tankers in latter stages of the 2019/20 fire season, while the NSW and QLD Governments have committed to sourcing their own Very Large Aerial Tankers (VLATs) for future fire seasons. These political decisions have been forced by community and media pressure generated by the 2019/20 fires.

To combat the 'firefighting trap', the recent Mediterranean research advocates:

... that policy and expenditures be rebalanced between suppression and mitigation of the negative impacts of fire.

The socio-economic value of returning to a more appropriate balance between forest management and emergency response in SE Australia is exemplified by a recent socio-economic analysis of the higher annual fuel reduction burning program that has been maintained in the south-western forests of WA. This analysis found that the region's fuel reduction burning program delivers a \$31 million per annum saving in expenditure on emergency wildfire suppression, and a \$169 million annual saving in averted property loss/damage. Long term modelling of various annual fuel reduction burning options, suggests that every dollar invested in planned fuel reduction burning generates between \$10 and \$47 of benefit compared to a 'no-planned burning' scenario.²²

The solution to stopping regular massive forest fires does not lie in continuously increasing expenditure on more and bigger water bombing aircraft. This has done little to reduce the frequency and extent of massive wildfires and effectively rewards poor forest management policies that are failing to adequately address the underlying causes of the problem.

The severity of wildfire and its community impacts will only reduce when landscape-scale fuel reduction is significantly increased across private and public forested lands, utilising modern methods while adopting the principles of indigenous Australians which worked for tens of thousands of years. A more equitable sharing of the fire management budget by increasing expenditure on prescribed burning and maintenance of the forest access network, will significantly reduce the dependency on aircraft – particularly the very expensive large air tankers – and may even lower the overall annual costs of forest fire management.

It is time that governments reviewed their annual expenditure on fires and rebalanced the amounts spent between its in-season wildfire suppression and off-season wildfire mitigation.

COAG has already adopted this policy direction through its *National Bushfire Management Policy Statement for Forests and Rangelands* yet not all States and Territories have committed to implementing the policy. The Federal Government may have unintentionally exacerbated the problem through increasing the amount of funding it provides for firefighting aircraft, while not funding the Bureau of Meteorology to deliver weather services for land management agencies outside of the fire season, when high quality weather predictions are needed for safe fuel reduction burning.

²¹ Moreira et al (2020), *Wildfire management in Mediterranean-type regions: paradigm shift needed*, Environmental Research Letters 15 011001

²² Florec, V., Pannell, D., Burton, M., Kelso, J., and Milne, G. 2016, *Think long term: The costs and benefits of prescribed burning in the south west of Western Australia*, Non-peer reviewed research proceedings from the Bushfire and Natural Hazards CRC & AFAC conference, Brisbane, 30 August – 1 September 2016.

Federal Government funds would be more effectively used if diverted away from funding very large air tankers towards funding the Bureau of Meteorology to provide meteorological support to land management agencies engaged in prescribed burning for wildfire mitigation.

Recommendation E.1:

That the Federal Government conduct an independent evaluation of the cost-effectiveness and efficiency of the aerial fire suppression resources used on the 2019-20 bushfires, including the potential for savings to be generated for use in improving bushfire preparedness.

Recommendation E.2:

That State and Territory Governments be encouraged to increase expenditure and commitment to off-fire season fuel management to mitigate the adverse impacts of wildfires and to reinstate a more equitable resourcing balance with in-season emergency response to wildfires.

TOR (g) the role and process of advising Government and the federal Parliament of scientific advice.

There are many existing bodies that provide scientific and technical advice on wildfires to the federal Parliament. Amongst these, the four listed below could provide the Government with advice:

Forest Fire Managers Group

The Forest Fire Managers Group (FFMG) is a subgroup within the Primary Industries Ministerial Council structure and answers directly to the Forest and Forest Products Committee (FFPC). The role of the FFMG is to provide FFPC high level technical advice and guidance on all forest fire related matters impacting government land managers across Australia and New Zealand.

FFMG consists of land managers with fire responsibilities, within government agencies, from Australia and New Zealand. It is augmented with people within other areas associated with fire and land management (e.g. research from Bushfire and Natural Hazards CRC and the CSIRO; and education from the University of Melbourne).

Institute of Foresters of Australia and the Australian Forest Growers

Outside of government, advice is available from the Institute of Foresters of Australia and the Australian Forest Growers. They are an independent national body representing Australia's forest scientists, technicians, growers and managers with professional and practical expertise in forest and plantation management. For fire management science advice and the development of national positions they have a dedicated Forest Fire Management Committee which includes highly credentialed experts in forest fire science from across Australia.

The Institute of Foresters provides peer-reviewed scientific advice in Australian Forestry, a quarterly journal of the IFA that has published articles since 1936. Australian Forestry is compiled and edited by the IFA, partnering with Taylor & Francis who produce and distribute it both online and in a printed version.

Bushfire and Natural Hazards Cooperative Research Centre

The Bushfire and Natural Hazards Cooperative Research Centre (BNHCRC) manages an end-user driven nationally coordinated and inter-disciplinary research effort in hazards, including bushfires, flood, storm, cyclone, heatwave, earthquake and tsunami. The BNHCRC undertakes research that supports the development of cohesive, evidence-based policies, strategies, programs and tools to build a more disaster resilient Australia. The BNHCRC delivers a long-term research base that directly supports emergency services and other government and non-government agencies as they work to prevent, prepare for, respond to and recover from natural disasters.

Australasian Fire and Emergency Services Authorities Council

The Australasian Fire and Emergency Services Authorities Council (AFAC) consists of the emergency services and fire management agencies of all mainland Australian States and Territories, and all other government agencies with emergency management responsibilities. It is independent of government and facilitates the sharing of contemporary fire and emergency service knowledge and practice, for the benefit of members.

All the above organisations rely on ongoing fire research. With the BNHCRC's current funding due to terminate in mid-2021, there is considerable urgency to determine appropriate new arrangements that ensure on-going co-ordination and collaboration of independent applied wildfire research and technology development (see TOR (b) and Recommendation B3, pp. 13-15).

The Institute acknowledges the highly significant achievements of the Bushfire CRC and the BNHCRC but remains open to considering alternative funding models to continue the success of this research coordination.

TOR (i) any related matters:

Inadequacies in State responsibilities for wildfire mitigation (ie. preparation) and emergency wildfire response.

The Institute wishes to register its concern that current forest fire management in southern and eastern Australia is characterised by inadequacies in both off-season wildfire mitigation and in-season emergency response to wildfires. These concerns are described in greater detail below and we acknowledge that they represent a failure of State, rather than Federal, responsibilities.

Wildfire mitigation activities include prescribed burning, maintenance of the forest road and track network, and regular slashing of fuel breaks, particularly near built-up areas. They do not prevent fires from starting, but provide safer areas for firefighters to work from (anchor points), enable quicker access to fires when they are still small, provide lower-risk areas for burning operations, and reduce wildfire intensity and rate-of-spread thereby widening the window-of-opportunity for their safer and quicker control.

However, under extreme conditions, such as were experienced during many of the 2019/20 season's wildfires, it must be acknowledged that mitigating fire intensity and improving access may only offer marginal assistance on the fire front until conditions moderate; but can then greatly assist in facilitating fire control, particularly in controlling the fire flanks, and thereby reducing the total area burnt.

Some of the emergency wildfire response issues mentioned below are likely to stem from inherently high wildfire intensities that are a direct consequence of inadequate wildfire mitigation actions which, over many years, has allowed forest fuels to accumulate to high levels in much of the forest estate.

These concerns have been recognised in several earlier inquiries into wildfire disasters around the country. In Victoria, it was acknowledged in a parliamentary inquiry which reported in June 2008²³ and again in the 2009 Victorian Bushfires Royal Commission into the 'Black Saturday' fires which reported in 2010.²⁴ Both of these major inquiries recommended a tripling of the then level of

²³ *Impact of Public Land Management Practices on Bushfires in Victoria*, report of inquiry by the Environment and Natural Resources Committee, Parliament of Victoria (June 2008). The Government responded to its recommendations on 4th December 2008. Can be viewed at www.parliament.vic.gov.au/enrc/inquiries

²⁴ Teague B, McLeod R, Pascoe S. 2010. The 2009 Victorian Bushfires Royal Commission Final Report (Summary). Melbourne, Australia: Parliament of Victoria.

prescribed fuel reduction burning for wildfire mitigation, but ultimately this recommendation was never fully enacted, and was formally abandoned by the Victorian Government in 2015.

The current imbalance in budgetary expenditure on in-season emergency wildfire response over off-season fire mitigation has already been discussed under TOR (e), p. 18. Arguably this is the most serious problem facing Australian bushfire management. Other serious concerns are outlined below.

Over-reliance on aircraft and risk-averse firefighting

Observation and analysis suggest that emergency wildfire response has become overly reliant on aerial water-bombing and that this may be displacing the aggressive ground-based attack on forest fires which is integral to quickly containing them.

Water-bombing aircraft, operating in suitable conditions, are highly valued for initial 'first attack' on just-ignited small fires because they can restrict fire spread. However, forest fires can generally only be stopped and extinguished by ground-based firefighters building, and then working from, containment lines. Accordingly, aerial attack on such fires is largely about buying time before ground-based attack can contain them, and thereafter assisting mop-up by dousing significant hotspots.

Unfortunately, it seems that the massive expenditure on aircraft-based wildfire response is not only reducing the resources available for off-season land management for wildfire mitigation, but has also skewed emergency response away from ground-based attack which is the only way to ensure fires are contained. Greater efforts at mitigating the fire threat through forest management will be wasted if there is not sufficient commitment to direct ground-based attack on wildfires.

In SE Australia, this concern is exemplified by the apparent decline of formerly standard ground-based firefighting practices such as walking-in to remote lightning strike fires, hand-trailing on the fire edge, and night-time fire-line construction (by hand or machine).²⁵ The decline of these practices is apparently rooted in overly-negative perceptions of firefighter risk and coincides with a greater use of indirect attack on fires (i.e. backburning from distant driveable roads or tracks) and an increasing reliance on volunteer firefighters to patrol fires and mop-up along often huge fire perimeters.

Backburning is a planned burning operation used to control the spread of an uncontrolled wildfire. It is an indirect form of fire control that should only be used only after careful consideration by skilled fire crews. Backburning is a major strategic decision that should only be made by an Incident Controller at a wildfire. However, during the 2019/20 fires there were many reports where backburning failed and resulted in only increasing the area burnt. If this is so, proper independent incident reviews will reveal how inappropriate such actions were when weather conditions and firefighter skills engaged were not conducive to success.

In light of these concerns, what constitutes acceptable firefighting risk needs to be reviewed because striving to eliminate the personal risk from what is an inherently risky activity is clearly hindering the capability to quickly contain fires while they are small. This often results in larger fires with exponentially increased levels of risk to far greater numbers of firefighters and the broader community when such fires emerge from forests to threaten farms, towns or suburbs.

The impacts of large forest fires on commercial crops may often last for many years e.g. vineyards and forest plantations. If large resource losses are suffered then local industries may close. This increases the impact to a wider community, swelling the number of people affected economically

²⁵ Position Paper: *Firefighting at night*, Institute of Foresters of Australia, www.forestry.org.au/Forestry/About/

and emotionally. Closure of an industry (e.g. sawmill) could result in a significant demographic shift away from a local area, and reduce the pool of capable people available locally to undertake firefighting.

When evaluating risk a wider consideration is required to include the accumulative effect of resource losses over several years disrupting commercial enterprises, as well as the impact on resources that take many years to produce a commercial gain.

Recommendation I.1:

That State and Territory Governments be encouraged to redirect expenditure and commitment towards improving emergency response to remote area wildfires. This may necessitate a re-evaluation of what constitutes acceptable risk, given that striving to eliminate firefighting risks can often lead to fires growing larger with exponentially increased risks to greater numbers of fire-fighters and the broader community.

Problems with centralising of land management and wildfire command and control functions

In the decades prior to the 2019-20 fires, State and Territory Governments have to varying degrees centralised their land management functions into large regional centres, effectively reducing the numbers of field-based personnel managing the public forest estate from nearby small towns. This has contributed to the general population decline in rural areas creating economic difficulties for many businesses, resulting in fewer local jobs for younger people thereby forcing many to move away in search of employment.

In many rural areas this decline has significantly reduced the capacity of the volunteer-based emergency response agencies to retain existing members and recruit new members; and has also reduced the capability to access local machinery required to fight wildfires.

History has shown that decentralised forest and park management supported by locally-based equipment, greatly improves the capability of rural and remote communities to:

- manage forest fuel levels for wildfire mitigation;
- undertake prescribed burning to maintain and enhance biodiversity;
- maintain and improve the forest access network for rapid first attack on wildfires; and
- optimise the efficiency and effectiveness of firefighting (including non-local resources, such as Defence Force personnel) during large-scale bushfires though leadership informed by local knowledge.

We are aware that the emergency response to the 2019-20 fires in East Gippsland was primarily managed from Bairnsdale, which is up to several hundred kilometres away from the extremities of these fires. The Institute does not believe that such a centralised emergency management approach is as effective as command and control arrangements that adhere to the principle of subsidiarity, whereby important operational decisions are made by appropriate appointees located close to the action with a better appreciation of the situation.

Recommendation I.2:

That the Commonwealth Government encourages State and Territory Governments to:

- reinstate permanently decentralised professional land management staffing levels in smaller townships distant from large regional centres to maintain a cohort of locally based agency personnel with detailed geographic and fire knowledge of our parks, forests and Crown lands;
- improve engagement with local communities; and help safeguard rural and remote economies;

- rearranges command and control functions for emergency wildfire response based on the principle of subsidiarity whereby decision-making is best undertaken from as close as possible to the emergency location.

Problems with variable levels of expertise in controlling emergency response

The expertise for responding to forest fires (as opposed to grassland fires and infrastructure fires) mostly resides within State land management agencies on public lands, and amongst plantation managers and forest growers on privately-owned lands. In the past, the most experienced, trained and qualified personnel appointed to be in control of major forest fires, were usually senior level foresters. In that role, they generally led the emergency response to forest fires (including coordinating the support of other emergency service agencies) in a successful manner.

Nowadays not all senior public land management personnel are trained and experienced foresters, and there have been instances where personnel placed in-charge of major forest fires have lacked the training and necessary experience to hold such positions. Indeed, it is not uncommon these days for personnel from non-forest/land management agencies, with little or no wildfire experience, to be placed in-charge of wildfire response.²⁶ Unnecessarily large or damaging wildfires have often resulted from such poor decisions.

Few people would accept an unqualified heart surgeon operating on them, and neither should the community accept inexperienced people being placed in-charge of major wildfire suppression operations.

Fortunately, Australian fire and land management agencies have agreed to a common system of incident management – the Australian Inter-service Incident Management System (AIIMS) – which enables all emergency service organisations within a particular jurisdiction, as well as those coming from interstate and overseas, to work under the one umbrella. The various roles and responsibilities under AIIMS have been well documented by the Australasian Fire and Emergency Service Authorities Council (AFAC).

Under the AIIMS system, the key people in-charge of personnel and decision-making that potentially impact on life, property and the environment, are the Incident Controller, the Operations Officer and the Planning Officer. Effective forest fire suppression relies on experienced accredited personnel occupying these positions. Unfortunately, standards of competency for such positions differ between States, and between agencies within the same State. To ensure consistency of expertise in these roles, there is a need for national standards for accreditation and currency.

Recommendation I.3:

That the Commonwealth Government standardises national minimum competencies and currencies for the training and experience of accredited Incident Controllers, Operations Officers and Planning Officers with wildfire responsibilities.

The decline of native forest timber industries

The progressive shift away from multiple-use forest management since the 1980s has resulted in the gradual decline of native forest timber production. This is a significant loss for forest fire management. Timber industry contractors have highly developed bush skills, including considerable experience of operating earth-moving machinery in difficult forest terrain, and were readily available to fight wildfires. Because they work in the forest, they can be more quickly mobilised than the road construction or farming contractors more commonly used today.

²⁶ Teague B, McLeod R, Pascoe S. 2010. The 2009 Victorian Bushfires Royal Commission Final Report (Summary). Melbourne, Australia: Parliament of Victoria.

Being very experienced at operating their machinery in the bush, timber industry contractors have the confidence to take calculated risks that could often stop small wildfires from developing into dangerous conflagrations. Furthermore, the industry's presence provides a stronger economic imperative to maintain the road and track network; is a greater incentive to protect a future socio-economic resource; and requires an associated force of experienced government-employed forestry and fire practitioners to plan, manage and supervise timber harvesting. All these advantageous elements are relatively lacking today.

The substantial loss of timber industries throughout southern and eastern Australia over the past 30 years has occurred for a range of reasons, including legitimate conservation needs; declining areas of usable timber resource; and for purely political reasons associated with appeasing mainly inner-urban 'green' voters. That timber industries are still threatened with closure despite most public forests now being already contained in national parks and other conservation reserves is now almost entirely due to eco-political machinations rather than legitimate conservation needs, despite the contrary activist rhetoric.

The Institute is unaware of any attempt to formally quantify the Australia-wide loss of timber industry resources on forest fire management capability. But in Victoria, the decline of timber harvesting contractors has been charted from 133 employed in 1984, down to 36 in 2014.²⁷ Since then, the Victorian Government has waged a subtle campaign against the industry prior to announcing its phased closure by 2030, and so it is likely that the current number of contractors may be down to 25 to 30. Given that each contractor would have had up to two suitable machines with experienced operators, it is apparent that the loss of such numbers represents a considerable blow especially to the capability to successfully contain wildfires during the 'first-attack' phase covering the first 24-hours after ignition.

The recent Victorian Government decision to close its native forest timber industry reflects decades of concerted (and often deceitful) public campaigning and lobbying of media and governments by non-government environmental organisations intractably opposed to native forest timber production. These entities have advocated for stagnant 'conservation' as the sole objective of native forest management while largely overlooking the scope for limited sustainable use of natural resources with its associated firefighting capacity and capability. As such, they have effectively advocated for an outcome – large wildfires - that is likely to be counter-productive to their intended aim.

Recommendation I.4:

That State and Territory Governments be encouraged to recognise the importance of retaining viable timber industries to maintaining an efficient and cost-effective ground-based firefighting capability.

Declining effectiveness of 'first attack' and subsequent firefighting

Whilst we are aware of a considerable amount of effective fire suppression undertaken in the 2019/20 and previous fire seasons, we believe there is strong basis for concern that optimal fire suppression efficiency is being significantly impaired, at least in southern and eastern Australia.

This concern is informed by a growing incidence of small fires being unable to be contained during the 'first attack' phase and/or subsequent prolonged periods of favourably mild or benign weather

²⁷ Ryan, M. and Runnalls, R. (2015) *Does timber harvesting in natural forests have any influence on fire management at the landscape level?* Unpublished paper presented to the Institute of Foresters of Australia 2015 Biannual Conference.

conditions. Consequently, these fires have grown large, damaging and uncontrollable during extreme fire weather conditions.

These include publicly documented instances of Victorian fires at Harrietville (2013), Goongerah/Deddick Trail (2014) and Wye River (2015), and in Tasmania at Geeveston (2019). In these cases, inexplicably missed opportunities to control small and easily accessible fires enabled them to grow into damaging conflagrations. Collectively these four fires burnt around 290,000 hectares when they could (or should) have been restricted to perhaps one hundred hectares or less.

This fire season, in northern NSW, an allegation that firefighters gave insufficient attention to a small fire is at the heart of a legal class action by local farmers whose properties were subsequently burnt when a fire initially contained in the Guy Fawkes National Park escaped and grew to uncontrollable proportions.²⁸

In Victoria's East Gippsland, it is staggering to consider how much of the massive area burnt during the 2019/20 season could have been spared given that wildfire from four lightning strikes, ignited on 21 November 2019, were unable to be contained despite firefighting being favoured by a month of mostly mild or benign weather before dangerous fire weather conditions arose in late December. In the absence of a rational explanation, experienced forest fire practitioners find such instances hard to comprehend.

There are likely to be other fires in this category that have not been reported. Indeed, amongst the 2019/20 fires, local anecdotes have emerged in relation to small fires growing large and uncontrollable due to avoidable human factors such as lack of attention, urgency, or experience; as well as inappropriate firefighting tactics related to disturbance-averse parks management philosophy.²⁹ These concerns have been articulated to the NSW and Victorian State Government inquiries in greater detail in submissions by stakeholders closer to the action.

It is appreciated that some of the allegations concerning fire suppression strategies may have arisen because of an increased emphasis on protecting life and property when dangerous conditions forced firefighting efforts to be diverted away from the primary task of controlling the fire. However, as described earlier, we believe that much of it can be attributed to an over-reliance on arms-length aerial water-bombing as a part-replacement for ground-based practices such as manual hand-trailing or machine-based fireline construction and black-out (including at night), especially on remote area lightning-ignited fires in difficult-to-access terrain. These traditional standard ground-based practices are essential to ensure fires are contained, while aerial water-bombing can rarely provide such certainty.

Recommendation I.5:

That State and Territory Governments be encouraged to increase expenditure and commitment to off-fire season forest management to mitigate wildfires, especially through increasing the annual level of fuel management and by reinstating and upgrading road and track networks, especially in remote area forests.

Recommendation I.6:

That State and Territory Governments be encouraged to rebuild their in-house fleets of heavy machinery and invest in training experienced operators to restore their forest firefighting capability.

²⁸ We saw *this coming for years: Farmers take legal action after fires*, by Alexandra Smith, *Sydney Morning Herald*, 6 February 2020.

²⁹ The Institute is not in a position to investigate the veracity of local allegations, but eagerly awaits the important learning lessons that will hopefully be revealed through this Senate Inquiry, the Royal Commission and the State-based inquiries.

APPENDIX 1

IFA Position Paper 3.1:

The role of fire in Australian forests and woodlands



The Institute of Foresters of Australia (IFA) advocates a better appreciation of the important and complex role that fire plays in the evolution and maintenance of Australian ecosystems and its potential to significantly impact on social, economic and cultural values. The IFA also advocates for better management of bushfires and prescribed fires, including the need for further scientific research and the systematic monitoring and review of fire management with the results being made available to policy makers, land managers, fire services and the community.

Fire is one of the most important factors in the ecology of Australian forests and woodlands. Hence, the managers of both public and private forests must understand the role of fire both in meeting land management objectives and in minimising the potential for adverse impacts on human life and property.

The Issues

Fire is an essential element of the Australian natural environment that cannot be removed. It is integral to maintaining environmental processes such as nutrient cycling, adaptation and evolution via gene expression and redistribution, faunal and floral composition and structure, hydrological processes and habitat formation and maintenance.

However, uncontrolled fire can also be destructive, potentially leading to human death, loss of houses, infrastructure and services, loss of amenity, impact on water flows and water quality, loss of habitat, loss of soil and soil nutrients and loss or degradation of other forest values such as timber. The impact of fire can also extend beyond the burnt area with smoke from bushfires or planned burns having potential to cause visibility problems, adversely affect human health, and damage crops such as wine grapes.

To manage for the protection of human life and biodiversity, fire must be viewed and managed at a landscape scale and over long timeframes even though its impact, at any one time, may be local and immediate. To this end, fire in the natural environment must be managed by professionally trained, experienced and accredited forest managers, not just emergency service agencies.

There has been an increasing reliance on the use of tools and technology, such as aircraft, firefighting vehicles, fire suppression chemicals, computer models and voluntary evacuation ("leave early") to control fires and reduce the loss of human life. This has been at the expense of rapid and aggressive early fire control using experienced and well trained ground crews in direct attack strategies early in the fire's development which, in most cases, is more likely to be effective than indirect attack strategies.

Position Statement

The IFA recognises that:

- Fire is an essential ecological factor, which has an important and ongoing role in maintaining biodiversity and ecological processes in Australian forests and woodlands.

- The ecological effects of fire vary according to the season, frequency, intensity, patchiness and scale of burning within a landscape.
- Bushfires can have effects that are significant at local, regional and global spatial scales and operate on timescales from the immediate to impacting over decades or centuries.
- Bushfires can be a very real threat to human life, property, economic and cultural values, social function and environmental values.

The IFA considers that:

- Every fire management program should be objectives-based and outcome-focused. The objectives should be set out in management plans based on legislative requirements, government policy and public consultation. Objectives must cover the protection of human life, property, economic and cultural values, social function and environmental values.
- Short-term fire management objectives should be consistent with long-term, landscape-scale fire and land management objectives.
- A decision to deliberately exclude fire from naturally fire-prone forests and woodlands will have adverse consequences for ecosystem productivity and function in the long-term.
- Because of the complex interaction of factors affecting fire and land management, there can be some uncertainty about the outcomes of different strategies and operations, therefore a risk-based assessment is a good way to approach fire management. Given the uncertainty in all the contributing factors and their interactions, the application of sound risk management principles gives the best likelihood of achieving specific management objectives. Having an outcomes focus, with well-defined performance measures, will lead to a system whereby the results of fire management strategies can be identified and measured over a long timeframe.
- The Australian, State and Territory governments have a responsibility to provide adequate resources for coordinated research and systematic monitoring of the behaviour, environmental effects and social impacts of bushfires and to provide inter-generational continuity of skills, capability and resources.
- The focus in all fire management programs should be around Prevention, Preparedness, and Fire Regime management and there needs to be a move away from relying primarily on Response and Recovery.
- The use of fire in the landscape by many Traditional Owners is acknowledged. Traditional knowledge and burning practices have great potential to contribute to positive social and environmental outcomes. Fire management can be used to reintroduce traditional knowledge to communities where it has been lost.
- All fire management operations should put a high priority on firefighter safety. However, the level of risks taken should be commensurate with the potential benefits to be gained, cognisant of the fact that firefighting is inherently risky and that trying to avoid all risk may inhibit the capacity to control fire in a timely manner and result in greater impacts and losses.
- Firefighting aircraft, tools and technology are not a substitute for effective on-ground firefighting. The primary focus of fire control should always be around on-ground efforts with aircraft, tools and technology being used to make on-ground efforts safer and more effective.
- Planned burning must be undertaken to enable forests and woodlands to be managed sustainably in the long-term, including the ability to evolve and adapt to climate change, physical disturbances, pests and diseases.

- Communication and consultation between forest managers, emergency response agencies and other stakeholders is vital to establish management objectives, including levels of “acceptable bushfire risk” for successful planning and fire management activities.
- Adaptive fire management (“learning by doing”, monitoring and recording with scientific analysis) should always be used.
- Many aspects of forest fire management are common globally. It is important to exchange knowledge and expertise nationally and internationally to extend the range and depth of knowledge and experience in bushfire policy, research and management.

Supporting Documents

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