

SOUTH EAST TIMBER ASSOCIATION SUBMISSION TO THE COMMONWEALTH BUSHFIRE ROYAL COMMISSION

1. Introduction

South East Timber Association (SETA) members advocate for policies that allow for active and adaptive management of native forests on both private and public land. SETA expects government policies and practices will maintain environmental values in the long term.

A number of SETA members have extensive fire mitigation and firefighting experience. This submission draws on that experience and observations of the positive and negative changes to bushfire mitigation and response, that have occurred since the *A Nation Charred: Report on the Inquiry into Bushfires* was published on 23 October 2003.

2. In Your Experience, What Areas of the Bushfire Emergency Response Worked Well?

2(a) Valiant Fire Fighting Efforts

Despite record levels of ground and understorey fuel levels across the native forest estate, in most fire affected states, the valiant efforts of ground firefighting crews and heavy machine operators, saved thousands of homes, that would otherwise have been burnt.

The high fire intensity, brought on by heavy fuel loads and drought conditions, presented significant risk to firefighters, residents who chose to defend their properties and at times, evacuees in transit and at points of refuge, such as at Mallacoota in East Gippsland, Victoria.

2(b) Climate Change Agenda

The move by the former fire chiefs, to shift responsibility for the disaster to the Commonwealth using a climate change agenda, was another response to the emergency, that worked well. The public campaign, led by a Climate Council member, forced the Commonwealth to sign off on additional funding for firebombing aircraft, almost overnight.

This campaign also diverted attention from the collective failure of the former chiefs, to ensure their organisations and state land management agencies managed forest fuel levels, the most significant mitigating action available to fire management authorities.

At no point, did the media address the fact that state governments are responsible for management of most public land and management of fire across public and private land.

2(c) Fire Scientists Defending Flawed Research Outputs

The regular media comments by fire research scientists, from a number of universities, also worked well, to distract public attention from the deficiencies in their research. Twenty first century fire research, has generally advocated for any fuel reduction burning (FRB) to be undertaken in the general vicinity of human assets.

It is clear that many of the current research scientists have little practical understanding of wildfire behaviour in a landscape context. CSIRO scientists undertook a critique of "ground breaking" wildfire modelling by Dr Philip Zylstra, formerly a fire researcher at the University of Wollongong (UOW).



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On 26 August 2016, the Illawarra Mercury published an article on the work of Dr Philip Zylstra under the heading "UOW bush fire research is ground-breaking." The article stated in part: *"The way emergency services deal with Australian bushfires could be tipped on its head after new research potentially discredits hazard reduction burns."*

A University of Wollongong study published last week found the main drivers of how severe a fire could come from the species of plants rather than surface fuel load.

In many instances the research showed getting rid of leaves and scrub could make forests more flammable."

On 4 November 2016, CSIRO Land and Water scientists published a critique of the model. Some key findings regarding the model included:

"The FFM is described by its author (Zylstra et al. 2016) as a 'biophysical mechanistic model' that incorporates heat transfer processes to describe fire behaviour through complex interactions between fuels, weather and the fire itself. Although the heuristics underlying the FFM in regard to the importance of fuel structure in determining fire behaviour are essentially valid (and described by others previously, see for example Kessell et al. (1978), Kessell (1979) and Malanson and Butler (1985), the physical basis of the FFM and its sub-models is flawed and incorrect.

In part, this is because much of the sub-modelling is based on small-scale table-top experiments that fundamentally do not incorporate key mechanisms of fire dynamics but also because many of the assumptions in the geometric construct linking a flame vector with a fuel location totally disregard fundamental concepts of heat transfer and fluid dynamics. As a result, these flaws invalidate the model and thus its results will be erroneous."

This is just one example of the research findings that have been produced by members of the UOW Centre for Environmental Risk Management of Bushfires (CERMB) and partners, including the University of Tasmania, which do not reflect real world fire behaviour and consequently deliver recommendations that increase bushfire risk to the environment and communities.

In general, national (including the *Environment Protection and Biodiversity Conservation Act 1999*) and state environmental and fire management law, particularly in relation to native forests, is written from a terra nullius ecological view. The terra nullius ecological view assumes that Aboriginal management had no real impact on the evolution of the Australian biota.

Therefore, it is assumed the cessation of Aboriginal land management by fire, has had no impact on the ecology, health and habitat of all the species that evolved in a regime of regular disturbance by fire. In the more remote parts of Australia, The Australian Wildlife Conservancy (AWC) is using managed fire, to protect and enhance the food resources of a range of threatened species. The scientists working for the AWC apparently see managed fire as an ecological protection tool, used for habitat and wildfire risk management.

In the taller forested landscape of south east and south west Australia, the regulators along with fire and ecology researchers continue to ignore the role that Aboriginal fire played in the evolution of the forested landscapes.



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The terra nullius ecological view is exhibited in the constant claim of 'permanent protection' made, whenever land tenure is changed from private, leasehold or state forest, to national park or other reserve status. The concept of permanent protection has been shown time and again to be a falsehood, as passive management ensures megafires and feral predators and other threats push more and more species in the "permanently protected" reserve system to extinction.

An example provided by the Threatened Species Scientific Committee, in 2016, documented the declining populations of the threatened Southern Brown Bandicoot (SBB), in five reserves, across three states.

Available quantitative data are summarised in the table below.

Population	State	Decline
Ben Boyd National Park	NSW	44% (1999 to 2008)
Nadgee Nature Reserve	NSW	47% (1999 to 2008)
Port Campbell	Vic	>70% (past 10 years)
Pines Flora and Fauna Reserve	Vic	100% (extirpated around 2006)
Mt Lofly Ranges – northern metapopulation	SA	100% (extirpated around 2009)

A significant area of SBB and Long-footed Potoroo, along with many other threatened species habitat, has been decimated in the December and January wildfires in SE NSW and East Gippsland, Victoria.

Current ideology driven research, consistently fails to place a value on the broad forest environment and state governments and government agencies, are yet to recognise the perverse environmental, social and economic impacts, this research is helping to deliver. Perhaps 2019-20 will be the fire season that will force governments to discard failed passive (lockup and neglect) land and fire mitigation policies.

The CERMB and other fire research institutions have failed to deliver scientific advice to the state run fire and public land management agencies, that would allow the delivery of ecologically sustainable forest fire management. See *Appendix 1* for further examples of flawed research outputs.

Recommendation 1

It is recommended the Commonwealth Government appoint a panel of bushfire research scientists with strong practical and theoretical understanding of bushfire behaviour and fire ecology, to review the current bushfire research directions and recommend reforms to address the deficiencies in research outputs. The review should include, but not be limited to, fire research outputs from the University of Wollongong (CERMB), the Australian National University, the University of Melbourne, the University of Tasmania, the University of Queensland, the Ballarat University and Curtin University.

Recommendation 2

It is recommended that the Commonwealth work with state governments to amend environmental legislation, regulation and policies to recognised the role of frequent low intensity fires in creating healthy and fire safe forests, prior to the arrival of Europeans.



3. In Your Experience, What Areas of the Bushfire Emergency Response Didn't Work Well?

3(a) Deficient Levels of Fuel Reduction Burning (FRB)

3(a)(i) 2009 Victorian Bushfires Royal Commission Recommendations

The 2009 Victorian Bushfires Royal Commission Report Recommendation 56 states:

*"The State fund and commit to implementing a long-term program of prescribed burning based on an annual rolling target of **5 per cent minimum of public land.**"*

This and many other Royal Commissions and inquiries have made similar recommendations. The consistent state government response has been to:

- Respond for a short time and then let levels fall, as a budget saving or for other short-sighted reasons; or
- Ignore the recommendations continue with inadequate levels of FRB, in the hope more water bombing aircraft will deliver a better outcome.

Western Australian research has shown that FRB levels of five percent or more make a material difference to the area burnt by wildfires. See *Appendix 2*.

In the end, it seems state governments are more than willing to shift the cost burden of inept forest fuel management to the Commonwealth, when the inevitable wildfire emergency occurs.

Emergency response organisations and public land managers in a number of states, including NSW and Victoria, seem to be placing increased faith in computer models and large air tankers (LATs), rather than taking all reasonable steps to mitigate risk by managing forest fuel levels.

The transition from FRB levels of generally less than 2 percent to a level of 5 percent, will present a number of challenges, due to heavy fuel loads covering a high percentage of the native forest estate. Fuel reduction activities need to be ramped up by:

- Creating appropriate low fuel buffers, around communities and key infrastructure (telecommunications, power lines, access roads), and
- Concurrently commencing regular and sustained fuel reduction activities, working out from the community areas into more remoter areas and also initiating remote area programs in priority areas.

Recommendation 3

It is recommended that the Commonwealth Government provision of future funding and other resources, used to assist state responses to bushfire emergencies, are conditional on states increasing mitigation efforts. Agreements should be signed before the next fire season and set an annual target of five percent of public land being subject to fuel reduction, traditional or ecological burning.



3(a)(ii) The NSW Native Forest Fuel Reduction Underperformance

In NSW and Victoria, emergency response now dominates expenditure and bushfire prevention or mitigations works have been significantly reduced. The average area of fuel reduction (fire and mechanical means) in NSW in the first four years of the 21st century was 555,498 hectares per annum.

For the 16 years from 2003-04 to 2018-19, the average fell to 167,917 hectares per annum. This is a decline of 70 percent and accounts for the potentially unprecedented levels of flammable fuel loads in native forests, across all NSW land tenures.

The current annual fuel reduction target set for the NSW National Parks and Wildlife Service (NP&WS) is 135,000 hectares, or less than 1.9 percent of the estate. The annual target for the Forestry Corporation of NSW (FCNSW) native forest estate, is less than 1.2 percent. The NSW NP& WS target is less than 40 percent of the minimum percentage recommended by the 2009 Victorian Royal Commission, while the FCNSW target is less than 25 percent of the minimum recommended. See *Appendix 2 C*) for more detail.

3(a)(iii) The Victorian Native Forest Fuel Reduction Underperformance

Despite the 2009 Victorian Bushfires Royal Commission Report Recommendation 56, *"In 2015, the Victorian Government set out a new approach to reducing the risk of bushfire in Victoria called Safer Together. Safer Together outlines an approach to reducing the risk of bushfires to Victorian communities, which focuses on how effective our actions are in reducing risk."* (Source Gippsland Region Joint Fuel Management Program 2018/19 – 2020/21).

"As part of the Victorian Government's bushfire management strategy Safer Together, DELWP has set a state wide target to maintain bushfire residual risk at, or below, 70 per cent. This means the risk of a major fire, like Black Saturday, would be reduced by about a third.

The Safer Together approach means that local communities, property holders and land and fire agencies are more involved in decision making about bushfire management all year round. This new approach sees our management moving from a hectare target for planned burns, to a risk reduction target for bushfire management. It means a more integrated approach across public and private land, with fuel management being just one in a range of different management actions we will take to protect lives, homes jobs and the environment."

As at 30 June 2019, DELWP and its partners had treated approximately 130,000 hectares of public land using planned burning and further 11,000 hectares of mechanical treatment, resulting in a bushfire residual risk of 67 per cent."

"Performance exceeds the target due to completion of the highest priority planned burns across the state. The amount of area impacted by bushfire also contributed to the result." (Source DELWP Annual Report 2019).

See *Appendix 2 C*) for more detail.

The Safer Together approach claims to ensure local communities and property holders are more involved in decision making about bushfires. During the 2019-20 bushfire season, the



Andrews Government refused to release the Victorian forest fuel load maps. On Sky News on 5 February 2020, Premier Andrews, while continuing to refuse release the maps stated: *"This is just common sense. We are not going to provide every arsonist in Victoria with a to do list."*

It is ironic, that up until four years ago, the forest fuel maps were routinely published. It would seem that withholding the maps coincided with the commencement of the Safer Together approach. If the communities in fire prone areas are to be more involved in decision making, having access to the forest fuel load maps would provide the most critical information needed to inform communities of the bushfire risk they face.

Recommendation 4

It is recommended that, in the interests of affected stakeholders being fully informed, as to where the risks actually lie, under the risk based bushfire mitigation policy, the Victorian Government be requested to release the forest fuel load maps.

The Safer Together approach is, among other things, supposed to protect the environment. With about 1.2 million hectares of predominantly native forest, burnt in eastern Victoria, in the 2019-20 fire season, it would seem the Safer Together approach has failed to protect a major environmental, public land value.

The bushfire residual risk calculation, takes the area burnt by wildfire into account, when determining whether the government has kept the residual risk under the target of 70 percent. If less planned burning contributes to more area burnt by wildfire, the government can still meet the residual risk target of 70 percent or less, while allowing the continued decimation of forests, biodiversity and communities by bushfires.

More background on the rationale for the decision to move to the risk based policy is contained in *Appendix 2 D*).

There appears to be a lack of commitment to manage forest fuel levels in an appropriate way, in a number of states. Consequently, large areas of native forest and adjoining rural properties and communities are at increased risk of larger and more intense bushfires, with consequential impacts on biodiversity, social and economic values.

It is understood that land management agencies report FRB on a gross area treated, so members of the general public assume the whole area is burnt. Many members of the public also believe biodiversity values are more heavily impacted than is actually the case.

A photo of native forest, north of Bairnsdale, Victoria, "protected" by the Safer Together approach is below. Is the minimisation of broadscale low intensity burning, delivering acceptable biodiversity, soil, water, social and economic outcomes for East Gippsland?





Recommendation 5

It is recommended that a nationally coordinated bushfire mitigation policy & program be implemented, utilising a sustained and ongoing 'whole of landscape' approach to land management, that recognises and acts to mitigate the increasing impacts of heavy forest fuel loads and drought conditions.

Recommendation 6

To better inform the community, it is recommended that the gross and nett area of fuel reduction be reported and to ensure fire modelling better reflects field conditions.

3(a)(iv). Measures to Control Bush Fires

Over the past decade or more, SETA members involved in firefighting operations have observed a general decline in coordination, deployment, strategic and tactical decision making and efficient utilisation of firefighting resources.

The broad observations on page 3 of the House of Representatives 2003, "A Nation Charred" report, accurately summarise some of the key concerns SETA members have. The observations were:

The fire suppression effort was hampered by lack of prior fuel reduction burning, closure and lack of maintenance of tracks, historical loss of resources from land management agencies (particularly the forest industry), and a reliance on suppression rather than prevention.

More fuel management is possible – a coordinated and planned scientifically based regional approach across all tenures could be achieved.

In some cases, there was a lack of effective early rapid response, and opportunities to contain some of the fires were available but not taken.



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Ground attack and aerial units were, in some cases, held back and not properly utilised – for a variety of reasons, including liability and occupational health and safety issues.

Local knowledge and experience was ignored or not sought. Volunteers are feeling marginalised (and in some cases taking direct action).

Some landholders and residents felt abandoned and the concept of asset protection is not sufficiently relevant to locals. The emphasis on asset protection probably contributed to the spread of fires.

Incident control systems did not effectively utilise local knowledge or respond to local conditions.

Additional comments made by SETA members include:

Tactical and strategic back burning were heavily restricted by incident control centres or else totally banned. See specific examples in *Appendix 3 C*).

Lack of direction from sector commanders left fire crew, tankers and heavy equipment idle for extended periods, when they should have been used for control line consolidation, backburning and mopping up.

Many crews did not seem to understand the basics of mopping up and placed too much reliance on pouring water on heavy debris, which often reignited hours or days later because the seat of the fire had not been exposed and extinguished.

Standards for selecting trees to be removed from the edge of control lines varied between national parks and other land tenures, creating confusion for machine operators and risks for ground crews, where dead spars were not felled. In at least one case standing dead trees became a risk for the nightshift mop-up crew.

Recommendation 7

It is recommended that an expert panel of experienced field fire sector leaders be appointed to review current control strategies used on large wildfires and establish national benchmark principles for the safe, efficient and effective training and deployment of fire crews. See *Appendix 3 B*) for guidance on best practice principles.

3(a)(v) The Precautionary Principle – Is it Impacting on Fire Fighting Standards and Operational Decision Making?

The precautionary principle is often used in situations where there is the possibility of harm from making a certain decision (e.g. taking a particular course of action like backburning or constructing a new fire control line) and conclusive evidence is not yet available as to whether that is the best decision to make. Consequently, experience on large fires, particularly in the field, is a critical skill, incident controllers need to help determine the best decision.

In operational situations such as firefighting, making a decision like backburning, can blow back on the decision maker, if the burn is not held. On the other hand, under the precautionary principle, decision makers can refuse to make a decision and when the next



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blow-up day arrives and the fire breaches the containment line, the blame automatically shifts to the weather, which is out of the control of everyone. See *Appendix 3. A) and B)* for more detail.

There are numerous examples in NSW and Victoria, where failure to take decisive action on key fire fronts, arguably, lead to large increases in the burnt area and consequential impacts on landscape environmental values and human social and economic values.

Some of the fires should be independently reviewed, to identify reasons as to why permission to backburn tactically (where the fire is close to the control line) and strategically (where the fire is some distance from the control line) was refused. Examples of fires that could be reviewed, include the Border Fire (southern NSW), the Postmans Trail fire (southern NSW), W Tree fire (East Gippsland) and Myall Creek Road Bora Ridge fire (northern NSW).

These are some examples where, in the view of experienced fire fighters involved in the fight, refusal to permit strategic backburns, resulted in major emergencies on subsequent "blow-up" days. Refusal generally did not put forward resourcing as an issue.

A common theme in refusal to allow any scale of backburning, whether tactical or strategic, in both NSW and Victoria was an order "*not to introduce new fire into the landscape.*" There were also times when new fire break construction, particularly in parks or reserves was stopped or else not permitted.

Why would a conservation land manager think that the clearing of some hundreds of trees is a worse environmental outcome, than the high intensity burning of tens or hundreds of thousands of hectares of conservation reserve or other native forested land? The devastation to biodiversity, including threatened species and large hollow bearing trees, caused by large bushfires, should be understood by all forest land managers.

A photo below shows of one of millions of large hollow bearing (habitat) trees, that were burnt down in the 2019 – 20 fire season. While these trees are protected from direct human interference, they are not protected from poor fire management decisions.

See *Appendix 3 C)* for information on the fires listed above.





Recommendation 8

It is recommended that the Commonwealth establish an independent panel of experts, with skills in field based decision making on large scale bushfires, to undertake root cause analysis on key decisions taken in relation to refusal to backburn and refusal to allow new track construction during the course of the fires listed above. There may be other fires that can be added to this list to confirm decision making patterns. The review should also examine fires where decisions were taken to backburn and containment outcomes were not achieved.

Submission made of behalf of the South East Timber Association members

Peter Rutherford (BSc Forestry) (Member of the Institute of Foresters)

Secretary

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APPENDIX 1

Common Flaws in 21st Century Fire Research

The pre-European fire management history of the Australian continent has been documented in detail by Bill Gammage in *"The Biggest Estate on Earth – How Aborigines Made Australia"* and Vic Jurskis in *'Firestick Ecology – Faidinkum Science in Plain English.'*

A number of fire researchers and ecologists appear to bring an ideological element into their research and interpretation of results.

The author of *"Fire History of the Australian Alps – Pre History to 2003"* Dr Philip Zylstra¹ provides one example of this approach, in a move which supports a fire research outcome that use of fire by Aboriginal people prior to European arrival, is overstated in the historical record.

There are several elements to a strategy aimed at minimising the use of planned fires to manage wildfire risk, which perversely, exposes ecological values in the remaining native vegetated landscapes of Australia to an increased frequency of high intensity wildfires.

1. Playdown or Otherwise Discredit Information that Conflicts with the Research Objective.

On page 11, of Dr Zylstra's *Fire History of the Australian Alps*, all historical sources relating to Aboriginal burning and its effects are grouped under the heading *NON-ABORIGINAL PERCEPTIONS*. In three words, the author effectively dismisses all the core sources that underpin the writing of Gammage, Jurskis and many other works, as perceptions, not real time observations.

2. Downplay any Information that Might Show the Weakness of Research Methodology or Conclusions.

Dr Zylstra's paper is peppered with expressions such as:

"Folklore has developed....."

Considering these factors it is reasonable to deduce.....

Contrary to perceptions.....

There is a perception in some areas gained from comments made by explorers that the Australian bush was at first encounter entirely composed of open woodland with no large patches of forest

Although the description is not here explicit, it is clear that Lhotsky sees the 'large timber' to be in stark contrast to the scattered trees of the grassland ridgelines.

It is most likely that.....

However, as for the rest of the Alps, there are no direct observational records.....

Clearly, some other factor introduced before the rabbits was the main factor in stripping the herbaceous stratum and accelerating the loss of topsoil.

Following the same argument as for the Snowy River corridor.....

It is not certain how this knowledge of aboriginal burning was attained.....

It is likely that the beliefs regarding burning practices were also assumptions based upon the beliefs of the time."



In the end, the perceptions and reinterpretations of the author become fact. The reinterpretations assume among other things, the early settlers could not distinguish between camp fires and broader area fires. The observations of Alfred Howitt, who widely travelled the Gippsland and alpine areas (Note: the author does not define "alps" in the paper) from 1860 saw changes in burning and flow-on changes to forest species and structure first hand. Dr Zylstra effectively dismisses his real time observations as perceptions.

3. Quote from Secondary Sources, so the Detail of the Original Source is Missing

On page 22 of the paper, Dr Zylstra references two quotes from Howitt 1890, from Ryan, Ryan & Starr and additional short extracts from other historical sources describing changes in forest composition and structure post European settlement.

He then states: *"Whilst these statements confirm that the cover of thick forest has occurred since European settlement, the question to be addressed is whether this colonisation has occurred as a result of changing fire regime, and if so, what indications are there as to what the pre-European fire regime was."*

Observations and reinterpretations 150 years after the fact, carry more weight than observations made by Howitt, who had a degree of Doctor of Science conferred on him in 1904 by Cambridge University.

Had Dr Zylstra read the source document referenced by Ryan, Ryan & Starr, he would have found important context in relation to altered fire regimes post European arrival:

The influence of settlement upon the Eucalyptus forests has not been confined to the settlements upon lands devoted now to agriculture or pasturage, or by the earlier occupation by a mining population.

It dates from the very day when the first hardy pioneers drove their flocks and herds down the mountains from New South Wales into the rich pastures of Gippsland.

Before this time the gramminivorous marsupials had been so few in comparative number, that they could not materially affect the annual crop of grass which covered the country, and which was more or less burnt off by the aborigines, either accidentally or intentionally, when travelling, or for the purpose of hunting game.

These annual bush fires tended to keep the forests open, and to prevent the open country from being overgrown, for they not only consumed much of the standing or fallen timber, but in a great measure destroyed the seedlings which had sprung up since former conflagrations.

The influence of these bush fires acted, however, in another direction, namely, as a check upon insect life, destroying, among others, those insects which prey upon the Eucalypts.

Granted these premises, it is easy to conclude that any cause which would lessen the force of the annual bush fires, would very materially alter the balance of nature, and thus produce new and unexpected results.



He would also have found other detail, which would undermine the following conclusion to his paper.

"The mountains recover slowly from the changes of the past 6 generations. The vast expanses of wildflowers slowly return to the glory they had when the early mountain men first saw them; but the minds of men change more slowly if they ignore the lessons of the past. We are no longer limited to the vision of 1 lifetime, we have a far longer period to tell us that although fire will always be with us, it will hold less terror as we learn the places it belongs, and respect the places that should be free of it."



The photo above shows alpine grassland subject to regular low intensity burning on the RHS. The LHS is a fire exclusion area. It would seem that if Dr Zylstra's desire for vast expanses of wildflowers is to be realised, burning will need to be returned to the alps, not excluded, as he argues it should be.

Significant areas of the Alps have been consumed by high intensity wildfire twice in the past 17 years, including significant areas of the permanently protected Kosciuszko National Park. How does respect for places that should be free of fire work in a practical, scientific frame, rather than a wilderness ideology frame?

4. Construct Models That Don't Reflect the Real Value of Fuel Reduction Burning

In December 2017, fire researchers from the University of Tasmania, one of the partners of the NSW Centre for Environmental Risk Management of Bushfires, published the outputs of their fire modelling in Tasmania. The authors of the paper are James Furlaud² a PhD student, Grant Williamson³ and Professor David Bowman. The Abstract commenced by stating:

"Prescribed burning is a widely accepted wildfire hazard reduction technique; however, knowledge of its effectiveness remains limited. To address this, we employ simulations of a widely used fire behaviour model across the ecologically diverse Australian island state of Tasmania."

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On the day the paper was published, a promotional opinion piece by Post Graduate student Furlaud and Professor Bowman appeared on the Conversation. The article was titled "*To fight the catastrophic fires of the future, we need to look beyond prescribed burning.*"

As the management of forest fuel levels is the only thing that humans can do to make a material difference to fire intensity and the amount of embers released by a wildfire under prevailing weather conditions, it appears these research scientists want to use Tasmania as the guinea pig to trial, what experienced fire fighters know, are fire management strategies doomed to fail.

They state: "*Yet our research, published today in the International Journal of Wildland Fire, modelled thousands of fires in Tasmania and found that nearly a third of the state would have to be burned to effectively lower the risk of bushfires.*"

In all simulations, we standardised fire-weather inputs to represent regionally typical dangerous fire-weather conditions.

"However, leverage analysis of the 12 more-realistic implementable plans indicated that such prescribed burning would have only a minimal effect, if any, on fire extent and that none of these prescribed-burning plans substantially reduced fire intensity."

The authors do not define where their "*typical dangerous fire-weather*" sits on the current Fire Danger Rating chart. Whether it is severe, extreme or catastrophic, this type of weather does not occur all day every of the bush fire season. Consequently, there is a very significant period of the declared fire danger period, when a reasonable area of FRB, say 5 percent per annum, will aid fire containment and suppression.

Despite the generally declining area of FRB in most states, there are a number of examples that have been available from the past fire season, that have shown a rapid transition from crown fire or full crown scorch, to a ground fire, with little or no crown scorch once the wildfire has entered a fuel reduced area.

This would suggest there are fundamental issues with the model used by these researchers, if their model shows "*that none of these prescribed-burning plans substantially reduced fire intensity.*"

In the Conversation they state: "*We need to start thinking bigger: how can we mitigate the effect of multiple large fires in a region like Tasmania or South eastern Australia?*"

They say: "*To combat fire risk we must take a multi-pronged approach that includes innovative strategies, such as designing new spatial patterns for prescribed burning, manually removing fuels from areas in which prescribed burning is not possible, improving the standards for buildings and defensible spaces, and most importantly, engaging the community in all of this.*"

Unfortunately, no real-world detailed solutions are offered. The experience in NSW and eastern Victoria this past season has again shown that failure to address the forest fuel loads in the broader landscape, leads to disaster for rural property owners and communities situated in fire prone areas and biodiversity across the fire devastated areas.



It is a common feature among many 21st century fire research scientists, that they and hence their models appear to have a significant disconnect from real wildfire situations, in relation to the value of FRB.

5. Concentrate Modelling on Protecting Human Assets.

On 9 July 2019, Associate Professor Owen Price⁵ and Mr Michael Bedward⁶ from the Centre for Environmental Risk Management of Bushfires at the University of Wollongong published a research paper titled: *"Using a statistical model of past wildfire spread to quantify and map the likelihood of fire reaching assets and prioritise fuel treatments."*

Most field fire practitioners would likely argue that you don't need to spend hundreds of thousands of dollars on computer modelling and writing a research paper to work out that: *"The probability of a fire reaching the vicinity of an asset was highest in the heavily forested parts of each case study, but when weighted for ignition probability, the high probability shifted to the wildland–urban interface. Further, when weighted by asset location, high-priority areas for treatment were in blocks next to the wildland–urban interface."*

The other key factor in this research, the research outcomes discussed above and much of the 21st century FRB minimalist fire research, is the lack of focus on the forest values. Time and again, the impacts of megafires on biodiversity, in heavily fuelled forests are ignored, as all attention is focused on purporting to protect human lives and assets.

The damage to flora, fauna, soil and water in NSW and in Victoria during the past fire season, was underpinned by a continuum of flammable and heavy fuel levels across millions of hectares of native forest, due to the diminished focus on broad scale fuel reduction burning by all relevant agencies.

The outcome of the increasing damage to forest values is that there is an inevitable carryover over of damage to human lives and property. While the environmental damage is soon forgotten, fire management agencies use each disaster as an opportunity to ramp up their emergency response capability, with the 21st century fire chiefs seeking to establish state owned large air tanker forces.

It is ironic that there is not tens of millions of dollars available for FRB, yet hundreds of millions of dollars can be found to buy and hire bigger and more expensive aircraft and bring in overseas fire fighters, when the inevitable disasters occur in dry seasons or in times of drought.

It is outrageous that millions of dollars of tax payer funds are being spent on a Centre for Environmental Risk Management of Bushfires, which appears to be increasing the risk of megafire impact on all non-human forest values. With a fauna death toll potentially in the order of 1 billion birds, mammals and reptiles during the last fire season in NSW, when will governments, regulators and public land managers accept that annual FRB rates must be increased across all land tenures?

Under weather conditions prevailing on the day, fire intensity is driven by forest fuel loads, yet much of the research over the past ten or more years has been seeking to minimise the use of the most effective and environmentally compatible fire mitigation tool available to NSW land managers.



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The satellite images below show "protected" national parks, north west of Port Macquarie before and after the 2019 wildfires. The areas of native forests burnt by high intensity wildfires have suffered massive damage to biodiversity, soil and water values. Still fire and ecologist research scientists, who seem to be running eco-political agendas continue to argue for less burning, rather than more ecological/traditional/fuel reduction burning.



6. Ecologists, Who Appear to Have Little Understanding of the Value of Fuel Reduction Burning or the Impacts of Repeated Wildfires, Make Comments That Have no Scientific Basis.

On 23 January, Emeritus Professor Byron Lamont had an opinion piece published in the Age and the Sydney Morning Herald. Among other things, he claimed:

"Controlled fires are only meant to stop the odd cigarette thrown out of a car window from starting a fire, or lightning strikes igniting the ground flora."



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"So, on grounds that they do not stop the progress of wildfires and indeed may lead to weed encroachment, increasing the rate of prescribed burning is no answer to the current wildfire problem."

"It may seem counter-intuitive but the longer old-growth forests remain fire-free, the less combustible they become. The thicker canopy creates more shade, the undergrowth becomes thinner and less vigorous - and hence there is less fuel for fires."

"Ironically, the Australian flora has experienced wildfires of the current type for many millions of years. It is adapted to wildfires, not prescribed burns."

Decades of firefighting experience shows how little understanding, Professor Lamont has of the fire mitigation value, let alone the ecological value that FRB has. Decades of forest management also shows that much of the flora will eventually recover from severe wildfires, the impact on fauna, particularly threatened species is much more devastating and some species will not survive repeated wildfires on the scale seen in NSW in 2019-20.

The comments on the article show how readily misleading comments made by scientists are accepted by members of the public. For example: Diane commented, *"At last the science to say hazard reduction burns are not the answer - and I'll add they are cruel to small, ground level wildlife. The best article I've read on the topic."* It appears that Diane has never seen the impacts of bushfires on biodiversity.

Why do governments continue to pay some of the research scientists noted above to provide advice to the Government and government agencies on how best to manage wildfire risk? Much of the research to date shows a lack of real understanding of fire science and potentially contributes to an increasing risk of wildfires.



Low Intensity Fuel Reductions Leave a High Percentage of Woody Debris and Habitat Trees in Place, Compared to Wildfires.





One of Millions of Habitat Trees Burnt Down in the 2019-20 NSW Wildfires

References

1. Dr Philip Zylstra, member of the Centre for Environmental Risk Management of Bushfires, at the University of Wollongong.
2. James Furlaud, Postgraduate, Plant Science, University of Tasmania.
3. Dr Grant Williamson, University of Tasmania, then University of Wollongong. No current listing.
4. Professor David Bowman Professor of Environmental Change Biology, School of Natural Sciences, University of Tasmania.
5. Associate Professor Owen Price, Centre for Environmental Risk Management of Bushfires, at the University of Wollongong.
6. Mr Michael Bedward, Centre for Environmental Risk Management of Bushfires, at the University of Wollongong.

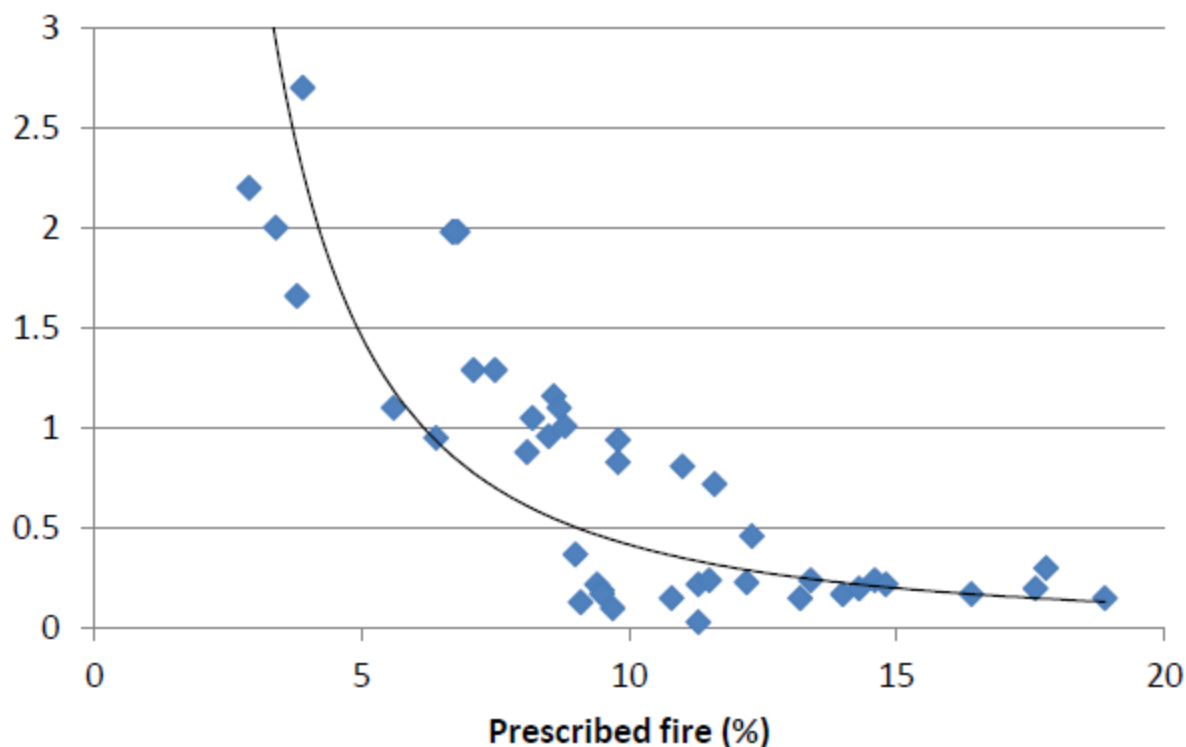
APPENDIX 2

A) Western Australian Data on the Relationship Between the Area of Fuel Reduction Burning and the Area Burnt by Wildfire

Research in Western Australia by Burrows and others has shown fuel reduction rates of **5 percent or more** significantly reduce the area burnt by wildfire.

It is understood that FRB area reporting is done on a gross area basis, so the actual area reported to have been burnt in the table above, would be less than 100 percent of the reported figures. Burning less than 100 percent of FRB blocks is important in minimising the impacts of planned burning on biodiversity values.

Proportion of SW forest region (2.5 M ha) burnt by prescribed fire (mean of 4 yrs) with proportion burnt by bushfire (mean of succeeding 4 yrs)



(Source: Sneeuwjagt 2008 + updates)

B) 20 Years of Forest Fuel Management Under the Rural Fire Service and Public Land Management Agencies in NSW

Fuel Reduction (FR) data in the table below has been extracted from the NSW Rural Fire Service Annual Reports 1999-2000 to 2018-19. Fuel Reduction Burn (FRB) data was not reported separately until 2004-05. To interpret the table, refer to the foot notes.



Table 1 Annual Fuel Reduction Performance in the 21st Century in NSW

SOURCE: RFS ANNUAL REPORTS			AREA OF FUEL REDUCTION BY BURNING & MECHANICAL MEANS (Ha)								
Year	Cost of RFS (\$'000)	Fire Mitigation (\$'000)	RFS*	BFMC/PP	NP&WS	FCNSW	Crown Land	Councils	Other Govt Agencies	Total FR	Total FRB Only #
1998-99	\$78,505										
1999-2000	\$84,129			474,009						474,009	358,684
2000-01	\$93,200			589,319						589,319	445,939
2001-02	\$179,218			581,825						581,825	440,268
2002-03	\$240,989			457,947	42,827	54,504	20,624	938		576,840	436,496
2003-04	\$141,074			178,776	65,451	75,540	2,801			322,568	244,088
2004-05	\$152,269		24,390	12,627	36,377	36,403	943	22,652	883	109,885	79,378
2005-06	\$177,519		15,759	3,647	32,026	38,008	1,286	31,387	1,388	107,742	71,861
2006-07	\$253,294		13,003	8,892	23,840	43,716	911	25,495	1,385	104,238	78,012
2007-08	\$223,312		19,517	21,656	49,514	30,719	2,503	10,464	9,701	124,556	98,198
2008-09	\$247,234		26,443	8,897	60,117	30,652	2,456	12,304	8,908	123,335	103,686
2009-10	\$316,080		44,531	16,758	95,673	36,216	5,786	16,091	4,181	174,706	154,504
2010-11	\$307,470		14,717	7,398	58,092	10,884	4,195	31,573	5,491	117,633	74,858
2011-12	\$286,771		28,748	9,702	49,791	19,703	8,677	34,757	15,583	138,211	89,884
2012-13	\$374,110	\$10,226	26,408	13,220	209,594	21,468	4,955	20,310	11,945	281,492	252,734
2013-14	\$412,051	\$6,877	40,319	10,819	114,154	7,259	4,222	16,066	4,702	157,222	136,102
2014-15	\$311,185	\$4,253	25,957	8,936	116,251	2,165	3,770	15,707	5,329	152,157	130,911
2015-16	\$326,590	\$5,724	34,282	11,348	205,889	34,022	8,188	14,864	11,089	285,401	264,927
2016-17	\$357,679	\$8,432	7,929	7,906	86,942	17,332	5,391	19,030	4,045	140,646	115,223
2017-18	\$371,370	\$8,077	18,531	10,047	102,121	9,054	7,216	14,887	4,302	147,626	129,472
2018-19	\$552,750	\$8,793	-	6,187	137,764	34,079	3,794	9,144	8,281	199,248	184,294
NOTES		Average FR 2000 - 2009 (Hectares)			311,432		Average FRB 2000 - 2009 (Hectares)			235,661	
		Average FR 2010 - 2019 (Hectares)			179,434		Average FRB 2010 - 2019 (Hectares)			153,291	
		FR Percentage Reduction 1st to 2nd Decade			42%		FRB Percentage Reduction 1st to 2nd Decade			35%	
		Average FR 2000 - 2003 (Hectares)			555,498		Average FRB 2000 - 2003 (Hectares)			420,347	
		Average FR 2004 - 2019 (Hectares)			167,917		Average FRB 2004 - 2019 (Hectares)			138,008	
		FR Percentage Reduction 2000-04 to 2005-2019			70%		FRB Percentage Reduction 2000-04 to 2005-19			67%	
*RFS fuel reduction areas are part of the land management agency totals.											
# Mechanical FR is not reported separately for 2000-04. Mechanical & other means averaged 25 percent of the total area fuel reduced from 2005-09. Total fuel reduced areas for 2000-04 have been discounted by 25 percent to provide a conservative FRB only estimate.											

The fuel reduction targets reported in the RFS annual reports for two major land management agencies are:

- NSW National Parks and Wildlife Service target is 135,000 for the past four years, which is approximately **1.9** percent of the national park & other reserves estate; and
- Forestry Corporation of NSW (FCNSW) target is 21,142 hectares for the past four years, which is approximately **1.12** percent of the FCNSW native forest estate.

The 2009 Victorian Bushfires Royal Commission Report Recommendation 56 states:

*"The State fund and commit to implementing a long-term program of prescribed burning based on an annual rolling target of **5 per cent minimum of public land.**"*

The 2018-19 RFS annual report states: *"This hazard reduction program provides the means by which the NSW RFS and other land managers seek to meet the NSW Government four-year target of 750,000 hectares treated and 600,000 properties protected for the period 1 April 2015 to 31 March 2019."*

Why has the NSW Government set a target of only 187,500 hectares per annum, which equates to 0.91 percent of the total native forest estate in NSW?

Why is biodiversity **not** listed as one of the values the NSW Government would want to protect from devastating wildfires?



C) 17 Years of Forest Fuel Management by Public Land Management Agencies in Victoria

Fuel reduction burn (FRB) data in the table below has been extracted from the the Victorian Department of Environment, Land, Water and Planning (DELWP) and predecessor department annual reports. To interpret the table, refer to the foot notes.

Table 2 Annual Fuel Reduction Performance Since 2003 in Victoria

DELWP AREA OF FUEL REDUCTION BY BURNING & MECHANICAL TREATMENT				
Year	FRB (Ha)	Mechanical (Ha)	Total FR (Ha)	BFRR (%)
2003-04	99,238		99,238	
2004-05	131,830		131,830	
2005-06	50,424		50,424	
2006-07	138,241		138,241	
2007-08	156,473		156,473	
2008-09	154,258		154,258	
2009-10	146,106		146,106	
2010-11	188,997		188,997	
2011-12	197,149		197,149	
2012-13	255,227		255,227	
2013-14	82,022	12,686	94,708	
2014-15	234,614		234,614	
2015-16	184,693	13,247	197,940	
2016-17	113,501	11,551	125,052	63
2017-18	64,978	9,750	74,728	65
2018-19	130,000	11,000	141,000	67
TOTAL	2,327,751	58,234	2,385,985	
FRB Average over 16 years #	145,484		149,124	
FRB Average last 10 years #	159,729		165,552	
FRB Average last 3 years #	102,826		113,593	
FRB Percent over 16 Years	2.04%		2.09%	
FRB Percent over last 10 Years	2.24%		2.33%	
FRB Percent over last 3 Years	1.44%		1.60%	
Area of State Forest*	3,138,000			
Area of Parks & Reserves*	3,982,000			
TOTAL	7,120,000			
Other Crown Land	796,000			
Total Crown Land	7,916,000			
Fuel reduction percentages only include state forest and parks and reserves.				
Treatment figures from DELWP & earlier agency reports.				
* Victorian Crown Land Area Statement August 2013				
# Percent calculated from parks and state forests only				
DELWP: Department of Environment, Land, Water & Planning				
BFRR: Bush Fire Residual Risk				

What has the Department Said About Wildfires and Fuel Reduction Burning?

The 2008-09 DES Annual Report states: *"A small number of fires had the greatest impact. Eighty six per cent of all fires this season were brought under control before they reached a size of five hectares thanks to a combination of rapid first attack efforts and previous planned burning efforts."*

"As the state remains dry, bushfires are an increasing threat to our forests and parks and neighbouring communities. Managing land in a fire prone environment involves a focus on planned burning and other fuel reduction activities."

"Planned burning does not eliminate the risk of bushfires. However, research shows that firefighters have a better chance of suppressing bushfires in areas where fuel reduction burns have been carried out."

The 2009-10 DSE Annual Report, in relation to Melbourne's water catchments states: *"The 2009 Victorian bushfires clearly demonstrated the risk that severe bushfires can pose to water catchments with around 30 per cent of catchment being burnt."*

"Bushfires are an increasing threat to Victoria's forests and parks and to neighbouring communities. Managing land in a fire-prone environment involves planned burning operations and other fuel reduction activities."

The 2010-11 DSE Annual Report states: *"As part of the Future Fire Management project, DSE is working with Parks Victoria, the Country Fire Authority (CFA) and local governments to develop bushfire risk analysis tools and methods that take into account effects on biodiversity. The project has undertaken a pilot study in the Otways fire district. Using Phoenix Rapid Fire, a computer-based simulation tool, DSE staff in collaboration with Parks Victoria and the University of Melbourne have pioneered innovative ways of mapping bushfire risk and evaluating the cost and effectiveness of different approaches to planned burning. As a result, fire managers can measure the level of risk reduction achieved by planned burning and the establishment of fuel breaks across public and private land as well as identifying where the most damaging bushfires may start, spread and have significant impacts on communities and water catchments. The pilot has provided critical information for Otway fire managers, showing where best to burn and do other prevention works to reduce the risks posed by severe bushfires. Further pilots are planned for the Yarra Valley, Dandenong Ranges and Central Highlands."*

The DEPI 2012-13 Annual Report states: *"This year's bushfires reinforced the need for an extensive strategic planned burning program, including large burns in areas like East Gippsland as well as the smaller asset protection burns around areas like Melbourne."*

BUT, under the Safer Together policy, fuel reduction burning has fallen to record low levels for the 21st century, with less the 1.6 percent average over the past 3 years, compared to an average of 2.33 percent for the past 10 years. See Table 2 above.



D) The 'Safer Together' Policy - Risk Management for Who and for What Values?

This indicator replaces the 2015-16 indicator 'Area of public land treated through planned burning and other treatments' as part of a new approach to reducing the risk of bushfire in Victoria, detailed in the government's policy statement Safer Together. The new indicator addresses recommendations from the Inspector-General for Emergency Management that a risk reduction target is the most effective form of performance target for bushfire fuel management on public land to protect life, property and the environment. DELWP 2017 Annual Report.

In the "Review of Performance Targets for Bushfire Fuel Management on Public Land", April 2015, the Inspector General for Emergency Manager, Mr Tony Pearce submitted Recommendation 1:

"Over the long term, a hectare-based target is unlikely to create sufficient incentive for DELWP to maximise the risk reduced through planned burning."

In part, the report argued: *"A hectare-based planned burning performance target does not effectively guide a fuel reduction program towards areas of highest risk reduction over the longer term. Nor does a hectare-based planned burning performance target create incentives to pursue alternate forms of risk reduction where planned burning is not possible."*

It is of deep concern the SETA members, that the authors of the report are suggesting that paid public servants will not do their jobs properly and agency heads and relevant ministers will not fund planned fuel reductions operations based on a hectare based approach, unless they are "incentivised."

Professor John Handmer from the Centre for Risk and Community Safety, RMIT University Melbourne and Ms Adriana Keating from the International Institute for Applied Systems Analysis, Laxenburg Austria, conducted an analysis of the hectare based and the risk based policies. Twelve criteria were used in the analysis and scored on a 0 to 4 scale and the academics concluded: **"Aggregating the scores we found that the hectare based policy scored 13 out of a maximum 48, while the risk based policy scored 40 out of 48. Two assessors scored the policy target options independently with results within four points of each other."**



Planned burning activities (image courtesy of DELWP)

Scores for the First 8 Criteria for the Hectare Based Policy

Criteria 1) Impact of policy on risk to human life.	Scored 2
Criteria 2) Impact of policy on risk to essential and community infrastructure, industries and the economy.	Scored 1
Criteria 3) Impact of policy on resilience of natural ecosystems and ecosystem services.	Scored 0
Criteria 4) Impact of policy on the risks from major fires.	Scored 1
Criteria 5) Fuel reduction burn planning undertaken within a risk-based framework.	Scored 2
Criteria 6) Impact of policy on understanding the role of bushfire in the Victorian landscape.	Scored 1
Criteria 7) Role of community and stakeholders in planned burning decision-making.	Scored 1
Criteria 8) Incentivizes shared responsibility.	Scored 1
TOTAL	9



Public Native Forest in East Gippsland, Victoria, After Four Years of Bushfire Mitigation, Using a Risk Based Policy.

Scores for the First 8 Criteria for the Risk Based Policy

Criteria 1) Impact of policy on risk to human life.	Scored 3
Criteria 2) Impact of policy on risk to essential and community infrastructure, industries and the economy.	Scored 3
Criteria 3) Impact of policy on resilience of natural ecosystems and ecosystem services	Scored 3
Criteria 4) Impact of policy on the risks from major fires.	Scored 3
Criteria 5) Fuel reduction burn planning undertaken within a risk-based framework.	Scored 3
Criteria 6) Impact of policy on understanding the role of bushfire in the Victorian landscape.	Scored 3
Criteria 7) Role of community and stakeholders in planned burning decision-making.	Scored 4
Criteria 8) Incentivizes shared responsibility.	Scored 4
TOTAL	26

The full report is available at:

https://www.igem.vic.gov.au/sites/default/files/embridge_cache/emshare/original/public/2020/04/e8/39acbe947/Reviewofperformancetargetsforbushfirefuelmanagementonpublicland.pdf

The scoring for all the criteria does beg the question as to whether the academics had even the most basic knowledge of the role of broad scale low intensity burning in both managing bushfire risk and maintaining healthy ecosystems.

To score burning as recommended by the 2009 Royal Commission at zero is laughable. Scoring a smaller fuel reduction footprint, risk based policy, that will undermine the health and resilience of native ecosystems, at three, has no scientific rationale.

Given the Victorian Government has denied public access to forest fuel load maps, scoring criterion 7 and 8 at the highest score of four begs the question of the competence of the public servants who accepted this deficient analysis of all the risks and benefits associated with two policies.



APPENDIX 3

A). The Precautionary Principle – Is it Impacting on Fire Fighting Standards and Operational Decision Making?

The precautionary principle is often used in situations where there is the possibility of harm from making a certain decision (e.g. taking a particular course of action like backburning or constructing a new fire control line) and conclusive evidence is not yet available as to whether that is the best decision to make.

In operational situations such as firefighting, making a decision like backburning, can blow back on the decision maker, if the burn is not held. On the other hand, under the precautionary principle, decision makers can refuse to make a decision or stop any action. When the next blow-up day arrives and the fire breaches the containment line, the blame automatically shifts to the weather, which is out of the control of everyone.

B) Why are Traditional Fire Fighting Method Not Working?

On 60 Minutes, on 9 February 2020, Craig Lapsley, former Victorian Fire Commissioner, stated: "We are getting to the point now, where the traditional tactics being deployed are not effective." Mr Lapsley is wrong. What he calls "traditional tactics" are a 21st century indecisive version of traditional tactics.

Traditional tactics consisted of:

- Direct attack when safe;
- Track close to the flank and fire front when safe;
- Undertake tactical burnout (delegated to sector managers) along the edge to remove all fuel between the break, track or road as the control line advances;
- If conditions don't allow direct attack, prepare containment lines and undertake strategic backburning as soon as there is a reasonable outlook of favourable weather;
- Everyone knows the plan and sector bosses update control centre regularly and vice versa;
- If situation changes, sector bosses redeploy crews and equipment in consultation with the control centre;
- Tactical and strategic backburning of difficult areas to be done mostly at night, to minimise the risk of losing the backburn;
- Black out the edge, as the control line and burning advances;
- Operate on a 24 hour 7 day a week basis, until the fire is actually contained and controlled;
- If blow-up days occur, divert crews and machines to asset protection;
- Undertake minimum crew, day shift patrol until the fire is confirmed as out;
- Make efficient use of resources and ensure blacking out extinguishes all woody debris and
- Shift changes occurred on the line.

Current tactics in the main involve:

- Indirect attack – keep well clear of the fire front preparing "containment lines;"



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- Allow the fire front to approach the containment line at a speed dictated by prevailing weather conditions;
- Use any available aerial water bombing capacity to try to slow the fire front, in the hope that the fire can be stopped as it reaches the containment line;
- Overall plan for the shift not always well communicated. Top down directives in the event of changing conditions and key field managers not always consulted on changes to control centre directives;
- In the event of deteriorating weather conditions, pull out all crews and equipment, for deployment to asset protection or to sit and wait for the emergency to pass;
- Identify a new containment line and repeat the process;
- While there are generally sufficient resources, casual observations note much time is wasted on day shifts and many night shifts run short-handed or whole sectors are abandoned;
- Breakdowns occur along the communication chain and between sectors, under different land management authorities. This results in misallocation and waste of key resource time;
- Tanker operator off road skills and a partial understanding of mop-up processes, including crews mopping up through bush, with no adjacent firebreaks, increase the risk of future breakouts; and
- Shift changes often occur through depots and day or night shift may not actually handover on the line.

If the damage caused by bushfires is to be minimised in future, there must be significant reform to the deployment of fire crews and heavy equipment to the fire ground. Some questions that need to be answered include?

- Why is it necessary to have 100 hundred or more paid and volunteer fire fighters congregate at a despatch point and wait more than an hour to be briefed, before leaving for the fire line?
- Why don't day and night shifts consistently change over on the fire line?
- Why does fire sector management usually change with a change of land tenure, which is not always a logical fire control boundary and does not always ensure the most capable line managers are used to best effect.
- Why do some land management agency staff, paid double time throughout declared incidents, not arrive at the fire line until 9 or 10am to oversee machines working on control lines? Heavy machines are often left idle for several hours and the best part of the fire control day is wasted.
- Why have some land management agency staff on double time, undertaken a backburn during the day and then left the sector unattended overnight? This action forced crews on adjoining sectors to fill the gap and deal with dead spars falling over the control line.
- With a blow up day forecast, why should a bulldozer owner have to ring more senior land management agency staff, to ensure at least one machine was withdrawn to a position in advance of the active front? If he had just followed orders, all bulldozers would have been on the western side of the fire, with access roads to the east cut by the run of the fire.

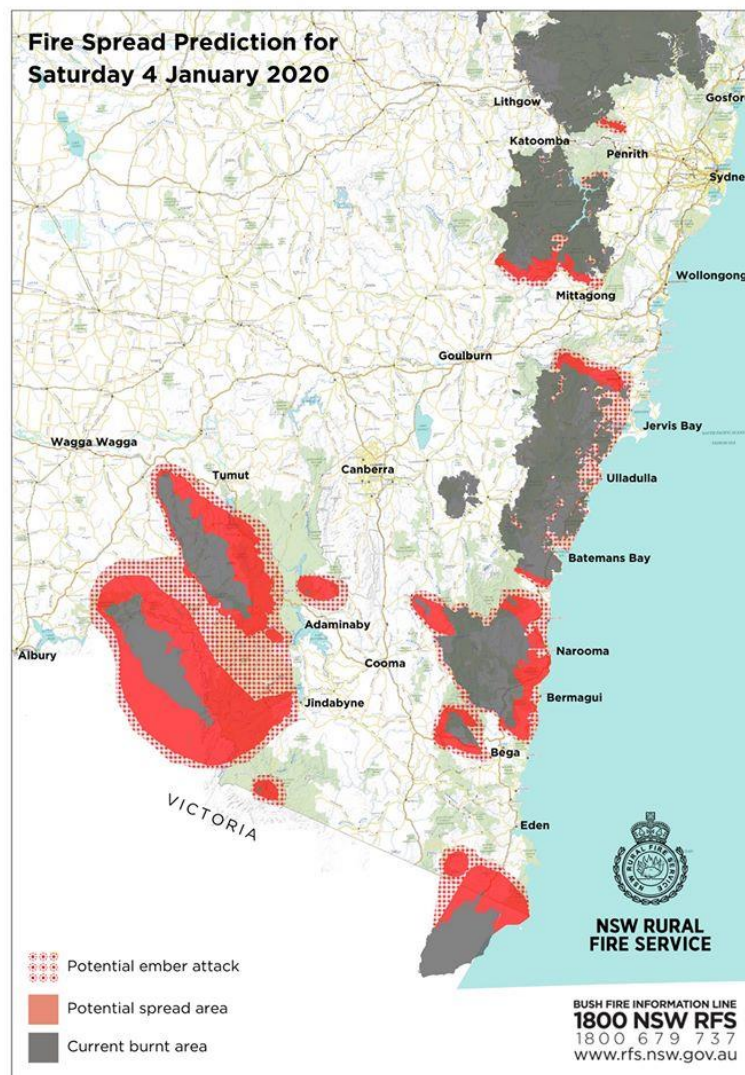


3 C). Some Potential Case Studies Relating to Refusal to Approve Backburning

3 (c)(i). The Border Fire Southern NSW

Numerous examples of refusal by incident control centres in both northern and southern NSW have been experienced by SETA members and others involved in the fire suppression effort during the 2019-20 fire season. There seems to be a lack of understanding of the difference between tactical (where fire is close to the control line) and strategic backburning. In some instances, the decision to withhold approval for backburning has potentially led to worse outcomes on the next blow-up day, than might otherwise have been.

On Tuesday 31st December 2019, one tongue of the East Gippsland Mallacoota fire complex ran to the NSW border adjacent to the Princes Highway. A second tongue of the fire ran to the east of the Princes highway and stopped further south of the border. See the Fire Spread Prediction for Saturday 4 January 2020 below, for more details.



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The run of the fire was stopped by a change in weather conditions, with the temperature falling to less than 20 degrees, 80 percent relative humidity and 0.2mm of rainfall. The eastern flank of the fire ran back into Victoria to the coast. The western flank of the fire ran to the south, south west into Victoria. There were other fire complexes to the west of the Mallacoota Complex and an isolated fire close to the border in the Victorian Coopracambra National Park, east of the Monaro Highway.

After the run of the fire, NSW crews and equipment that had evacuated to Narrabarba, on Tuesday morning, returned to the strategic fire breaks, that had been established along the Victorian border, after a February 1983 wildfire had come out of Victoria into NSW.

On the morning of Wednesday 1 January 2020, the RFS recorded the fire area in NSW to be 240 hectares and initial requests to commence backburning along the strategic and other forest roads were lodged. Permission was refused. Requests for approval to burn were made on Thursday 2 January and again refused.

Reasons given did not mention a lack of resources. Despite generally favourable wind conditions predicted for the period Wednesday to mid-day Saturday, one reason for refusal was conditions were too dangerous and the change in weather conditions too close. Other reasons included a directive not to "put any more fire in the landscape." Mention was made that there had been a backburn escape elsewhere, which burnt houses.

It is assumed that the backburn that was mentioned, was associated with the Gospers Mountain fire, which was reported in the Land newspaper on 18 December 2019 and read in part: *"A backburn as part of the 409,000ha Gospers Mountain fire went badly wrong on Sunday, destroying up to 20 buildings including 12 homes."*

A learning response would have been to ensure all necessary precautions were in place in future backburns and promptly approve, or delegate decisions to operationally experienced controllers or sector bosses, to maximise the chances of success. Blanket bans on any backburning will just ensure that fires fronts, that could have been fully contained and blacked out, will run out of control on the next windy day.

Given the long-established strategic fire break and network of forest roads, experienced fire fighters involved in the operation, were extremely frustrated at the apparent lack of understanding of on-ground conditions that seemed to be held by the incident controllers.

On ground fire fighters with decades of firefighting experience still hold the strongest views, that up to three days was sufficient time to undertake the burn from the Marshmead College campus in Victoria, north to Mines Road, then west along Royds Creek Road and then Handfords or Maxwells Road, to the Princes Highway.





Royds Creek Road Strategic Fire Break 14 April 2020

The burn would then have extended from the Princes Highway, west along the Broadaxe Road strategic break, at least as far as the Border fire trail in Yambulla State Forest, or further west, depending on movements of the Mallacoota complex.



Broadaxe Road Strategic Fire Break 14 April 2020

The burn could have potentially contained more than 20 kilometers of the Victorian fire front and greatly reduced the wind storms generated by the fire. The worst outcome may have been an occasional spot over, starting from scratch, rather than the continuous wall of fire that was in place, when the south west wind change arrived on Saturday 4 January 2020.

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The location of the Mallacoota fire front presented the first opportunity in 37 years for this break to be used. SETA members, who aided in the control of the February 1983 wildfire want to know why the necessary action was not taken to use this break. How many days of favourable weather do incident controllers need, before they deem the use of assets like the border strategic fire break, is worth the decision risk, rather than leaving it to weather conditions to determine wildfire outcomes?

Questions also need to be asked of the Victorian response, or lack thereof, to the Coopracambra (became the Rockton fire on entering NSW) fire, that blew up with the south westerly change and joined with the Mallacoota Complex on the night of 4 January. These two fires destroyed homes and more than 215,000 hectares of NSW forests, plantations and farms.

Throughout January, incident controllers maintained a ban on any backburning on the northern front of the Border fire. Backburning would have ensured the northern front was contained and could be blacked out. The fire front stretched from the Pacific Ocean to west of Rocky Hall. Relatively favourable (for this fire) weather, and an unknown expenditure on water bombing of the fire front by a fleet of helicopters, rather than active on-ground management, contained this fire until heavy rain covered all the fire grounds in south east NSW in the second week of February.



Night Time Backburn, 9 February 1983. Backburn in Heavy Fuels, to Contain a Fire Front Over 20 Kilometers North of the Victorian Border, Less than 10 Hours After a 100+ km SW Wind Change Pushed the Fire Over the Border



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At a public meeting at Pambula Beach in mid January, a senior RFS officer advised concerned residents that no back burning was being done on the Border fire, as the RFS didn't think backburns could be held. Day after day, helicopters left the Merimbula airport to the various fire fronts. Why could these aircraft be tasked to support backburning operations, instead of bombing hotspots across the fire ground?

The standoff management approach is best summarised by one line in the RFS – Border Fire Advice of 25 January 2020:

"There is still active fire burning behind identified containment lines." This advice was issued 21 days after the major run of the fire. In the end, good luck, rather than good management would seem to have been the major factor in the extinguishment of this and other fires.



One of Several Helicopters Stationed at Merimbula in January 2020

The "containment line" was, like so many other containment lines across the state, just lines on a map, readily overrun by fire on the next bad weather day, due to a lack of commitment to burn out to mineral earth control lines and black out the whole of the fire edge.

3(c)(ii). The Postmans Trail Fire Southern NSW

The Postmans Trail fire started in late January 2020. On 29 January, the RFS recorded the fire area to be 291 hectares. The fire was surrounded by existing roads and trails and the critical eastern front had been tracked by bulldozers. Permission to backburn was denied, as strong north west winds were expected on Saturday 1 February.

When the change arrived on Saturday 1 February, the uncontrolled fire readily spotted over new and existing control lines and burnt towards Wyndham. By 2 February, the fire area was over 11,000 hectares.



In the end, regular rain from 6 February, was the most likely reason this and the Big Jack Mountain fire did not burn to the Great Eastern Firebreak.

There are multiple examples across NSW where refusal to backburn likely lead to major breakouts of "contained" fires on blow-up days. While the various incident controllers may have been trained in the management of an incident, managing potentially everchanging incidents, needs a practical, as well as theoretical understanding of wildfire management and good communication with sector bosses.

3(c)(iii) Myall Creek Road Bora Ridge Fire Northern NSW

The Myall Creek Bora Ridge fire is an example from the NSW north coast, where failure to backburn is said to have contributed to the ultimate size of the fire. SETA members have been advised that during the earlier days of the fire, there were four days of favourable backburning weather on the major fire front. The reason for refusal to burn was said to be that the fire was too far from the containment line. Subsequently, west to north westerly winds quickly pushed the fire over the "containment line," to an ultimate burn area of 121,324 hectares.

The command and control model, where incident controllers constantly overruled advice and requests from experienced field managers, remains a deep frustration for many volunteer and paid fire fighters. The 2019-20 fire season, might be best described as a series of opportunities not taken, which led to bigger and bigger fires and effectively handed control of many fires to the weather. Available resources were spread ever more thinly and the management complexities were magnified as a consequence. Incident management is then forced to focus on the ever-growing emergency response burden, as fires impact farms, livestock, homes, towns and lives.

3(c)(iv) W Tree Fire East Gippsland

A number of lightning strikes occurred in East Gippsland on 21/22 November 2019. It is unclear whether the initial attack on the W Tree fire failed or in fact was not attempted due to the number of fires in the landscape at the same time.

Regardless of the reason for the fire not being controlled at first attack, it quickly increased in size. By the time of the 29 November 2019 community update the fire had grown to 10,900 hectares. The situation on perimeters of the fire at that time can be summarised as follows:

- Western flank at the private land at W tree;
- Northern flank heading towards cleared farmland;
- Southern flank heading towards cleared farmland; and
- Eastern flank – has spotted across the Snowy River into remote country in the Snowy River National park.



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The priority should have been to contain the eastern flank, which had the potential to cover long distances under north westerly winds. The Moonkan Track was the obvious control line.

Bulldozer work was carried out on the Moonkan Track in this period but the local fire control personnel were reportedly directed at this time by the Controller at the IMT (based in Bairnsdale) *"not to introduce new fire into the landscape"* (ie not to backburn).

From late November machines were also deployed on Lightning Track, and on many other tracks in the Snowy National Park, falling dangerous trees and preparing backup lines presumably with the intent of backburning operations. About this time construction of a new control line was commenced on a ridge between Yalmy Rd and Moonkan Track.

However, the local fire control personnel were reportedly directed by the Controller at the IMT (based in Bairnsdale) that the work was to cease and that *"no new tracks were to be constructed"*. Further the local control team were reportedly advised that, *"Control works were to be confined to the footprint of the existing road network."*

Sometime prior to the 6 December 2019 Community update the fire had crossed Moonkan Track, so that option for control had been lost. The part of the fire east of the Snowy River was listed as 217 hectares. Still no backburning was approved from any of the tracks being prepared under the Controller's direction of *"no additional fire in the landscape."*

Work on preparing control lines proceeded through December. Somewhere between the Community updates on 22 and 26 December 2019 backburning was approved along Yalmy Rd - however it would prove to be too late to be effective with events to unfold 4 days later.

At the 26 December 2019 Community update the fire was listed as being 13 Km west of Goongerah and 31,000 hectares in total area. At the 27 December 2019 Community update the fire area was listed as 32, 754 hectares.

On 31 December 2019 the fire broke away on a number of fronts under the influence of a north westerly wind and severe fire conditions and ran for 10 to 20 kilometers in a south easterly direction impacting Goongerah and areas further to the east.

Was this best practice bushfire management?

Best practice fire suppression policy is to commit enough resources to a fire to contain it in the first shift (ie at first attack). If first attack fails then best practice is to confine the fire within defined control lines, from which backburning is conducted to burn out between the line and the fire to stop the fire *"running at the control line"* or *"spotting over the control line"*.

It appears that during December a lot of effort went in to preparing a range of potential control lines and backup lines along existing roads and tracks within the Snowy River National park providing multiple options for backburning operations. However, no burning



was carried out from these prepared tracks until somewhere between 22 and 26 December on the Yalmy Rd - by which stage it was too late.

During the month of December, under generally benign weather conditions, the fire moved about 10 km in an easterly direction and about 15 Km in a northerly direction – an average of less than 500 metres per day. It does not appear that there was any active attempt to control those fires during that period. Activity was solely focussed on track widening and dangerous tree removal but with no backburning from those lines, apart from Yalmy Rd late in December.

Not actively working to minimise the size of the fire is contrary to all best practice fire control principles, especially given these fires started in late December and there was at least 3 months of the fire season ahead.

Management of this fire has many parallels, with a number of the NSW fires and hence there is a need for a national overview of bushfire management in Australia.

Conclusion

These examples do highlight the change in fire fighting over the past two decades and prompt the following questions.

1. What factors were taken into consideration in not actively working to contain these fires according to best practice fire control strategy, particularly given most fires were burning at the start of summer with 3 months of fire season ahead?
2. Why was there not any backburning from the prepared control lines, despite favourable weather conditions?
3. Why was there a ban on new control line construction to contain some fires?
4. Who in the fire organisation structure is responsible for the control strategy on each fire?
5. Were there external or other influences that impacted on the person responsible for the individual fire control strategies, which caused them to disregard best practice bushfire control strategy?

