

Submission Number: NND.001.01208

Submission Of: Marie Ferland

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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?

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?

Use of the Army to support disaster relief, including bushfires, worked well according to friends who were directly affected (south coast of NSW and Snowy Mountains); I have not been directly involved in a bushfire (thankfully)

See my attached written submission for additional recommendations and comments.

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

Failure of communications infrastructure and power systems was catastrophic for many, and resulted in major problems including some people making the wrong decisions, and in response and recovery being mis-directed. This must be improved soon.

See my attached written submission for additional recommendations and comments.

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

Reduce Australia's over-reliance on 'prescribed burning' to reduce fire risk (because it doesn't do this and it has a hugely detrimental impact on ecosystems) and put in place better zoning and regulations to insure appropriate buildings in appropriate places.

Fully accept that climate change is here for decades and we need to implement the many and varied required strategies to reduce the risks of and mitigate against a variety of natural disasters. This must start now.

See my attached written submission for additional recommendations and comments.

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

Please see my attached lengthy written submission for and comments.

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

Supporting material provided:

Royal Commission into 2019_20 Bushfires and Natural Disasters_MA Ferland_28 April 2020.pdf

Submission to the Royal Commission into Natural Disasters

<https://naturaldisaster.royalcommission.gov.au/submissions>

by Dr MA Ferland
Geologist and Environmental scientist

Dear Commissioners,

As a geologist and environmental scientist, I have taught university courses in both subject areas for decades, within Australia and overseas, as well as courses in natural hazards. My knowledge and experiences in teaching, conducting and supervising research, working as a consultant and in several government departments, all provide me with the perspective to look at long-term impacts and trends, as well as the short-medium term need to develop practical strategies, regulations and policies to address environmental problems especially with respect to natural hazards.

Australia wants and needs a concerted response to avoid a disastrous repeat of the horrible and devastating 2019-20 bushfire season, and other natural disasters that have preceded it. While Australia had some very disastrous floods and cyclones in the past 150 years, bushfires rank highest among Australia's worst disasters of the past 50 years. Although floods and cyclones have been, and will continue to be locally destructive, many policies, regulations and structural changes have been put in place to reduce their terrible impacts on people and property. The clear lesson to be learned is that Australia must adopt a similar serious approach to planning for and managing bushfire risk and eventuality. This approach should include practical actions that can be put into place in the relatively short-term (months), as well as shifting policy and making major structural changes in both organisations and infrastructure – these will take longer to enact but should still be prioritized.

It is encouraging that finally see that the role of climate change is being accepted and needs to be factored into future responses to natural disasters, and that it is acknowledged that Australia must take action, including the development and implementation of adaptation actions, to address the consequences of longer, hotter, drier seasons and severe weather events. What is essential now is that this knowledge carries through into actual effective policy and regulatory outcomes from this Royal Commission. Australia cannot delay any longer in preparing for this coming season's bushfires or reducing the longer-term risks that climate change will create – we must work to reduce greenhouse gas emissions and land-clearing, save native and old growth forests and established ecosystems (which are generally more fire-resistant), and allow water systems to recover so the landscapes is less dry – all of these will actively contribute to reducing bushfires and ongoing loss of biodiversity.

Recommendations to improve preparedness, resilience and response to natural disasters

Past and current practices of land and vegetation management

This seems to be the single-most contentious topic associated with reducing the risk associated with bushfires. In short, there is growing evidence that past and current

land and vegetation management practices in Australia, as well as our greenhouse gas emissions, have exacerbated the risk of fire. While this was not the intention, it has been the outcome and we need to change the practice in order to reduce the potential for catastrophic fires in the future. Although we will not eliminate bushfires, we can reduce the loss of life, property and equally importantly ecosystems – including our amazing fauna and flora.

Firstly, the correct phrases need to be used consistently in order to have a sensible conversation and set policy to meet the serious and ongoing problems we face. I refer to the terms: 'back burning', 'controlled burning', 'prescribed burning', 'hazard reduction' and 'fuel reduction', and 'planned burning'. The use of 'back burning' is only correct to describe the fire-fighting technique of burning in front of an advancing wildfire to stop its progress by eliminating flammable vegetation. While in the past hazard reduction and fuel reduction burning have been used, they are inappropriate because often they do not reduce the hazard or available fuel – in many cases they seem to increase it. Prescribed burning is also problematic, because increasingly the act of setting a quota of area to be burned has either increased the risk of unintentional damage to buildings and native bushland, or the quota cannot be met because there is such a short window of time available when the conditions are safe to burn; the latter is due primarily to climate change and this will continue for many decades. For the same reasons, so-called controlled burning is often not well controlled and results in unintentional damage as the fire spreads. I include the unnecessary burning of native bushland when that bushland is well away from towns, cities or other critical infrastructure. **The term 'planned burning' seems to be the most appropriate to describe burning for the purpose of wildfire mitigation.**

While the Commissioners will be well aware of these differences, the confusion in the press and among some politicians has really conflated the public response and support for various policies – we need to use clear and correct language to ensure appropriate policy outcomes and community support.

In WA, the purposes of prescribed burning are mitigating the severity of fires by reducing fuel loads, maintaining biodiversity, rehabilitating vegetation after land disturbance, and undertaking research (<https://www.dpaw.wa.gov.au/management/fire/prescribed-burning>). However, there is little evidence provided that these outcomes have been achieved, perhaps due in part to funding cutbacks to DCBA; inadequate outcomes also may be likely in other jurisdictions. In addition, although there were independent assessments of previous planned burns by the Department in the past, this seems not to be happening now which is a concern.

A further concern about the widespread past use of prescribed burning is that it seems to be a 'business' in some locations where local contractors clear land for tracks and firebreaks that may not be needed, and unfortunately they contribute to invasive weeds and pests, erosion especially on slopes, and loss of native habitat. Of course, some tracks are required and should be maintained, but these could be limited.

All fires, including prescribed burning, cost much more than the native bush ad structures they destroy, or the costs of having people and infrastructure on the

ground and in the air. There are short- and long-term costs to people's health as was seen during the 2019-20 bushfires when the air quality was dramatically reduced even in cities that were relatively far from the fires. This resulted in a large increase in respiratory illness, hospital admissions, and even death. Other less obvious impacts are on the agricultural industries, when crops were smoke-damaged, and on native flora and fauna that were adversely affected by smoke.

What we have done and need to “undo”:

- removed most of the big old trees, which don't burn easily and suppress the undergrowth (Wilson et al., 2018, <https://doi.org/10.1071/WF17112>); in WA the old growth karri and marri trees have been cut down for woodchips which is a travesty in terms of their importance in the ecosystem but also has increased fire risk partly because of the discarded wood left after logging
- opened the canopy by removing old growth trees which allows the understory to dry out further and promotes the growth of weeds/non-fire resistant species, both of which also increases the potential fuel load
- prescribed burning with set targets has become a major part of the problem because, in order to meet the annual targets of hectares to burn, some government agencies burn in remote areas where there is little/no risk to infrastructure; this has become increasingly “necessary” with a drier climate and a narrower window for safe burning to reduce fire hazard
- set fires with the aim of reducing hazard but in some cases these got out of control and actually burned houses and/or natural bushland that was not near homes or critical infrastructure (e.g. 2011, Margaret River, WA)
- built wooden/other flammable homes and structures in, or at the edges of the forests, without appropriate regard for their natural tendency to burn
- conducted widespread burning in nonessential areas (away from infrastructure and homes) which has had a massive negative impact on our flora and fauna, by further reducing the number of many threatened and endangered species

We should not and cannot burn the entirety of Australian forests to reduce bushfire risk, so we must come up with other strategies to reduce risks while maintaining our forest and bushland ecosystems.

To improve our management of terrestrial ecosystems, we should:

- protect all forests with old-growth trees and stop logging native forests; this includes all the euphemisms (thinning, selective, salvage, restoration...) used to hide what is actually happening
- eliminate burning quotas and reduce the land area targeted for planned burning to those areas around communities and/or directly adjacent to important infrastructure and buildings, so that burning is restricted to areas of high fire-risk
- consult with/allow communities some autonomy to decide which local areas are to be burned (when it is safe to do so) and where firebreaks should be placed; this will help to reduce the loss of native bushland and improve compliance

- include the health and ecosystem costs into all calculations about planned burning, as well as costs of losses to local economy (tourism, agriculture, wine, etc); this will likely involve additional research in some areas
- improve and enforce building regulations/codes in fire-risk areas to reduce risks to structures and therefore the need to protect them later
- increase the assets and infrastructure available to fight bushfires especially in regional areas that have experienced significant fires in the past
- involve fire ecology experts as well as government officers and local fire-fighters when planning the annual planned burns, and give equal weight to maintaining biodiversity and terrestrial ecosystems
- reinstate the concept and funding for more rapid detection of fires (done using fire watch towers in the past) using remote drone/other technology, so that fires are detected early and can be controlled faster to reduce damage and cost

Communications and power infrastructure

When key infrastructure such as power is fragile, like pine electricity poles, the whole system can (and did) fail. Inadequate communication systems, due partly to damaged power infrastructure, created major challenges and resulted in many problems during this past summer's bushfires, including:

- uncertainty on the ground for firefighters and the community,
- inaction by some individuals because they were not connected/not receiving news updates,
- incorrect action regarding staying vs evacuating,
- less effective recovery efforts – not getting to the most needy people first.

Some things could be done in the **short-term to enhance communications capability to prepare for the bushfires** that will inevitably start later this year, as well as other natural disasters:

- every town in bushfire-prone areas (many!) should be advised to buy hand-held CB radios and/or transistor radios with batteries (and if possible, a small portable solar PV panel for recharging during the days following the fires) to ensure they receive and can send important announcements; this needs to be done before a disaster because inevitably access will be a problem
- clear additional bushland immediately around mobile base stations and transmission facilities to create larger firebreaks and install water tanks onsite for damping down these areas when required
- install stand-alone power sources (such as generators) adjacent to towers especially those that service large areas, so that there is emergency power when the poles burn and/or wires come down
- create a central hub to facilitate information-sharing between the power companies regarding areas without power, so they can prioritize where/when to deploy generators
- make available temporary communications infrastructure facilities, such as Cells On Wheels (COWs), to replace damaged facilities, accompanied by a number of pre-determined sites for each region where these could be placed

Most of these recommendations would greatly help to inform and support officials, volunteers, individuals and communities during any natural disaster, including cyclones and floods.

The Institute of Public Works Engineering Australia identified critical communications system issues, while also acknowledging that the telcos had been very responsive after the fires to get systems working again under extremely difficult conditions (<https://www.ipwea.org/blogs/intouch/2020/02/05/telco-infrastructure-resilience-under-review-after>)

These include:

- any equipment connected via the NBN will not work during a power outage; most network outages following the bushfires were due to loss of power rather than direct bushfire damage to the network
- accessing some sites where mobile infrastructure is located, to assess damage and install generators, was difficult to impossible

Residential infrastructure

Aside from communications and power infrastructure, much more could be done in the short-term to inform people of the importance and effectiveness of having a large water supply close to the house. There were many stories, including the personal experience of several friends in Canberra and the Snowy Mountains, about people whose houses and sheds did not burn because they had sufficient water, and a generator to pump it when they lost power, to repeatedly spray structures with water as the fire approached. Councils and governments should assist by conveying this information to people now so they can prepare, and insurance companies should assist by including this homeowner capacity in their list of policy items covered.

Similarly, people who are preparing now for the upcoming bushfire season should be given a short list of strategies or recommendations about how they can reduce the risk of their homes being ignited by flying embers, without huge costs. While bushfire risk assessments are ideal, apparently there are not nearly enough qualified people to conduct the assessments right now given the large number of people who have been affected in the past few months. Some practical, relatively inexpensive and easy-to-enact suggestions include:

- install a metal water tank now, so that it fills over the coming months and buy a generator and (long) hoses to pump it onto the house
- replace wooden fences with metal fences (less fuel) especially close to the house, shed and garage
- cut back vegetation near houses, especially eucalypts that might overhang
- move garden mulch, rubbish and woodpiles further from houses and buildings
- replace mulch with non-flammable ground covers like pebbles
- enclose open areas under houses, preferably with non-flammable materials

While these all sound like common sense, the large number of people who were not prepared indicates that they either did not know the true fire risk in their area, or had not thought these “simple” actions could make a big difference. Australians who are rebuilding after bushfires, or those building new houses in areas likely to be affected by fires (including based on future climate change predictions), should be given clear instructions when they apply for development approval about both the risks and how

they can reduce substantially those risks. There is an urgent need to revise building codes for all new buildings and structures, and then enforce these codes with appropriate compliance periods for owners to retro-fit in order to protect existing structures. Although bushfire risk assessments are required in some jurisdictions, apparently they are not required everywhere. However, until regulations are changed, there are many practical recommendations including the use of:

- metal roofs and exterior walls when possible, for houses, sheds and garages
- metal fences, rather than timber
- metal water tanks, portable generators and long hoses to dampen structures and surrounding vegetation as fires approach
- less fire-prone vegetation (with high-moisture content) immediately around the house and non-flammable ground covers like pebbles
- having an emergency preparedness kit with CB and/or transistor radios, batteries, and personal protective gear (goggles, gloves, hat, boots and cotton trousers and long sleeved shirt)

Recommendations to improve natural disaster management coordination across Commonwealth and State governments

From news stories and the experiences of personal friends, a major problem was the lack of communication and coordination across state boundaries, especially between NSW and Victoria. This in addition to the lack of power and hence mobile coverage meant that people just didn't know what was happening. In 2020, this should not be the case, except perhaps in localized extreme situations.

There is a huge and immediate need de-politicize the bushfire issue which tends to be have a short-term focus rather than the long-term perspective that is required, as Stretton concluded in the Royal Commission report into 1939 Victorian bushfires. Changing the terminology used to describe planned burning will assist as discussed previously.

While some planned burning may always be required around communities or important infrastructure, this should not be the primary or preferred strategy, either within or between States and Territories. A much greater effort needs to be made to develop Australia-wide policies, with local variations to suit conditions, that are based on solid research into the past effectiveness (including how these areas responded to subsequent bushfires), the direct and indirect costs involved including health and ecosystems, and an increased acknowledgement that we need to take responsibility by building appropriate structures in appropriate places.

There have been at least 50 State and federal inquiries into past bushfires – yet many of their recommendations have still not been implemented even after the policy statement signed off by COAG and published in 2014 (<https://www.abc.net.au/news/2020-01-16/we-do-not-need-bushfire-royal-commission-this-is-why/11870824>). It is important to put in place some/many of these policy recommendations, in addition to listening to the suggestions of those who lived through and fought the recent bushfires, as well as scientists, fire chiefs, and local rural fire brigades.

Necessary longer-term strategies

The RBA Governor, Dr Philip Lowe, has been calling for more federal investment in targeted infrastructure projects for several years (e.g. <https://www.afr.com/policy/economy/rba-s-philip-lowes-infrastructure-comments-commended-by-business-20190521-p51pta>). More recently, Infrastructure Australia has called for federal and state government investment to build the strategic infrastructure to make Australia more resilient to natural disasters and climate change; they placed high-priority on water security plans to ensure access to sustainable water supplies, upgrades to communications systems and power grids, and building alternative roads along priority transport corridors (<https://www.webuildvalue.com/en/infrastructure/australia-infrastructure-priority-list.html>). As

In 2016, the Australian Business Roundtable for Disaster Resilience & Safer Communities estimated that \$17 billion dollars would be needed to directly replace critical infrastructure between 2015 and 2050 due to the impact of natural disasters in Australia (<http://australianbusinessroundtable.com.au/our-research/resilient-infrastructure-report>). These costs have only increased, and has the Australian Strategic Policy Institute <https://www.aspistrategist.org.au/prevention-not-a-cure-reducing-the-costs-of-natural-disasters/> has identified, resilient infrastructure will play a crucial role in helping communities to withstand, respond to and recover from the potentially devastating impact of natural disasters in Australia. But the problem remains that government and the private sector are not required to consider resilience when making investment decisions – this must change.

As Australia rebuilds in response to the financial and employment challenges created by the Covid 19 pandemic, high-priority infrastructure projects should be facilitated to improve preparedness, resilience and response to natural disasters.

Another significant natural disaster that threatens Australia

In addition to bushfires, Australia needs to get serious about **planning for and mitigating against climate-induced sea-level rise and changes in storminess**, both of which will increase our chances for more major natural disasters associated with cyclones. As with all disasters, we can prepare and plan for this reality through a variety of mechanisms which should be put into place as soon as possible, before the threats are again upon us. For the coast these include:

- protection and restoration of vegetated ecosystems, such as mangroves, coastal dunes and tidal marshes, that provide natural resilience to high waves, storm set-up and strong winds
- enact regulations including building codes that will ensure the above happens – these should not be 'aspirational goals' or required 'when practicable' because history has shown that those generally do not work and we will be in the same vulnerable place when the next cyclone hits
- design and build all new infrastructure in the coastal zone – including ports, jetties, wharves, airports, roads, public buildings, etc – to accommodate projected sea-level rise over the next 50+ years

- mandatory set back lines and/or hazard-proof construction for new development, or any rebuilding after storms; this may necessitate buying the most vulnerable coastal land to create parks to buffer cities or infrastructure

The need for a **national coastal inundation protection strategy**, to reduce the impacts of sea-level rise and flooding, was recently identified in Infrastructure Australia's new high-priority infrastructure initiatives released in February 2020 (p. 67, https://www.infrastructureaustralia.gov.au/sites/default/files/2020-03/2020_infrastructure_priority_list_low_resolution_-_updated.pdf). **It is time to make the iconic Australian coast a national priority so that we can benefit fully from the incredible effectiveness of coastal ecosystems in protecting us and mitigating against natural disasters, and their high financial and environmental costs.**

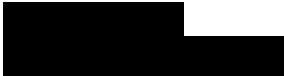
Closing comments

If there is a silver lining to the terrible bushfires of 2019-20, perhaps it is that they highlight the dire need for a renewed focus on the pressures faced by Australia's biodiversity and the urgent need for conservation measures that work – the flora and fauna (large and small) are an integral part of the Australia we love and must be included in planning for and mitigating against natural disasters, including bushfires.

I wish the Commissioners well in their very important and complex task.

Yours sincerely,

Dr MA Ferland

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