## Your details

**Title**
Dr

**First name**
Sarah

**Last name**
Waddell

**Email**

**Address**

## Submission details

**I am making this submission as**
A resident in a bushfire-affected area

**Submission type**
I am making a personal submission

**Consent to make submission public**
I give my consent for this submission to be made public

## Share your experience or tell your story

## Terms of Reference (optional)

The Inquiry welcomes submissions that address the particular matters identified in its [Terms of Reference](#).

**1.3 Response to bushfires**
Item 3 and Item 8 -

## Supporting documents or images

**Attach files**

- Items 3&8 Response to bushfire_Dr Sarah Waddell_0.pdf

**Items 3 and 8 – Early response to bushfires**

This submission particularly concerns human and capital resourcing of response capacity for detecting and controlling unwanted bushfire, particularly in remote areas, within the first 24 hours.

I am writing as an environmental lawyer who has taught at the UNSW Faculty of Law, contributed to the work of the Australian Panel of Experts on Environmental Law, and worked as both a solicitor and international environmental law consultant. I am a resident of Kangaroo Valley in the Shoalhaven and a member of the Kangaroo Valley Community Bushfire Committee. I have received copies of the following submissions to the NSW Independent Bushfire Inquiry to which I refer:

(a) Volunteer Fire Fighters Association (VFFA); and
(b) Emergency Leaders for Climate Action (ELCA).

**<u>Recommendations</u>**

1. The State to adopt an approach to bushfire control that measures success in reference to the extent to which the regional landscape (national parks, state forest and other forms of landholding across rural NSW) remains unburnt by bushfire in any given fire season as well the minimising of loss of homes, buildings and human life.
2. The State revise bushfire management policy regarding rapid response and early extinguishment to include an objective to put out unwanted bushfire within the first 24 hours and before it exceeds 10 hectares.
3. The State to collaborate with the Commonwealth towards the application of new technology for lightning anticipation and early detection, and the application of early bushfire detection methodology, such as bushfire scanning technology.
4. The State to work with the Commonwealth and other states and territories towards the purchase or lease of aircraft suitable for rapid extinguishment of bushfire in remote areas such as medium-sized, amphibious water-scooping aircraft and twin engine purpose-built aircraft.
5. The State to collaborate with the Commonwealth and other states and territories in preparing guidelines and criteria to be applied by decision-makers in mobilizing rapid aerial first attack and deployment of ground crews including:
   - assessing the weight of attack in the allocation of firefighting aircraft
   - mobilizing the aerial attack
   - trigger points and mobilisation of Remote Area Firefighting Teams (RAFT)
   - coordination between aerial force controllers and RAFT ground crew leadership.
6. The State to review the structure and function of RAFT including:
   - assessment of human and capital resources necessary to meet future needs
   - re-structuring RAFT and possibly locating RAFT within a single agency, for example, the NSW NPWS.
7. The Department of Planning, Industry and the Environment to update its fire management strategy for national parks and state forest taking into account the vastly increased area of land that was impacted by bushfire over 2019-2020 including:
   - capabilities of relevant agencies
   - the need to boost remote area firefighting capacity
   - respective roles and responsibilities between state and federal agencies concerned with bushfire fighting.
8. The NSW NPWS to update bushfire management strategy for each national park, state forest and other form of nature reserve.

**Introduction**

As stated by the Department of Planning, Industry and the Environment
https://www.environment.nsw.gov.au/topics/parks-reserves-and-protected-areas/fire/park-recovery-and-rehabilitation/recovering-from-2019-20-fires/understanding-the-impact-of-the-2019-20-fires:

> The 2019–20 bushfires in New South Wales (NSW) have been unprecedented in their extent and intensity. As of 3 February 2020, the fire ground in NSW covers 5.4 million hectares (7% of the state), including 2.7 million hectares in national parks (37% of the NSW park system).

Half the fire ground in NSW was in national parks and, furthermore, many of the fires actually started in national parks or state forest.

As an environmental lawyer, it appears clear that the 2019-2020 bushfires have caused a level of devastation to our natural environment that overwhelms environmental protection and biodiversity conservation measures provided in Australian environmental law at both the State and Federal level.

Priority should be given towards maximising the response to unplanned bushfire in the early stages in order to minimise the spread of bushfire. To this end, surely a key concern of government should be to prepare human resources and capital sufficient for a rapid response to quickly and effectively extinguish bushfires at the outset before they can become so big that the only response available is one of containment for the purpose of protecting human settlements and lives. Such rapid response capability is particularly important in remote areas that are often part of national parks or state forest.

There is a strong argument for a nationally uniform approach given that a megafire, such as the fires experienced over 2019-2020, has every capability of crossing over state borders. Even if it is retained within a particular state or territory, the size of a megafire is capable of impacting the national economy. The financial cost involved in establishing an effective rapid response capability will be more than offset by the saved economic short-term and long-term costs that inevitably flow from a massive bushfire.

**The current approach to bushfire management in NSW national parks**

*NSW State-wide approach*

Bushfire management strategy is guided by the state-wide fire management approach prepared by the Department of Planning, Industry and the Environment as detailed in a document entitled *Living with Fire in NSW National Parks – A strategy for managing bushfires in national parks and reserves 2012-2021* https://www.environment.nsw.gov.au/research-and-publications/publications-search/living-with-fire-in-nsw-national-parks ('the Strategy').  The Introduction to *Living with Fire* states

> Most unplanned fires are contained and extinguished by firefighters before they cause significant damage. However, during severe, extreme or catastrophic fire weather events, some bushfires can escalate to a size and severity well beyond our fire suppression capability and will often pose a serious threat to life and property.

The tone of this statement is no longer appropriate given our failure at bushfire containment over the 2019-2020 fire season and the huge damage that occurred, not only to human life and property but to whole ecosystems and flora and fauna across the landscape of NSW.

At 3.3.2, the Strategy states that 'the percentage area burnt on parks and reserves over the last twenty years from both prescribed burns and from wildfires has averaged 3.6% per annum, or 3.8% over the last 10 years.' At 3.3.5 it is stated that '[o]ver the last 35 years the average annual area burnt by wildfires on parks and reserves is approximately 144,000 ha.' The question needs to be asked whether the approach demonstrated in the Strategy is viable when, during the 2019-2020 fire season, the area burnt was 2.7 million hectares – 37% of the NSW park system?

Capabilities

At 4.2 under Capabilities, the Strategy states that the NPWS has a firefighting force of around 1350 staff who are equipped to undertake various firefighting roles, including rapid response and remote area firefighting, and staff who specialise in incident management. They also have a 'well-maintained fleet of firefighting vehicles' comprising a large number of light 4WD vehicles which are optimal for firefighting in rugged country and a specially outfitted helicopter fleet'. It states that there is a government-funded rapid wildfire response program for 2011-2016 but no detail is provided. Other capabilities are said to be

- a risk-based level of preparedness of regional staff enabling early detection and safe and rapid response capability to bushfires
- cooperative arrangements (joint management plans and agreements) with adjoining states and territories and with other firefighting agencies and peak bodies.

Given the events over 2019-2020, the 'risk-based' level of preparedness would appear to need revisiting as well as the capacity for early detection and rapid response, set out in joint management plans and agreements.

Remote area firefighting

The start of a bushfire in a remote area is particularly concerning as it may be difficult to extinguish in the early stages and then become too large to contain, as occurred with the Currowan fire. As set out in the Strategy at 4.2.1

> NPWS maintains dedicated aircraft and employs seasonal remote area firefighting crews in conjunction with RFS during the bushfire danger period to rapidly and safely respond to wildfires, especially in remote and difficult to access areas. The remote area firefighting capacity includes:
> - conducting specific training for helicopter winching and hover exit for remote firefighters
> - maintaining a fleet of specially equipped helicopters for remote area firefighting
> - conducting fitness testing for all staff involved in on-ground fire management activities
> - employing highly trained teams of remote area firefighters
> - following the Joint Operational Protocol for Remote Area Firefighting.
> As a result, nearly 80% of fires over the last 10 years have been contained to an area of less than 100 ha (Figure 9).

The events over 2019-2020 put into doubt whether the current arrangements for remote area firefighting are anywhere near adequate given the change in fire conditions. For example, there is no guidance as to when aerial rapid response will be required.

*Morton National Park*

National parks and reserves in NSW have specific fire management strategies to assist the NSW National Parks and Wildlife Service (NPWS) in managing bushfire https://www.environment.nsw.gov.au/topics/parks-reserves-and-protected-areas/fire/fire-management-strategies.

The Morton National Park (North of Shoalhaven River) Fire Management Strategy dates back to June 2006 https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Parks-reserves-and-protected-areas/Fire-management-strategies/morton-national-park-north-of-shoalhaven-river-fire-management-strategy-060677.pdf

It states that the NPWS is responsible for fire management but that any fire authority may initiate size up and attack with advice to NPWS upon initial fire sighting and report. Class 1 fire suppression operations may remain under command of the initial attack agency following assessment and advice of NPWS.

In relation to foam and retardant use it states: 'Avoid foam and retardant use within the reserve unless there is significant necessary operational advantage. DO NOT use on or near rainforests, water courses, wetlands or swampy areas.'

In relation to aerial operations it states that aerial operations 'should be briefed on location of transmission lines in the area' and should be 'postponed or abandoned if there is a high risk of a storm moving through the area, or there is a significant wind change anticipated…'.  There is nothing to say when aerial operations must be carried out.

**Events as they occurred at the beginning of Currowan bushfire**

It is well known that 82% of the Shoalhaven Local Government Area was burnt by the Currowan bushfire. This fire started in State Forest and proceeded to burn out vast areas of the South Coast including the Morton National Park and areas in the western parts of Kangaroo Valley.

The cause of the Currowan Fire was a lightning strike in the difficult terrain of ridges and gullies of the Currowan State Forest https://www.canberratimes.com.au/story/6575661/the-currowan-fire-a-monster-on-the-loose/. The agency who sought to control it was the Shoalhaven RFS. Within one week it was already 11,500 hectares in size and had reached the Princes Highway.

It needs to be investigated, and put on the record, exactly what happened in the first few days of the Currowan bushfire as lessons may be learned from this experience. According to information available to the Kangaroo Valley Community Bushfire Committee, the Shoalhaven RFS was allocated responsibility in the early stages of the fire and struggled to meet the challenge.

Some questions that need to be answered include:

- How well organised were the Shoalhaven RFS in responding to the Currowan fire in the early stages? What hindered their level of organisation?
- Was a Remote Area Firefighting Team (RAFT) activated?
  If yes, how long did it take to activate the RAFT and were there any obstacles in gaining a quicker response? If not, why not?
- Could a better result have been achieved if a RAFT from NPWS or WaterNSW had been activated?
- Were there pre-existing trigger points for the mobilization of an RAFT? If so, what were they? Were they effective?
- What could have been achieved with effective aerial support? What sort of aerial support was available at the time and what was provided?

**Towards a new approach for rapid response**

It is clear that improved rapid response to bushfire in remote areas will be essential if we are to avoid further loss of vast areas of the landscape. We know lightning strikes have become more prevalent and will continue to do so as part of our warming world. Clusters of lightning-caused fires were observed this fire season. As stated in the ELCA submission (pp.43-4):

> Many fires were started by lightning in northern NSW, the Hunter region, the Blue Mountains, the southern ranges, and southern alpine region.
>
> Coupled with multiple days of Severe, Extreme and Catastrophic fire danger, despite many of the fires being controlled in the early stages, many others grew to mammoth proportions and resulted in significant losses.

Such lightning strikes are likely to occur in remote areas and, therefore, it is entirely foreseeable that there will be more and more fires starting in remote areas, out of easy reach of the traditional RFS, and that these fires will have the potential to rapidly increase in size to become megafires, especially in times of low rainfall and higher temperatures.

Responding to this new challenge requires a change in mindset away from measuring success primarily in terms of how many homes and lives the RFS and other emergency services save. Success needs to be measured in terms of how many hectares of landscape, including ecosystems in national parks and other reserves, as well as freehold land, remain bushfire free during a fire season.

ELCA has identified a benchmark for rapid response to bushfire as putting out a bushfire within 24 hours and before it exceeds ten hectares (Recommendation 16). Importantly, as stated by ELCA (p.45), there are three areas in which concerted effort by the government would make a difference:

1. Rapid, accurate fire detection and location capabilities
2. Rapid aerial first attack to contain the fire until arrival of ground crews
3. Rapid deployment of highly trained remote area fire teams.

### 1. *Rapid and accurate fire detection and location*

According to ELCA, rapid and accurate fire detection will require improved lightning detection systems (p.45) combined with improved fire detection technologies which, according to ELCA, might include (p.45):

- remote controlled cameras capable of identifying smoke
- infra-red and thermal imaging technologies capable of identifying new fires
- use of large drones and advanced imaging
- increased use of satellites
- increased aerial patrols
- use of existing fire lookout towers

The VFFA have commented that given smoke detectors have had a major impact on structural fire detection and help to promote early escape and suppression, why can't we embrace the technologies that already exist to detect a bushfire in its early stages? They go on to say (p.11)

> In the past, we have operated a few fire towers in strategic positions around the state of NSW, but they are not generally staffed all year round. With modern technology, it would be possible to install automated scanning technologies that could detect fires in the early stages all year round. Another alternative or additional strategy is the use of drones or unmanned aircraft to scan the landscape at

certain times. Bush fire scanning technology may be costly but when compared with reactive firefighting measures such as aircraft and aviation services, the pro-active expenditure becomes more palatable.

### 2. Rapid aerial first attack to contain unwanted bushfire until arrival of ground crews

Building sufficient capacity for rapid aerial first attack can be divided into a number of components along with the type of required government action:

| Component | Action by government |
|---|---|
| Sufficient aerial force capability | Capital investment or allocation of financial resources to ensure sufficient aerial force capability |
| Criteria for assessing the weight of aerial attack to be deployed in a particular instance | Policy-making and strategic planning including setting of criteria for decision-makers tasked with assessing the weight of aerial attack to be applied |
| Capacity to provide sufficient force within the required timeframe | Allocation of human resources and strategic planning to mobilise sufficient aerial force within the required timeframe |
| Coordination between aerial force controllers and ground crews | Strategic planning and guidelines setting out who is to do what, and how, to ensure coordination between aerial force controllers and ground crews |

*How to achieve sufficient aerial force?*
ELCA have recommended that rapid attack should involve dispatch of a suitable number and type of fixed and rotary winged aircraft. There are short-comings with both helicopters and larger aerial tankers. Whilst helicopters of various sizes can be used in rapid first attack, the remote location of a lightning strike may make it difficult to reach quickly. A large aerial tanker (LAT) (Boeing 737 jet - 15,000 litres) or a very large aerial tanker (VLAT) (DC10 jet - 35,000 litres) can only refill at a few major airports.

In comparison, medium-sized air tankers capable of scooping from water sources and landing at local air strips for manual filling can establish rapid turnaround and constant direct aerial attack. ELCA have pointed out that experience in other countries has demonstrated the usefulness of these aircraft (CL415 and Be200) for a flexible and fast attack role. ELCA has noted that these aircraft can be used in conjunction with 3,200 litre single engine air tankers (SEAT). They have recommended (Recommendation 16) that given the success of 3,200 litre single engine air tankers (SEAT), a purpose-built twin engine aircraft with significantly greater air speed, range, flexibility and twice to four times the payload would be a logical addition to current arrangements.

A question that needs to be answered is how to finance a sufficient level of aerial force? Allocation of financial resources will be required either through purchasing or leasing aircraft. It may be more efficient to build a national aerial firefighting force – one that is capable of moving between fire outbreaks in each state and territory. Given the high level of piloting skills required and specific characteristics of the aircraft, there may be advantages in the Commonwealth contracting out activities involved in rapid aerial first attack.

*Gauging the most suitable weight of attack*
Decision-making in respect to mobilization of aircraft when there are competing needs should be transparent and accountable. Hence, criteria and guidelines will need to be prepared.

*Coordination with the arrival of ground crews*
RAFT ground crews will also need to be rapidly mobilised which is likely to need coordination with aerial activities. This will require a level of strategic planning and guidelines to set out who is to do what, when, and how.

### 3. Rapid deployment of highly trained remote area fire teams

In many instances, RAFT will formed by the RFS. Given that the RFS is a volunteer-based organisation and the skills required in remote areas are specialist skills, it would appear appropriate to transition the RAFT to a professional body. According to ELCA, it makes sense to enhance the ability of NPWS to form RAFT from amongst its full-time ranks, and for NPWS RAFT to be transported rapidly to fire scenes across NSW. However, some background questions that may be need to be answered include:

- Do we have sufficient personnel in NPWS RAFT? If not, what level of personnel is required?
- Is there a sufficient level of training? If not, what more is required?
- Are the NPWS RAFT adequately resourced in terms of vehicles and equipment?
- How quickly can NPWS RAFT be deployed and how could that be speeded up?
- Who would be in charge of coordination of NPWS RAFT with a rapid aerial response?
- Should there be a national approach to RAFT to ensure standardised operations?