

CAN WE BETTER FIRE-PROOF OUR COUNTRY TOWNS?

USING MATCHES AND MACHINES TO REDUCE FUEL LOAD



"This new policy proposal is one small but important step towards reducing the bushfire risk to our country towns and important rural assets."



INTRODUCTION

Hotter and drier weather, and more frequent bushfires, are costing Australia dearly.

Loss of life, injury and destruction of homes are obviously the most tragic face of fires.

And the increased fire risk is also impacting the forest industry.

This new policy proposal is one small but important step towards reducing the bushfire risk to our country towns and important rural assets. It does not attempt to solve the entire bushfire challenge; it is simply about better protecting our towns, regional communities and valuable rural assets.



It is prompted by several disasters in recent years in which whole communities have been tragically destroyed.

We have seen devastating bushfires in Yarloop, Western Australia, in 2016; in Dunalley, Tasmania, in 2013; in Canberra and the Alpine region of NSW in 2003, as well as the 2002-03 and 2007 fires in the Victorian high country which burnt more than 2 million hectares. In fact, bushfires have burnt almost 50% of Victoria's public land over the past 15 years.

Each of these events has brought enormous grief and trauma. When the smoke clears and the embers cool, many do not rebuild in the worst affected towns. Families drift away to start a new life. School numbers drop. Economic life wanes.

Rural based industries such as Australia's forest and forest products sector are also severely affected by these fires, through a loss of plantation and production forest resource, as well as sawmills and processing facilities. The loss of these valuable rural assets, and the employment and markets they create, weakens once vibrant, strong and sustainable rural communities.

Rural communities are as fragile and precious as our topsoil. Once families move it is hard for them to return. Once a rural town drops below a certain population, the decline is hard to stop, as first the post office, then the bank, then the school disappears.

It is therefore beyond time that we focused on the towns, townships and small communities which are devastated by bushfire.

Whilst dealing with bushfires is unpredictable and very dangerous, science tells us that we could do more to reduce the fire risk to our regional communities and important rural assets. It is not rocket science. It is simply fuel load reduction.

Research tells us that in the open eucalypt forests of south-eastern Australia, an annual fuel reduction program of 5% of the landscape could reduce the extent of bushfires by 50% (W.L. McCaw, 2013)

This level of fuel reduction is consistent with that undertaken in the forests of southwest Western Australia between 1990 and 2000, which was shown to be effective in minimising the impact of high intensity fires. This level of fuel reduction no longer takes place (reasons are discussed later in this paper). Forest with a dense understory of forest regrowth – a candidate for opening up and 'de-risking' alongside townships or strategic assets such as a water catchment or plantation.

THE PROPOSAL

Federal, state and local governments can work with rural communities to reduce the risk of bushfires developing, and engulfing towns and important rural assets.

Risk can be reduced by a new approach of proactive and targeted reduction of understory and dense forest regrowth up to five kilometres from at-risk towns and strategically important assets, such as water catchments, plantations and production forests.

The goal is to create a buffer which would make it easier to battle oncoming fires, or implement emergency back-burning operations, as bushfires approached towns and other assets.

The reduction of understory and some of the dense regrowth would also remove the larger fuels that can assist in "laddering" fires to the tree crowns, which results in catastrophic fire fronts.

As well as the physical (sometimes called 'mechanical') removal of forest biomass, the more traditional fuel reduction burning would continue to be employed. This is vital to remove the finer fuels at strategic locations, reducing the risk of ignition and fire spread.

This biomass removal and fuel reduction burning needs to be ongoing (to prevent the undergrowth regenerating within a short number of seasons) and should be combined with more aggressive fire break construction as well.

"Risk can be reduced by a new approach of proactive and targeted reduction of understory and dense forest regrowth"

DOSAL

Analysis by Deloitte Access Economics (DAE) has found in locations close to cities, biomass removal can complement fuel reduction burning and has a cost-benefit ratio of 6 – that is, it delivers benefits 6 times that of the costs involved. INFRA THE

Private Forest Industry Fire Crews

Each year the forest industry has thousands of workers and fire trucks on standby, ready to attack bushfires whenever they arise.

Government to increase funding to extend the current 'mechanical removal' pilot program to \$30 million, and expand it to a broader range of biomass removal projects around regional communities and strategic assets

Increase funding from \$1.5 million to \$30 million

FUNDING

As a first step, the Federal Government should increase funding for the current \$1.5 million 'mechanical removal' pilot program to \$30 million.

In addition to the mechanical biomass removal trials, the program should include a public awareness campaign to highlight the benefits of combining mechanical biomass removal with fuel reduction burning. The combined approach represents a more effective and efficient way of reducing fuel loads around towns and <u>rural assets</u>.

The program would also involve the Federal and State Governments working together to reduce the red tape required to gain approval for bushfire mitigation works, particularly for biomass removal on public land and fuel reduction burning.

The project could quickly pay for itself.

The biomass collected can't just be left to create mountains of combustible materials around regional towns or outer urban areas close to the bush – that would merely relocate the fire risk.

The better approach is to recycle the biomass collected: for the production of renewable energy; for pelletised fuels; for feedstock; or for use in landscaping (for example, composting).



COSTS OF BUSHFIRES IN AUSTRALIA

DEATH: Since records began in 1850, on average five people have died every year as a result of bushfires;

BUILT ENVIRONMENT AND INFRASTRUCTURE: Around 300 houses have been lost each year on average between 1925 and 2009;

(Source: DAE, 2014)



The extent and the severity of bushfires are caused by the interaction of **weather, topography** and **fuel**.

We can't do much about the weather or the topography; but we can make a real difference to fuel.

Bushfires have a major impact on forest industries, and the consumers who use our products.

In the ten years to 2004, as a nation we lost around 916,000 hectares of forest on average each year to bushfires – including a massive 4.68 million hectares in 2003, and 1.26 million hectares in 2002 (Federal Department of Environment, 2005)

While we will never be able to prevent each and every bushfire, we can do more to mitigate the risks – to our forest resources, to our communities, and to the many Australian bushfire fighters who risk their lives fighting fires.



MORE BUSHFIRES ARE COMING...

In recent years, bushfire in Australia has increased both in frequency and severity.

Harsher fire weather is being predicted for many areas of Australia – particularly, the southern and eastern regions which have the highest projected increases in fire danger indices, and in the number of days with severe fire danger (CSIRO and BOM, 2015).

AND THE COSTS ARE RISING...

ECONOMIC COSTS

The most apparent costs of bushfire include damage or destruction of homes, schools and other buildings, of infrastructure such as bridges, and of crops, livestock and natural resources such as timber.

Deloitte Access Economics (DAE, 2014) has estimated the total economic cost of bushfires in Australia was around \$360 million in 2014.

If nothing is done, this figure could more than double – to almost \$800 million by 2050.

Each year bushfires destroy thousands of hectares of privately owned forest assets. Each summer hundreds of private fire crews are on standby to fight fires which commence on other land but run into industry owned estates.

Forecast total economic costs of bushfires (2011)





SOCIAL COSTS

The social costs of bushfires are also enormous, although often less directly measurable.

These costs include death or injury, the loss of personal items and family memorabilia, and stress for those that live directly in the path of the fire or nearby areas, as well as firefighters and other emergency personnel.

ENVIRONMENTAL COSTS

The environmental costs of bushfires are also important to consider.

Bushfires have a massive impact on the populations of native fauna and flora. They lead to the loss of habitat for many rare and threatened species. In addition, they cause severe damage to soil, plants, seeds and fungi, and damage waterways and aquatic species.

Bushfires are also one of the largest contributors to Australia's greenhouse gas emissions.

Emissions associated with the 2003 bushfires in the southeast of Australia were estimated to be greater than that of all other sectors, with the exception of the energy sector. These fires generated an estimated 190 Mt CO_2 -e of emissions — which is about one third of Australia's annual emissions target (of 591 Mt CO_2 -e) under the Kyoto Protocol's first commitment period.



The 2016 bushfires in Tasmania caused considerable damage to some of Tasmania's most sensitive ecosystems in the Central Highlands, West Coast and South West regions, racing through Tasmania's World Heritage Area and other Conservation Areas.



Australia's Annual Average Emmissions 2000-2010

BIOMASS REMOVAL AND FUEL REDUCTION BURNING

Simply relying on autumn and/or spring fuel reduction burns to manage bushfire fuel loads is not enough.

We need to both remove larger fuels through physical (mechanical) biomass removal (reduction of understory and dense forest regrowth), as well as fuel reduction burns for the finer fuel, in priority areas.

The Royal Commission into the Black Saturday bushfires in Victoria recommended that the state government 'fund and commit to implementing a long-term program of prescribed burning based on an annual rolling target of 5% minimum of public land' and that the responsible government agency 'reports annually on prescribed burning outcomes publishing details of targets, area burnt, funds expended on the program and impacts on biodiversity.'

Unfortunately, community and other pressures on governments have meant there has been a drop off in prescribed burn-offs – markedly in Western Australia; and noticeable also in New South Wales, Queensland and Victoria.

Indeed, Victoria has gone so far as to abandon its prescribed burn-off target altogether.

In the last 25 years, the average annual burn-off area has fallen by more than 30%. The area burnt in bushfires has more than tripled over this period.

Nearly 677,000 hectares of forests were subject to prescribed burn-offs across Australia in 1990.

By 2010 this figure had fallen to just under 569,000 hectares, after hitting a low of just 328,000 hectares in 2006.

It is not a question of physical removal of biomass OR fuel reduction burns. They should be used in combination. It is about finding the best mix.

The current approach has a focus on fire suppression. Massive resources are thrown into battles to fight flames around higher valued assets during the bushfire season. However, this has been accompanied by a reduction in bushfire prevention effort and a decline in funding for fuel reduction in the autumn and spring.



Management of Public Native Forest Fuels and Bushfire Extent

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THE UNITED STATES EXPERIENCE

The United States Government is 7 years into a 10 year, \$400 million Collaborative Forest Landscape Restoration Program (CFLRP) intended to promote science-based restoration of priority forest landscapes.

The program aims to encourage ecological, economic and social sustainability of forests. A key component of the program is the thinning of forest regrowth, which has multiple benefits in terms of improving forest structure, increasing water yields and reducing bushfire risk.

One key activity is using machinery to remove understory and dense forest regrowth. Early results are pointing to positive outcomes in reducing the severity and the extent of bushfires.

Similarly, water yield has been shown to improve by up to 16%, enhancing environmental flows, as well as increasing water availability for public consumption and agriculture.

A mid-term evaluation of the program found it had been successful, to date, in meeting its aims, and was expected to deliver positive outcomes.

A key dividend from the US program is that more than 1.45 million acres has been managed to reduce the risk of catastrophic fire.



The United States biomass removal project has also won praise from one of the world's largest Environmental Non-Governmental Organisations, the Nature Conservancy.

Commenting on the water supply benefits of mechanical thinning of forests in the Northern Sierra Nevada in California the Nature Conservancy (2015) found:

"Given the many other non-water benefits of such restoration efforts – including fire risk reduction and fish and wildlife benefits – our assessment suggests that investing in Sierra Nevada forest restoration deserves consideration as a cost-effective water supply strategy for California."



ARIZONA, USA

The stand on the left is overstocked. The stand on the right is treated via mechanical removal and fuel reduction burning treatments, which has greatly reduced the risk of catastrophic fire.





YARLOOP, WESTERN AUSTRALIA, 2016

On 6 January 2016, the communities of Yarloop and surrounding areas in the Shires of Harvey and Waroona were hit by a devastating bushfire.

Tragically, 2 residents lost their lives in the fires, and a Western Power employee was killed while working to restore power.

The fire impacted an area of 69,000 hectares, with a perimeter of 398 kilometres. Some 181 residential properties and businesses, and a large number of farm buildings were destroyed.

The Western Australian Government committed to open an independent review of the management of the fire, with broad terms of reference which cover what has been learned from previous bushfires, and what can be learned from the current fire. The terms of reference also cover identifying strategies for future reforms in bushfire fighting, and capability enhancement to effectively and efficiently manage bushfire-related risk.

AFPA encourages the WA Government to strongly consider forest thinning around communities in its response.





DUNALLEY, TASMANIA, 2013

In January 2013, major fires ravaged areas around Forcett, Lake Repulse and Bicheno in Tasmania.

More than 430 properties were destroyed, and over 10,000 head of livestock were killed. The total damages bill was estimated at more than \$100 million.

The bushfire also destroyed the Dunalley sawmill, causing \$15 million in damage and the loss of 15 jobs in this small regional town. The Dunalley sawmill was a family operation, with three generations of the Kelly family having worked at the mill.

The broad and fast spread of the fire was attributable to very high fuel loads, combined with wooded and inaccessible terrain.







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