

Submission Number: NND.001.01051

Submission Of: Dr Carolyn Currie and Ms Julia McKay

Your Details

Email address:

Phone:

Preferred means of contact: Email

What is your submission based on? I am making this submission based on my professional knowledge, qualifications or experience or on behalf of a group or organisation

What is your area of professional expertise? Personal experience in Blackheath over 37 years

If you are lodging your submission on behalf of a group or organisation, what is the name of the group or organisation?

Your Submission

In your experience, what areas of the bushfire emergency response worked well?

Please refer to extensive submission but it was the Coordinated National Response.

In your experience, what areas of the bushfire emergency response didn't work well?

Miscommunication between elements of the RFS- over reliance on volunteers - no Australia wide App - please refer to extensive submission. The prohibition on clearing, droving and the lack of effective hazard reduction by State governments, the lack of monitoring via satellite and cameras - all of this contributed.

In your experience, what needs to change to improve arrangements for preparation, mitigation, response and recovery coordination for national natural disaster arrangements in Australia?

1. Planning – including asset protection zones, housing design, on-site water availability (for both resident use and RFS support), fire-resistant vegetation options, fire preparedness and zoning.
2. Climatic predictions – soil and vegetation moisture readings (via BOM), drought modelling, temperature, windspeed and humidity predictions – scientific warnings of severity of bushfire seasons. An understanding of climate change impacts on drought and meteorological extremes.
3. Oversight of catastrophic conditions – emergency declarations and the interaction of Federal and State authorities and their co-ordination with local RFS Brigades. Possible role of Defence Forces or specialised Citizen Emergency Force with training and NewStart payment.
4. National Parks and Wildlife Services – Hazard reduction options. Responsibility for adequate fire breaks, upkeep of fire trails and NPWS (often called National Sparks and Wildfire Service) role in co-operation with RFS during the “cool burn” season. See Indigenous Practices.
5. Communications – “Fires Near Me” app usefulness is limited by rural connectivity. Mobile phone reception inadequate in many fire prone areas and power supply to cell towers an additional problem when fires moving into a danger zone. Evacuation plans gravely affected by the knowledge gap, particularly when smoke reduces visibility to near zero.
6. Friction between vegetation and wildlife preservation groups and native vegetation removal lobby. Emphasis on reinstatement of dry sclerophyll forests that are fire-loving and the alternate use of fire-resistant exotic fire breaks.
7. A growing realisation that, under certain conditions, fires are uncontrollable even with the use of aircraft. The mix of drought and expanding population into forested coastal regions is increasing the risk to life and property. Some areas can not be made safe and fire behaviour is changing – refer 1 and 2 above.

Is there anything else you would like to tell the Royal Commission?

We have covered extensive points in our submission as requested by the Terms of Reference. In particular an instance of miscommunication between two divisions of the RFS caused the fire in the Mt Wilson area to spread across the Grose Valley and almost decimate Blackheath. We refer you to the points made in the fourth Term of Reference about the necessity to recruit professional staff to the RFS and to have a nationwide App.

Do you agree to your submission being published? Yes I agree to my submission being published in my name

Supporting material provided:

Submission to the Royal Commission on Natural Disasters by Dr Carolyn Currie and Julia McKay 28.4.20.pdf

Appendix A to Currie McKay Submission to the RC on Natural Disasters - NSW RURAL FIRE SERVICE Asset Protection Zones.pdf

Appendix B - to Currie McKay Submission to the RC on Natural Disasters re Native Vegetation Act.pdf

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EXECUTIVE SUMMARY

The dominant issues raised by the participants in this submission are:

1. **Planning** – including asset protection zones, housing design, on-site water availability (for both resident use and RFS support), fire-resistant vegetation options, fire preparedness and zoning.
2. **Climatic predictions** – soil and vegetation moisture readings (via BOM), drought modelling, temperature, windspeed and humidity predictions – scientific warnings of severity of bushfire seasons. An understanding of climate change impacts on drought and meteorological extremes.
3. **Oversight of catastrophic conditions** – emergency declarations and the interaction of Federal and State authorities and their co-ordination with local RFS Brigades. Possible role of Defence Forces or specialised Citizen Emergency Force with training and NewStart payment.
4. **National Parks and Wildlife Services** – Hazard reduction options. Responsibility for adequate fire breaks, upkeep of fire trails and NPWS (often called National Sparks and Wildfire Service) role in co-operation with RFS during the “cool burn” season. See Indigenous Practices.
5. **Communications** – “Fires Near Me” app usefulness is limited by rural connectivity. Mobile phone reception inadequate in many fire prone areas and power supply to cell towers an additional problem when fires moving into a danger zone. Evacuation plans gravely affected by the knowledge gap, particularly when smoke reduces visibility to near zero.
6. **Friction between vegetation and wildlife preservation groups and native vegetation removal lobby.** Emphasis on reinstatement of dry sclerophyll forests that are fire-loving and the alternate use of fire-resistant exotic fire breaks.
7. **A growing realisation that, under certain conditions, fires are uncontrollable even with the use of aircraft.** The mix of drought and expanding population into forested coastal regions is increasing the risk to life and property. Some areas can not be made safe and fire behaviour is changing – refer 1 and 2 above.

FIRST TERM OF REFERENCE

- (a) **The responsibilities of, and coordination between, the Commonwealth and State, Territory and local Governments relating to preparedness for, response to, resilience to, and recovery from, natural disasters, and what should be done to improve these arrangements, including with respect to resource sharing;**

Federal-State coordination

1. There is a lack of public clarity as to the different roles and responsibilities of Federal and State Governments (let alone Local governments), exacerbated by the media. This creates confusion among the public and led to a lack of confidence in the Government's ability to

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effectively lead and manage the emergency.

2. While the roles and responsibilities of each as legislated seem clear, this confusion encourages a 'blame game'. This does nothing to help address the emergency and provides a distraction from what should be the focus. **We would encourage the Review to consider how clarity in roles and responsibilities of all levels of government could be enhanced.**
3. Hitherto, even the worst fires have tended to be contained to one or two States, with the peak occurring during one or two significant days. The four-state spread of the latest fires over a protracted period makes them different both in scope and in public perception. This is what led to the involvement of the Prime Minister in a manner in which no Prime Minister has been engaged before.
4. Where cross-border operations are required, the fire authorities already have well worked coordination mechanisms. We understand that these generally work well. We believe it should be those involved at the senior leadership level who make the decision as to whether a single, Federal body/agency is required. **If the decision is that such a single Federal body/agency is required, we recommend that this should focus across all emergencies rather than being bushfire specific.** We note the recent appointment of the former head of the NSW Rural Fires Service to head up a Resilience Commission as an example of an all emergency body.
5. One area where improved coordination is required is in *Fires Near Me*. The fires in Victoria did not appear on this which is a problem if you are near the border. **We recommend that a single application be used by all States which ensures consolidation of this information.**

Other matters that need attention are:

- (a) **How Local Councils across different States have building codes which are inconsistent with State Legislation.** For instance, Appendix A describes the requirement of the NSW

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Rural Fire Service to have Asset Protection Zones. However, in the Blue Mountains the local Environmental Plan attached to a Development Application requires native trees to be planted around a new house in direct contravention of the Bushfire Protection Act (State Legislation). This requires a 70 metre buffer zone, and that many DAs were approved which stated that the house proposed complied, but they actually included a neighbour's land. The net result for instance in Blackheath, one of the areas continually threatened by fires, there has been a crowding in of substandard lot size houses right near highly flammable eucalyptus forests.

- (b) **How some State governments have prohibited droving which has allowed public areas such as roadsides in the country to become totally overgrown and susceptible to fires.**
- (c) **How other State governments have prohibited clearing of land of native vegetation -** which used to be done not just to plant crops, and to provide shelter to animals, but also to provide a safe zone near a national park which was and is essential to survival. We cite the example of the wealthy landowner who saved a town by land clearing but in addition installing cameras, lights and automatic sprinkling systems, this is a fine example but was financed by his horse stud and other investment pursuits. Not everyone can do this- however a State government such as Queensland has installed security cameras across empty fields and land so they are aware of any activity that could cause a fire. Satellites have also been used in certain cases which can detect a match being. **We recommend examination of the use of cameras and satellites in order to provide an early warning system.**

SECOND TERM OF REFERENCE

- (b) **Australia's arrangements for improving resilience and adapting to changing climatic conditions, what actions should be taken to mitigate the impacts of natural disasters, and whether accountability for natural disaster risk management, preparedness, resilience and recovery should be enhanced, including through a nationally consistent accountability and reporting framework and national standards;**

The following four suggestions are made:

- **1. The Commonwealth can use its powers in relation to interstate trade, as rivers and national parks are not confined to state boundaries in order to address resilience, climate change, risk management and recovery.** It's a big field and involves private and public land. The aim must be to understand that drought and fire will happen again and when drought applies, hazard reduction burning becomes an impossibility - the fires, even in winter, can become uncontrolled and too hot. There are many other ways to reduce the fuel load - crash grazing, wide fire breaks created by dozers and graders (for use as fire trails as well, but they must be maintained), fire breaks of fire resistant plantations (deciduous trees that reach a great height to catch embers, like poplars, elms, cottonwoods, aspens, acer negundo, planes etc.) These grow quickly and need to comprise a wide break, maybe 20 trees deep. They also offer good forage to livestock in Autumn as their leaves are edible. Near watercourses, willow species perform the same task as fire breaks.
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- **2. This also brings water management into play, as the extremely dry conditions and lack of water or even humidity provided ideal conditions for**

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fires. Keeping wetlands intact (not drained) also offers large non-combustible areas where people and livestock can shelter in times of fire. Farm dams could be converted to wetlands and linked across the landscape to keep areas green. Having permanent water for livestock and wildlife is not only important in drought but also during the fire recovery phase.

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- In NSW this would involve a change to legislation along the lines of a motion already passed by a political organization – namely that,

“The Water Management Act (NSW) 2000, as amended, be reviewed and re-drafted for the proper management of floodplains, wetlands and streams. This review to take into account the mitigation of high flows, retention of base flows, the spreading and slowing of water to allow water infiltration of soils and the prevention of stream bank and stream bed erosion. Definitions of “streams and rivers” to be narrowed such that first and second order water courses are not captured by the legislation. Innovative soft engineering to be permitted under appropriate supervision in third orders and above. (Strahler Orders)

Background:

The Act requires that works approvals be granted from the NSW Office of Water and such approvals are of limited scope and size. The NOW has a few hard-working officers working within the legislation but the process of gaining approvals is time consuming, rigidly policed and counterproductive.

There is considerable scientific evidence that the current practices of in-stream work to arrest and reverse stream bed and bank erosion are unsatisfactory and expensive. Recent floods have exacerbated stream degradation, particularly in areas where sodic and dispersible soils apply. Willow removal, spraying of blackberries and elimination of other opportunistic weeds has caused bank slumping and sand slugs to move downstream, mobilising sediments into reservoirs and adversely affecting drinking water quality in major catchments.

Landholders have been encouraged to fence off streams from livestock, plant eucalyptus species and insert stream bed structures (of a height not exceeding 300mm) under programmes supported by CMAs (Catchment Management Authorities). This work has been costly and of minimal value in addressing erosion.

Successful interventions have been scientifically validated at Tarwyn Park, Bylong, Baramul Stud, Widden Valley and Mulloon Creek Natural Farms, Bungendore. Reinstatement of “chains of ponds” or “pool and riffle sequences” will mitigate flooding and erosion, reinvigorate floodplain function and retain soil moisture in times of drought.

Refer: Dr. John Williams (former NSW NRM Commissioner), Dr. John Field (Fenner School, ANU), Professor Richard Bush (Southern Cross University), Professor David Goldney (Charles Sturt University) and Professor John Blackwell (Charles Sturt University).

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3. Reform to management of water licences and the Murray Darling Basin Scheme is also essential and the introduction of new technology in

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order to increase water flows, such as desalination of salt water piped to key spots using nuclear modular plants. A special study has been undertaken on this sensitive topic by a member of the NSW Liberal Women's' Council, as it is essential to both prevention of fires, drought resistance and the future survival of our essential food industry, When water has to be carted by voluntary organisations to towns like Armidale and Bundanoon in NSW we know that we have hit an extremely dire situation. Herewith is a summary:

- (a) Water resource management is the activity of planning, developing, distributing and managing the optimum use of water resources. In this century challenges have been imposed by changing weather patterns. Comparison of Australia with California illustrate similar problems. Except that as droughts have become more severe and longer in Australia, dramatic changes have been made both at a Federal and State level to water resource management which are considerably advanced compared to those just being instituted in California.
- (b) The topic has become a "burning issue" as a result of droughts, which have four faces - meteorological, hydrological, agricultural, and socioeconomic. Whatever the causes of not receiving rain or snow over a period, which often originate upstream of an area, California has experienced an unprecedented long drought since 2011, which has only recently ended in March 2019. During this period and for 13 years before, several types of non-severe extraordinary events occurred in California, including the hardest freezes, heaviest prolonged rain events, longest-duration fog, and worst heat waves (onset and end) in a 21-yr period.

However, in Australia, due to its geography, the country has always experienced extraordinary climate events of great severity. Records over 800 years show although parts of Northern Australia are wetter than ever before, that major droughts of the late 20th and early 21st centuries in southern Australia are likely without precedent over the past 400 years. No scientific study can prove whether this is due to population growth, bad agricultural and water management practices, El Nino effects caused by sunspots, or climate change attributable to greenhouse gases. We need much longer records to attribute causes.

- (c) In Australia, once it became clear that the water resources catchments were fully allocated, the deficiencies of existing systems of water rights became increasingly exposed. Hence water trading was introduced in 2007 under a new Water Act as a pragmatic and user-driven response to emerging circumstances, rather than as a comprehensive strategy. The Act gave new powers to the Federal government overriding State powers, in order to coordinate a national approach to **water management** and meet the challenges facing one vital river system that ran across four States - the Murray–Darling Basin in NSW.

(d) In direct contrast the effect of the Australian water trading system has been blamed for massive river fish deaths and exacerbating the prolonged ten-year drought. This has caused the Federal government in 2019 to introduce significant legislative changes, while the State of NSW most affected has set up three new agencies to cope. However, none of these changes flowed through fast enough to help prevent the disastrous fires which started in Queensland, then spread south.

- (e) Hence, we question the problems of a water licensing system, where foreign investors could profiteer and even own Australian water rights. The flaws in the system have resulted in the

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Federal government buying back water rights, and reconsidering the role of certain types of agriculture, the location of dams and water management in general. An emphasis has moved to sustainability of agricultural practices and water collection, storage and distribution.

(f) It is therefore proposed that the feasibility of piping sea water to key spots along the Murray Darling system, where nuclear modular plants could desalinate and release vital flows into the system for irrigation as well as environmental purposes.

4. Vegetation management on agricultural, mining and forestry land is deficient – so it is proposed that a complete review of all State and Federal legislation on vegetation management be undertaken. (*Refer Appendix B which summarises the relevant items of legislation relating to Vegetation Management*). Leaving nature to take over does not enhance landscape function. There is so much unused land in this country, owned by weekenders and "lifestylers" that is degraded, wasted and a haven for pests (animals and plants) plus areas awaiting subdivision or development. It's all over the Goulburn Mulwaree Shire; it's unsightly, unproductive and subject to regrowth that is simply a fire ground waiting to start. Some obligation must be placed on absentee owners to take care of their land rather than using it for trail bike riding and other "hoon" activities. Land ownership is a privilege and with it goes stewardship responsibilities.

There is also evidence of conservation societies buying back farmland and letting it go wild without adequate water supplies, thereby creating a tinder box.

THIRD TERM OF REFERENCE

(c) Whether changes are needed to Australia's legal framework for the involvement of the Commonwealth in responding to national emergencies, including in relation to the following:

- (i) thresholds for, and any obstacles to, State or Territory requests for Commonwealth assistance**
- (ii) whether the Commonwealth Government should have the power to declare a state of national emergency.**
- (iii) how any such national declaration would interact with State and Territory emergency management frameworks.**
- (iv) whether, in the circumstances of such a national declaration, the Commonwealth Government should have clearer authority to take action (including, but without limitation, through the deployment of the Australian Defence Force) in the national interest.**
- (v) any relevant matter reasonably incidental to a matter referred to in paragraphs (a) to (c).**

a. One suggestion is that a Civil Defence Corps or the Citizen Military Force might be created/used for such national disaster emergencies, similar to the position created for the former head of the RFS in NSW now appointed as Head of a

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Resilience Commission. Reliance on volunteers is fine for little, localised fires, but the conflagrations of 2019/20 were beyond them. This would be a great way to train the young and give them experience in truck driving, aircraft engineering, maintenance of pumps, even taking out a pilot's licence to say nothing of working as a TEAM. They could get the equivalent of NEWSTART for the days they work so everything doesn't fall on employers and sole traders. It's probably politically incorrect to suggest that participation is compulsory but maybe COVID 19 might make a difference to public sentiment.

- b. The question posed in (c) (i), (ii) and (iii) put simply is, "How bad does it need to get" before the Commonwealth should be entitled to intervene. In respect of bushfires, should it be on a hectare/acreage basis; a number of deaths basis; an invitation from the State/States in question? Should a Ministerial Council meet to determine the need for intervention, allowing the State and Commonwealth to confer on the severity of the need and the proposed action to be taken?

We suggest that each relevant State and Federal Minister should be involved in flood, fire and drought issues in collaboration - not just once the disaster occurs but in preparation. The fire experts, BOM and Department of Primary Industries/Agriculture all warned of the impending fire disaster during 2019, well in advance of the actual occurrence. Why was there not better preparation, particularly the provision of firefighting aircraft?

We suggest that the creation of a Special Disaster Corps above could allow a "standby force" be created once the scientists and National Farmers Federation concur on immediate risk – this could also be used in the event of pandemics.

FOURTH TERM OF REFERENCE

(d) any relevant matter reasonably incidental to a matter referred to in paragraphs (a) to (c).

AND We direct you to make any recommendations arising out of your inquiry that you consider appropriate, including recommendations about any policy, legislative, administrative or structural reforms.

AND We direct you, for the purposes of your inquiry and recommendations, to have regard to the following matters:

We would like to submit that the Royal Commission consider the following recommendation for reorganisation of the Rural Fire Service which would involve getting more professional RFS staff to move away from sole reliance on volunteers.

Background

The NSW Rural Fire Service (NSW RFS) was established on 1 September 1997 by the Rural Fires Act 1999. It claims to be the world's largest fire service with a century of experience in protecting the most fire-prone areas in the state.

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Currently the NSW RFS comprises over 2,100 rural fire brigades with a total volunteer membership of approximately 72,000. In addition, over 900 staff members are employed to manage the day to day operations of the Service at District Fire Control Centres, Regional Offices, Customer Service Centres, Operational and Mitigation Support Service bases and Headquarters at Lidcombe. Employment of staff members is governed by the Government Sector Employment Act 2013 (the Act), the Crown Employees (Rural Fire Service 2009) Award (the Award) and the Crown Employees (Public Service Conditions of Employment) Award 2009.

During the 2019-2020 Bushfire season, the NSW RFS crews and other agencies have responded to more than 11,400 bush and grass fires that had burnt more than 5.5 million hectares, equivalent of 6.2% of the state. There was on average around 2,500 firefighters in the field, 25 lives were lost including three NSW RFS volunteers and three US aerial firefighters.

We acknowledge that volunteerism is a long-established tradition in Australia, the volunteer-run NSW RFS is providing fire protection for approximately 95% of NSW's land. Our community-based volunteer firefighter have been contributing their local knowledge, familiarity and expertise in the local fuels, weather conditions and topography to combat the bushfires. However, some issues emerged during the 2019-2020 bushfire disaster have raised concerns from all sectors.

Chart-1 illustrates the ratio of employed staff and volunteers are seriously out of proportion. Having small number of staff to source and manage substantially large number of volunteers during a major disaster has been claimed as unsustainable by both the professional firefighters and volunteers. There were cases that the volunteers reported as 'chaos' and 'couldn't trust the instructions they were given at times'.



Chart-1

To analysis the current status of the NSW RFS volunteer and staffing, and find out the future opportunities, we conducted a SWOT analysis as below,

SWOT analysis

Strengths	Weakness
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<ul style="list-style-type: none"> • Lower costs for the government • Large number of volunteers gives it flexibility for rostering. • Volunteers sourced locally have local knowledge, familiarity and expertise with the local conditions. • Volunteers have a strong sense of 'protecting the local community'. 	<ul style="list-style-type: none"> • Volunteers are mostly unexperienced. • Their availability is an issue. • It's difficult for them to fight for long hours and transferred between multiple locations. • Volunteers had to crowdfund their protection gear and others. • Small number of employees managing a large number of volunteers can cause chaos at times.
<p style="text-align: center;">Opportunities</p> <ul style="list-style-type: none"> • The 2016-2021 Next Generation Workforce Plan has provided training to young members for personal development of the future leaders of the NSW RFS. • New e-membership project has been approved. • Online learning resource were released to membership. • Key operational courses are anticipated to be completed and available in 2019/20. They include Basic Life Support, First Aid Application, Navigation, Wildfire Behaviour, Hydraulics and Crew Leader Introduction. • A new user-friendly Member Website will replace intranet and be available for both volunteers and staff. 	<p style="text-align: center;">Threats</p> <ul style="list-style-type: none"> • Longer fire seasons makes it unsustainable to solely rely on volunteers as they also have to work and feed their families. • The bigger and longer-lasting disasters caused by climate change will push the limit of the volunteer abilities. • The conflicts between volunteer and paid firefighters makes it difficult for paid firefighters to take more control.

Recommendations

With the result of the SWOT analysis we'd like to propose the recommendations as below,

1 Note that the NSW RFS volunteer firefighters have been making extraordinary contributions to protecting the community from major bushfire disasters.

2 Note that the NSW RFS volunteer firefighters have local knowledge, familiarity and expertise in the local fuels, weather conditions and topography.

3 NSW RFS to increase the ratio of professional firefighters by recruiting experienced volunteer

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firefighters by EOI and provide leadership training.

4 NSW RFS to continue the next Generation Workforce Plan to provide training to young members for personal development of the future leaders of the NSW RFS.

5 NSW RFS to re-evaluate its 72,000 volunteer membership and update the database with a focus on the active members. Continue providing both the online and in-field professional training courses to the volunteers.

6 NSW RFS and Fire and Rescue NSW to merge and share some of the resources such as personnel, equipment, learning/training resource.

Reference

NSW Rural Fire Service Annual Report (2019-2020), retrieved from https://www.rfs.nsw.gov.au/data/assets/pdf_file/0004/129892/NSW-RFS-Annual-Report-2018-19-web.pdf

NSW Rural Fire Service <https://www.rfs.nsw.gov.au/about-us/structure>

NSW Rural Fire Service Media Release, (31 March 2020) Fire Season comes to a close in NSW, retrieved from https://www.rfs.nsw.gov.au/data/assets/pdf_file/0003/171921/200331-End-of-season-20.pdf

Why do Australia's Bushfire Defences Rely on Tens of Thousands of Volunteers? Retrieved from <https://www.sbs.com.au/news/the-feed/why-do-australia-s-bushfire-defences-rely-on-tens-of-thousands-of-volunteers>

FIFTH TERM OF REFERENCE

(e) the findings and recommendations (including any assessment of the adequacy and extent of their implementation) of other reports and inquiries that you consider relevant, including any available State or Territory inquiries relating to the 2019-2020 bushfire season, to avoid duplication wherever possible.

Reading through the 1939 and 2009 reports on previous bushfires there is a stark similarity with 2019/20 to say nothing of the Ash Wednesday fires of 1983. To quote - the bushfires of 13 January 1939, known as the Black Friday fires, followed a long drought and a severe, hot, dry summer – all of which factors were present in 2019 but combined with problems with water and vegetation management, and lack of hazard reduction. For all the moisture analysis, stream flow data, remote sensing from space, the on-ground conditions are what affect fire behaviour.

Overall, there have been 18 bushfire inquiries with very little action. Victoria is in one of the bushfire prone regions on Earth, and the two Victorian Royal Commissions both emphasized the

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need to have planning rules to clarify where people can build and to what level of fire protection in order to minimise the death and destruction caused by bushfire.

The 1939 fires were largely caused by human negligence, particularly the sawmilling industry. The inappropriate construction and location of housing was hardly mentioned. The 2009 Royal Commission Final Report made more extensive recommendations that Victoria Planning Provisions 'adopt a clear objective of substantially restricting development in the areas of highest bushfire risk' (recommendation 39) and that 'the CFA will approve new developments and subdivisions only if the recommended bushfire protection measures—including the minimum defensible space—can be created and maintained on a continuing basis' (recommendation 40)¹. The 2009 Final Report also advised that the Commission 'considers that there are some areas where the bushfire risk is so high that development should be restricted' and that 'action be taken to help people move away from those areas where other bushfire risk-mitigation measures are not viable'.

The 1939 bushfires were perhaps the most significant event in the environmental history of Victoria, profoundly damaging millions of hectares of forests, affecting soil fertility and impacting important water catchments. Where the fires were most intense, soil was burned to such a degree and depth that it took decades for it to restore its natural chemistry. Water catchments were severely impacted with ash, dirt and burnt debris being washed into rivers during heavy rain. These contaminated water catchments for years after the fires. Large tree hollows and other important habitat for mammals and birds, including the Leadbeater's possum and powerful owl, were destroyed when the mature mountain ash forests burned. Even today, as you drive through the Yarra Ranges National Park to the north-east of Healesville, you can still see tall, dead mountain ash trees called 'stags' towering above the canopy – these are constant, stark reminders of the magnitude of the bushfires over 70 years ago.

Over 100 fires started on February 16, 1983, the day now known as Ash Wednesday. Prior to 16 February 1983, most of Victoria had experienced a drought lasting 10 months or more. Rainfall over winter and spring was very low, and summer rainfall for Victoria was up to 75 per cent less than in previous years. Low rainfalls meant that there was little moisture in the soil and water supplies in many places were almost dry. The moisture in the air, called the 'relative humidity', was also very low.

Bushfires require fuel such as dry leaves, twigs and other vegetation matter to keep burning and across Victoria, this fuel was very dry, due to the weather conditions, including the low humidity. The forest vegetation in valleys and gullies, which is normally moist in summer, was also very dry. Hot and dry weather towards the end of 1982 gave firefighters an early warning of what might lie ahead. The earliest day ever declared to be a total fire ban, up to that point in time occurred on 24 November 1982.

Causes of the Ash Wednesday Fires

These include sparks caused by clashing of electricity power lines, tree branches connecting with power lines, deliberately lit fires and other causes that were not identified.

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The 2019/20 Summer fires were largely caused by dry lightning. Australians have learned NOT to light fires, use machinery or cause other sparks on "catastrophic" fire days. But this doesn't stop fires if the fuel load is high, there is no humidity, high temperatures and lack of water.

We can control fuel load and lack of water – see our desalination recommendation and therefore mitigate the other two factors.

SIXTH TERM OF REFERENCE

(f) ways in which Australia could achieve greater national coordination and accountability - through common national standards, rulemaking, reporting and data-sharing - with respect to key preparedness and resilience responsibilities, including for the following:

(i) land management, including hazard reduction measures.

(ii) wildlife management and species conservation, including biodiversity, habitat protection and restoration.

(iii) land-use planning, zoning and development approval (including building standards), urban safety, construction of public infrastructure, and the incorporation of natural disaster considerations.

Relevant to all three points but in particular point (iii) is the following submission:

F. (iii) land-use planning, zoning and development approval (including building standards), urban safety, construction of public infrastructure, and the incorporation of natural disaster considerations.

Recommendations:

1. Concrete tanks should be built underground by 'Interested Parties' along border of national parks and properties, with electric pump attached to generator. Water from tanks to be piped to a fire hydrant at the closest access road. This will allow fire trucks to readily access the water in the tanks. Tanks should also be attached to commercial industrial pivot sprinklers which can be turned on along the national parks border during a fire and would be available for use by property owners during times of drought or for general use, and maintenance.
 - a. Each township or large property should build a large concrete tank underground (underneath ovals) for use during drought and bush fires. Tank should be attached to a fire hydrant on an access road.
2. Any new buildings on farms bordering national parks should be built using concrete and steel or fire- retardant materials, to reduce instance of ember fires.

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- a. Solar Panels should be encouraged on all properties attached to Tesla Battery for powering generator in time of black out.
3. 'Interested Parties' to assist owners to continually clear flammable material on borders between national parks and property. Owners be able to clear flammable material from fire trails or fire breaks in national parks which are on the border of their property by tractor or available heavy machinery (as they deem necessary).
4. Majority of RFS trucks should be able to drive off-road. This includes trucks which were deployed from the city, as these were not able to drive up access roads and fire trails during fires.
5. Each RFS unit should have a large water truck attached to it, to follow the fire trucks on the main road, to allow easy refill of RFS trucks during firefighting.
6. Allow property owners to build as many dams as they wish on their property and ensure majority of dams have electric pumps attached to a generator, and can pipe the water to a fire hydrant at closest access road.
7. Every property should have one large water tank (subsidised by govt) which is made of fire-retardant material, such as concrete or fibreglass.
8. Recommend a 200-metre buffer zone be implemented between the highway and start of tree lines to provide a natural fire buffer to property owners.

Some of the measures undertaken by Willinga Park (WP) as part of its environment and fire proofing plans were:

- Built equestrian centre and all outbuildings in concrete and steel – all buildings were constructing using fireproof materials, such as concrete and steel with Colourbond roof. Solar panels were installed on the roof, which generated power kept in their 500k Tesla battery, which ran their battery powered generator.
- As WP had its own power, it had the only working cool room in the district. The fire fighters came to WP for food and the local team stayed on site as it had power and working communication facilities. Locals also came to WP for fresh food and to get news of what was happening outside their location, as there was no other power source in the district. Locals were able to camp in safety on the polo field.

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- WP built multiple dams around the property. These are for use in both drought and for providing water during firefighting. They were utilised by fire trucks and planes collecting water for aerial disbursement.
- WP lay piping from their dams and tanks to fire hydrants, which allowed rural fire trucks to easily access the water in their dams and tanks.
- The Park owns two water trucks which was used to damp down the property during the fire, by the park's own staff.
- WP removed all large trees on their boundary with the national park, and regularly maintained the gap between their boundary and the national park by regularly removing all fuel along the boundary using heavy machinery and tractors. The Park also used their heavy machinery to clear fire trails and tracks in the national park of flammable material, to try and create a fire buffer zone. This was very effective in slowing the pace of the fire as the fire had no fuel to burn.
- Massive concrete water tanks were built under the main building for both ascetic reasons and to reduce evaporation in drought. These water tanks were attached to commercial pivot sprinklers for general use in growing turf on the property. The sprinklers were turned on during the fires to wet down the lower paddock which held all cattle and stock during the fires. The sprinklers on the roof of the main building ensured no embers managed to set the main buildings alight. The main building held over 600 horses as well as all staff and their local family members. No person or animal at WP was hurt during these fires and the fire proofing efforts of the Park meant that the fire did not spread into surrounding properties or the townships. It saved the whole district from serious fire damage.

Comments from WP were:

- WP feels a 200-metre buffer zone between the highway and properties should be allowed, as this will slow the fire or hopefully stop its progress.
- The community had no communication or power and WP property was only property in area with own power supply and communication system for relaying information to locals.
- Main items which had to be ferried in from nearby towns were food and potable water. WP had the only working cool room as they had an independent power supply.

Definitions:

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ROYAL COMMISSION ON NATURAL DISASTERS

Interested Parties: *Owners/Local councils/ State Govt./Federal Govt.*

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(g) any ways in which the traditional land and fire management practices of Indigenous Australians could improve Australia's resilience to natural disasters.

The concepts of mosaic burning or cool season burning are largely based on Aboriginal “fire stick farming”. The latter is most relevant to Northern Australia to control Savannah Fires and takes place immediately following the wet season in order to limit the size and heat of the grass fires in the long (often introduced) species of grasses.

Mosaic burns are again grassland or sparse woodland fires designed to stimulate the germination of fire-loving plants and native grasses. The intention behind these practices is not specifically hazard reduction but rather improvements in biodiversity.

There are two highly regarded references for these strategies – ‘The Call of the Reed Warbler, A new agriculture – a new earth’ by Charles Massy, 2017 and ‘The Biggest Estate on Earth, How Aborigines Made Australia’ by Bill Gammage, 2012.

Massy comes from the Monaro, is a sheep farmer in the high country and has a deep connection with his environment. This publication has received wide acclaim and comprised his PhD Thesis at ANU. However, his landscape is largely open woodland and grassland and not strictly relevant to the densely forested coastal regions that burned so aggressively in 2019/20. Further, as a grazing area, the capacity to reduce fuel loads with both mosaic burning and livestock is enhanced.

Management practices conducted in consultation with Indigenous Australians certainly have a role in the Australian Alps and foothills but the concept of using livestock as a secondary tool is highly contentious. Yet cattle were used extensively throughout Australian history during spring to control fire and to maintain the grasslands above the treeline. This practice is now contentious and has been banned for many years.

¹ <https://www.ffm.vic.gov.au/history-and-incidents/ash-wednesday-1983>

Appendix A

NSW RURAL FIRE SERVICE



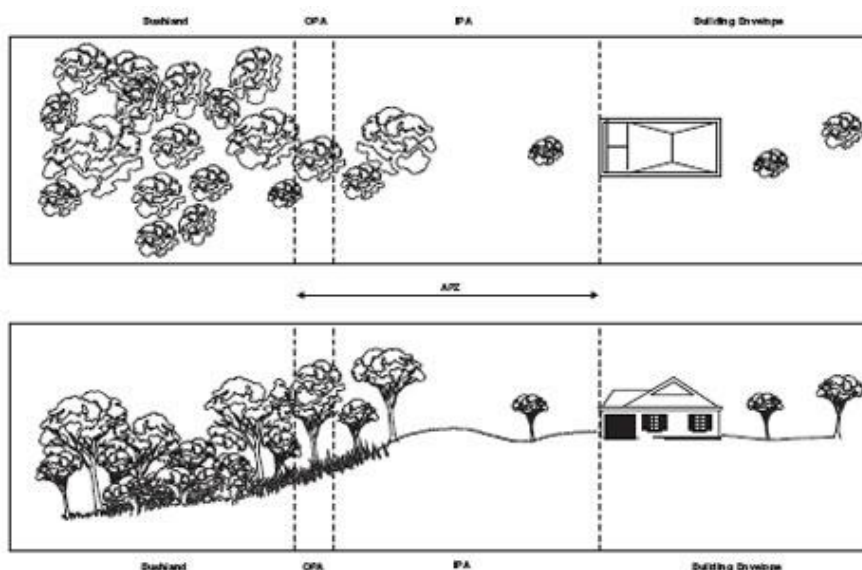
Asset Protection Zones

Development on bush fire prone land will normally require the implementation of a set back distance which is referred to as an asset protection zone. An asset protection zone (APZ) is also known as a fire protection zone and aims to protect human life, property and highly valued assets. It is a buffer zone between a bush fire hazard and buildings, which is managed progressively to minimise fuel loads and reduce the potential radiant heat levels, flame contact, ember and smoke attack on life and property.

The width of the APZ will vary with slope, vegetation, Fire Danger Index (FDI) and construction level. *Planning for Bush Fire Protection 2006* sets out the [site assessment methodology](#) that should be used to determine the applicable width of the APZ.

An APZ can consist of an area maintained to minimal fuel loads and can comprise of a combination of perimeter roads (subdivision), fire trails and managed lands so that a fire path is not created between the hazard and the building.

For forest vegetation the APZ can be made up of an Inner Protection Area (IPA) and an Outer Protection Area (OPA). The IPA should be located immediately adjacent the asset, incorporate a defensible space and significantly reduce the heat intensities at the building surface. The OPA is a fuel reduced area that is designed to reduce the potential flame length by slowing the rate of spread, filtering embers and suppressing crown fires.



Creating an APZ for New Development

An APZ should be located wholly within the development property. Developments should not offset APZ to neighbouring land unless exceptional circumstances apply. You cannot clear vegetation on a neighbour's property or on lands administered/owned by National Parks, the Crown or under the management of your local council without written consent from the owner (an easement or plan of management). For more information about APZ and easements, see [Development Control Note 02 \(PDF 173Kb\)](#) available in our Publications area.

If you are constructing an APZ for a new dwelling you will need to comply with the requirements in [Planning for Bush fire Protection 2006 \(PDF 34,909Kb\)](#) available in our Publications area. Any approvals required will have to be obtained as part of the development application process. *Planning for Bush Fire Protection 2006* outlines the distance requirements for APZ including the requirements for an Inner Protection Area and Outer Protection Area.

The performance criteria and acceptable solutions for APZs can be found in [Chapter 4 - Performance Based Controls \(PDF 20,901kb\)](#) available in our Publications area.

Creating an APZ for Existing Development

If you wish to create or maintain an APZ for an existing structure you may be required to obtain a Bush Fire Hazard Reduction Certificate or other environmental approval. The RFS offers a free environmental assessment and certificate issuing service for private property in bush fire prone areas. This process may provide an environmental approval for up to 12 months at a time only and if ongoing environmental approval to maintain an APZ is required you will need to contact the relevant authority. Contact your local [NSW Rural Fire Service \(RFS\) Fire Control Centre](#) to determine if you can use this approval process.

If you intend to use fire to remove the bush fire hazard from your property you are required to obtain a fire safety permit through the RFS or NSW Fire Brigades. The RFS document [Before You Light That Fire \(PDF 4,347Kb\)](#) explains when a permit is required.

If you believe that the land adjacent to your property is a bush fire hazard and requires clearing to create an APZ, you can lodge a [complaint](#) with the RFS and action will be taken if required.

For more information about the management of an APZ see the RFS document [Standards for Asset Protection Zones](#) (PDF 20,901kb) available in our Publications area.

For more information about each of the six bush fire protection measures to be considered when planning a development in a bush fire prone area, return to the [Bush Fire Protection Measures main page](#).

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APPENDIX B NSW WOMENS' COUNCIL SUBMISSION
Native Vegetation under Local Land Services Act

Please note that the Native Vegetation Act was repealed in 2017 and the sections of the NSW Local Land Services Act that are relevant to these issues appears below:

60B Meaning of “native vegetation”

(1) For the purposes of this Part, native vegetation means any of the following types of plants native to New South Wales—

- (a) trees (including any sapling or shrub or any scrub),
- (b) understorey plants,
- (c) groundcover (being any type of herbaceous vegetation),
- (d) plants occurring in a wetland.

(2) A plant is native to New South Wales if it was established in New South Wales before European settlement. The regulations may authorise conclusive presumptions to be made of the species of plants native to New South Wales by adopting any relevant classification in an official database of plants that is publicly accessible.

(3) For the purposes of this Part, native vegetation extends to a plant that is dead or that is not native to New South Wales if—

- (a) the plant is situated on land that is shown on the native vegetation regulatory map as category 2-vulnerable regulated land, and
- (b) it would be native vegetation for the purposes of this Part if it were native to New South Wales.

Clearing:

60C Meaning of “clearing” native vegetation

For the purposes of this Part, clearing native vegetation means any one or more of the following—

- (a) cutting down, felling, uprooting, thinning or otherwise removing native vegetation,
- (b) killing, destroying, poisoning, ringbarking or burning native vegetation.

Authorised Clearing – can be carried out in the following circumstances

(d) Rural fires authorisation

The clearing was—

(i) an emergency fire fighting act or emergency bush fire hazard reduction work within the meaning of the [Rural Fires Act 1997](#), or

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Native Vegetation under Local Land Services Act

(ii) bush fire hazard reduction work to which section 100C (4) of the [Rural Fires Act 1997](#) applies or vegetation clearing work under section 100R of that Act.

(e) Electricity network operator bush fire risk mitigation direction

The clearing was required to be carried out to give effect to a direction of a network operator under Division 2A of Part 5 of the [Electricity Supply Act 1995](#).

(f) State emergency authorisation

The clearing was authorised by or under the [State Emergency and Rescue Management Act 1989](#) or the [State Emergency Service Act 1989](#) and was reasonably necessary in order to avoid a threat to life or property.

(g) Biosecurity authorisation

The clearing was an authorised action for the purposes of section 386 of the [Biosecurity Act 2015](#).

(h) Plantation operations authorisation

The clearing was the carrying out of a plantation operation on an authorised plantation in accordance with the [Plantations and Reafforestation Act 1999](#), the conditions of the authorisation and the provisions of the Plantations and Reafforestation Code applying to the plantation.

(i) Forestry operations authorisation

The clearing was the carrying out of a forestry operation in a State forest or other Crown-timber land to which an integrated forestry operations approval under Part 5B of the [Forestry Act 2012](#) applies, being a forestry operation that is carried out in accordance with the approval.

(j) Water management authorisation

The clearing was authorised by a licence, permit, approval or other authority under the [Water Management Act 2000](#).

(k) Mining/petroleum authorisation

The clearing was authorised by a lease, licence or other authority under the [Mining Act 1992](#) or the [Petroleum \(Onshore\) Act 1991](#).

(l) Fisheries management authorisation

The clearing was authorised by a licence under Division 6 of Part 7A of the [Fisheries Management Act 1994](#) or was authorised under Division 3 or 4 of Part 7 of that Act.

(m) Survey work

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The clearing was required to be carried out for the purposes of a survey under the [Surveying and Spatial Information Act 2002](#) and was carried out by or under the direction of a surveyor.

(n) Roads authorisation

The clearing was authorised by a consent under Division 3 of Part 9 of the [Roads Act 1993](#).

(o) Private land conservation agreement

The clearing was authorised by a private land conservation agreement under the [Biodiversity Conservation Act 2016](#).

(p) Other legislative authorisation

The clearing was authorised by or under any other Act that has effect despite this Part.

For Landholders

60S Authorised clearing by landholders under codes

(1) The clearing of native vegetation in a regulated rural area is authorised without any approval or other authority under this Part if it is clearing carried out by or on behalf of the landholder in accordance with a land management (native vegetation) code under this Division.

(2) The clearing of native vegetation is not authorised by a land management (native vegetation) code in any part of a regulated rural area that is excluded by the regulations or that is excluded by the code concerned.

(2A) The clearing of native vegetation is not authorised by a land management (native vegetation) code if the clearing is the carrying out of a forestry operation within the meaning of Part 5B (Private native forestry).

(3) Clearing of native vegetation authorised by Division 4 and Schedule 5A is not subject to a land management (native vegetation) code despite anything to the contrary in the code.

(4) A land management (native vegetation) code does not permit clearing or any other activity—

(a) without an approval or other authority required by or under another Act or another Part of this Act, or

(b) in contravention of any provision of or made under another Act or another Part of this Act, or

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(c) if the regulations so provide, without the consent of all landholders or other persons with a specified interest in the land.

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Landholder Approval Mechanism

60ZF Obtaining approval for clearing of native vegetation

- (1) An application may be made to the Panel by or on behalf of the landholder for approval to clear native vegetation on land in any area of the State to which this Part applies.
- (2) The Panel may, in accordance with this Division, grant an approval to clear the native vegetation under this Division or refuse the application.
- (3) An approval for the clearing of native vegetation on any land may only be granted under this Division if the land comprises or includes category 2-regulated land.
- (4) An approval may only be granted under this Division if the land is being cleared for a purpose specified in the application for approval and—
- (a) the land can be used for that purpose without development consent or State significant infrastructure approval under the [Environmental Planning and Assessment Act 1979](#), and
- (b) the clearing of the land is not part of an activity that is carried out by, or that requires the approval of, a determining authority within the meaning of Part 5 of that Act.
- (5) In determining an application for approval under this Division, the Panel is to take into consideration the environmental, social and economic impacts of the proposed clearing (in accordance with the principles of ecologically sustainable development) having regard to the purpose for which the land is to be used after it is cleared. In relation to the environmental impacts, the Panel is to take into consideration (without limitation) the following—
- (a) the likely impact of the proposed clearing on biodiversity values as set out in a biodiversity development assessment report that has been submitted by the applicant for the approval in accordance with section 60ZG,
- (b) whether the clearing of the native vegetation is likely to cause or increase soil erosion, salination, acidification, land slip, flooding, pollution or other adverse land or water impacts,
- (c) any future clearing of native vegetation on the land that has been duly authorised or notified but not yet carried out.
- (6) The Panel must refuse to grant approval under this Division if the Panel is of the opinion that the proposed clearing of native vegetation is likely to have serious and

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irreversible impacts on biodiversity values. Serious and irreversible impacts on biodiversity values means serious and irreversible impacts on biodiversity values as determined under section 6.5 of the [Biodiversity Conservation Act 2016](#) that would remain after the measures proposed to be taken to avoid or minimise the impact of the proposed clearing on biodiversity values.

(7) An approval under this Division may be granted subject to such conditions relating to the clearing as are specified in the approval (including in relation to any matter referred to in subsection (5)). However, an approval cannot be granted subject to conditions relating to the use of the land after it has been cleared.

Note.

The [Environmental Planning and Assessment Act 1979](#) deals with land use.

(8) An approval under this Division may be granted even if part of the clearing is otherwise authorised under this Part or under section 600 (Clearing authorised under other legislation etc).

(8A) An approval under this Division may not be granted—

(a) to carry out forestry operations within the meaning of Part 5B, or

(b) to clear native vegetation on land to which a private native forestry plan under Part 5B applies.

(9) An approval under this Division may be granted subject to a condition that any development consent under the [Environmental Planning and Assessment Act 1979](#) that authorises the clearing of native vegetation on the land is surrendered under that Act. Any such development consent may be granted subject to a condition that any approval under this Division is surrendered under this Division.

(10) An application for approval under this division may be made jointly by or on behalf of a group of landholders. In that case, the application is to be assessed and determined under this Division having regard to the whole area that is the subject of the application.

(11) The regulations may make provision for or with respect to the fees payable in connection with an application for an approval under this Division.