



Royal Commission into National Natural Disaster Arrangements

Submission Form

Please complete this form if you would like to provide input or comments about coordination, preparedness for, response to and recovery from the 2019-20 'Black Summer' bushfires.

Personal and Background Information

1. **Full Name** Graeme Douglas Thom
2. **Email** [REDACTED]
3. **Mobile/Telephone** [REDACTED]
4. **What is your preferred method of contact if we want to follow up with you?**

email

As above [REDACTED]

5. **The Commission would like to understand the views of community groups based on their respective experiences and background.**

- a. Please select Option 1 if you are providing input and comments primarily based on your personal situation.
- b. Please select Option 2 if you are providing input and comments primarily based on your professional knowledge, qualifications or experience, or on behalf of a group or organisation

Option 1: Based on your personal situation, please complete the following.

- a. What was your personal situation in relation to the 2019-20 Bushfires? Please choose all that apply.
 - I was not living in an area affected by bushfire
 - I lived in an area affected by bushfires but was not evacuated, and didn't suffer personal or financial loss
 - I lived in an area affected by bushfires and was evacuated, but didn't suffer personal or financial loss
 - I lived in an area affected by bushfires and was evacuated, and I suffered personal or financial loss
 - I was part of the emergency response as a fire fighter on the ground

- I was part of the emergency response as an aerial fire fighter
- I was part of the emergency response as health professional
- I was part of the emergency response as an Australian Defence Force member
- I was part of the emergency response as a Commonwealth or State government employee
- I assisted the emergency response as a community support volunteer
- I assisted the emergency recovery (i.e. after the fire event) as a community support volunteer
- Other

b. Where do you live? Please provide your Local Government Area, town name and post code.

Local Government Area Choose an item.
Town name
Post code

Option 2: Based on your knowledge, qualifications or experience, or your role representing a group or organisation, what is your area of expertise? Please choose all that apply.

- Emergency/disaster response and/or management
 - Environment/land management
 - Land use, planning, building standards
 - Impacts of changes in climatic conditions
 - Wildlife conservation
 - Traditional land and fire management practices of Indigenous Australians
 - Community welfare
 - Other
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Input / Comments

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

The coordination between all agencies and at risk communities.

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

Despite enormous effort and heroic commitment, governments and response agencies are still using inadequate, outdated and ineffective tools, tactics and strategies in the same way that bayonets and bullets being used against the advent of tanks in the first world war was ineffective.

It is critical, if we are to avoid similar disasters in the future, that we change the way we think and act in regard to our emergency response to these fires.

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

I comment in particular with regard to the area of response activities.

That is in the areas of detection, locatiion, risk assessment, monitoring and rapid response to future bushfires.

Irrespective of the cause or contributing factors to global warming, in particular over the land mass of Australia, global warming and population growth are factors that are with us, and will continue to be so for some time to come. Therefore it is imperative that we urgently review the way in which we are responding to bushfires.

We currently have sufficient resources and technology available (both within Australia and intrternationally) to do far better in the areas of Detection e.g. arial and satellite techniques, Location Identification - including early fire boundary identification, Risk identification e.g. human and animals within boundary areas, at risk assets e.g. nursing homes and power plants) and current and predicted weather conditions, Monitoring e.g continued use of best satellite technology and best scenario modelling and, most importantly in how, and with what we respond to the much earlier detection of fires.

This last matter, the 'how and with what we respond' is the significant 'game changer'. Using the vast knowledge, creativity and capability of our scientists, engineers, military and existing emergency service and land management agencies in Australia and internationally, we can coordinate a, 'JFK mission to land a man on the moon' type of goal to eradicate the disasterous impacts of bushfires, not only in Australia, but around the world by the end of the century.

If we have the will, we will find a way.

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



I am a firefighter with over 40 years experience (QFES), including fighting many bushfires. I was the Chair of the Australasian Fire Authorities Council's Built environment committee for over 10 years. Have been awarded the AFSM for leadership and the Australian Centenary Medal for services to the Australian community as well as a number of other awards.

My only intention is to help prevent the devastating and ongoing loss of life, property, the environment and the economic loss that Australia faces year after year after year. I situation which I believe is unnecessary and avoidable.

I wrote to the Prime Minister earlier this year and received a polite and bureaucrat response to my letter. The response was that my issues, ideas and recommendations would be passed on to the relevant department etc. Everybody is busy, I get it, so I have not heard any further.

To paraphrase Einstein, 'if we continue to do what we have always done, we will always get what we've always got".

Graeme D Thom AFSM

10. Do you intend to provide supporting material?

Yes

No

If you are providing any supporting material, please include it with your Submission if possible. If you need to send it separately (e.g. if you make a Submission over the phone), please ensure supporting material can be clearly identified as relating to your Submission by including your name or other identifier so that it can be considered with your Submission.

11. Do you agree to your submission being published? (Mandatory)

Yes, I agree to my submission being published in my name

Yes I agree to my submission being published anonymously

No I don't agree to my submission being published

Once you have completed this form, email it to rcnda.submissions@royalcommission.gov.au or print the form and post it to the Royal Commission at:

National Natural Disaster Royal Commission
Locked Bag 2000
Manuka ACT 2603

Royal Commission into Natural Disaster Arrangements at a national level in response to the extreme bushfire season in 2019-20

Graeme D Thom AFSM

On 11 September 2019, I wrote to the Prime Minister and asked him to convene and to deliver the opening address to a national summit established to better prepare for and respond to fires in the 2019-2020 bushfire season.

Even before September last year most fire services, land agencies and fire research scientists knew we were facing potentially catastrophic circumstances for the 2019-2020 bushfire season. It was not rocket science. The summit did not occur. What did occur in that bushfire season was significant devastation including loss of bush land and vegetation including productive farm land, 6000 homes affected, 34 deaths and billions of dollars in economic loss with billions more to come in economic recovery including physical and mental issues such as post traumatic stress disorders, depression and even domestic violence issues.

Paraphrased is part of what I wrote in the letter to the Prime Minister,

Dear Prime Minister Morrison, I am a retired Firefighter (41 years) and still maintain a passion for protecting life, property and the environment from fires and other emergencies. Due to the increasing likelihood, severity, duration and ferocity of bushfires currently occurring across Australia, and projected to continue to do so into the future, I am asking you as a matter of urgency to call for a national summit. Specifically, to address how Australia responds to these and future fires. Further, I am suggesting that this summit be opened, and initially chaired by yourself.

While it is true that we already have two national bodies involved in addressing this issue i.e. The Australasian Fire Authorities Council (AFAC) and the Bushfire and Natural Hazards CRC (<https://www.bnhcrc.com.au/organisations/afac>) these agencies both separate and together still lack the punch that is needed and must be provided by a much higher level of political activity. States too provide enormous input in research and manpower, but here's the problem, it is a fight, (it is a War).

Due to climate change, manmade or otherwise, the fight is increasingly being won by the other side, that is, the fires. It is analogous to us as soldiers on one side of the battle using rifles and bayonets facing the first ever armored tanks. On our side we continue to try out different bayonets, longer ones, or sharper ones. We even try adding more troops and try to attack the 'tank' in a different way, but with limited success and great loss of life. Invariably it is too little and or too late. We need new thinking. Einstein said, "We can not solve our problems with the same level of thinking that created them".

It is key role of any government to protect its people, I therefore went on in the letter to the Prime Minister to propose that a clear goal be established as an outcome from the summit to do just that, to protect the people in effect *to eradicate by the end of this decade the onset, impact and consequences of unwanted and uncontrolled fire.* By doing so and achieving it or

even only mostly achieving it, life, property, the environment and our economy would be better protected. Some of the potential benefits and outcomes of convening this summit would be actually doing, and be seen to be doing the right thing, and also the opportunity of monetizing the science and technology spin-offs created or invented as a result of progressing and achieving the goal would be huge.

There are two key components to achieving the goal these being,

- (A) To discover the inner workings of fire, to go deep into the belly of the dragon, to better understand the physics, the chemistry the quantum mechanics of fire and to find the switch that turns it off.
- (B) To radically change the way in which we attack a fire. First, how we deliver an extinguishing medium to the fire and second, discover and develop better extinguishing medium to use when we get it there and into the fire zone.

Part (A), and the two elements of part (B) need to be addressed simultaneously with the first part also feeding into second. Recognizing however that how we deliver an extinguishing medium to the fire, and using a better extinguishing medium on the fire when we get it there, are not necessarily or entirely dependent on part (A).

The first part then, part A, is about establishing at a national level and with international input, a collaboration of an array of scientists across a wide range of scientific expertise. Again this part of the goal in no way decries the great work already done and being done by the scientist and other staff currently working with the Bushfire & Natural Hazards CRC (Cooperative Research Centre), or through AFAC (Australasian Fire & Emergency Service Authorities Council). Both these agencies do great work, and although possibly needing structural streamlining and other reforms including possibly a realignment of Head of Power arrangements, they need to continue to do their work in one form or another including as part of the overall national goal that I am proposing.

However, three points need to be made. First, neither of these agencies is directly driven at the highest political level, second each agency has multiple influences, and influencers at each government level, also by universities currently undertaking collaborative research and also being influenced at individual fire and land management agency levels, third (almost beyond belief) the Bushfire & Natural Hazards CRC is due to be wound down as a government funded establishment in June next year (2021) under the 2015 review recommendations.

So achieving part (A) of the goal is about two aspects, first the setting up at the highest possible political level the goal, and second bringing together a much broader array of scientific knowledge, experience and expertise than currently exists in the BNH-CRC. That is a broader range of scientists that can be involved in achieving part (A) of the goal through pure research into just the one subject – **better understanding fire - and how to make it stop, each objective equally important**. This would clearly involve, but not be limited to the chemistry, physics and quantum mechanics of fire but also include many scientists outside of those direct fields.

Much science is already being conducted into fire, but possibly only in what appears to be in an ad hoc, internationally uncoordinated way. At the very least, the following scientific fields

and types of scientists should be considered for involvement, analytical chemists, atmospheric chemists, computational chemists, electrochemists, nuclear chemists, physical chemists, quantum chemists, agro chemists, theoretical chemists and thermo chemists. Also involved would be atomic physicists, and chemical physicists along with mathematicians, systems scientists, computational scientists, military scientists and industrial and applied scientists being part of the (A) team.

Part (B) then is to **radically change the way in which we can attack a fire**. Firstly, **how we better deliver an extinguishing medium to the fire zone** and second, to **discover and develop better extinguishing medium to use** once having got it to the fire zone. So firstly, water, still being the main firefighting medium is currently delivered to the fire zone by the use of mobile ground fire appliances of various types carrying it from one point to where it is then applied at another point onto the fire via hose lines. Secondly it is taken to the fire ground via rotary or fixed wing aircraft of various size and capacity with the extinguishing medium (mostly water) being dropped onto the fire or fire line.

A current limitation of these delivery systems is that by the time many of last seasons major fires were impinging on, or close to over-running human, animal and property locations, the amount of water (including with the inclusion of fire retardants, gels and foams) able to be dropped on to and the limitations on how it is directed into the fire zone area via hose-lines, Bambi buckets or scoop and drop from fixed wing aircraft, is insufficient and ineffective on the severity of the fires being faced. Providing more of these types of delivery systems (aircraft –fixed wing, rotary and drone) will help and may be necessary, but not sufficient alone in themselves to meet the threat.

What is proposed for exploration therefore, is the use of military type ground systems (e.g. rocket powered mine sweeping systems) and various aircraft (fixed wing, rotary and Drone) as a supplement to existing National Aerial Firefighting Centre (NAFC) resources <http://nafc.org.au/> and its deployment mechanisms . An example may be the use of Blackhawk helicopters and the use of their systems to deliver through their armament, a specifically designed extinguishing medium onto the fire e.g. using its rockets and various caliber ammunition containing various new forms of extinguishing product. The use of military armament to provide an explosive force of air into a fire zone, or across a fire front should also be considered and attempted.

To better explore and develop these systems a subset team a consisting of AFAC and BNH-CRC representatives, relevant military experts in ground and air firepower delivery systems, various engineering fields, Fire Protection industry organizations and others to better explore new ways to take new extinguishing medium to the fire ground and to be able to direct it into the fire zone or across a fire front.

Because water (with or without additives, e.g. gels, retardants and foams) is still the main extinguishing medium used on fires, the use of it, and they way in which we use it, needs to be reviewed along with seeking alternative extinguishing mediums e.g. a return to BCF (Bromochlorodifluoromethane) as the extinguishing product, or other halon like products that could affect the chain carriers that continue the chemical reaction of fire.

A second Subset team should therefore be established to better explore and develop new extinguishing medium to be used by the newly developed (military style) delivery systems, or in other new ways and consist of representatives of scientists working in the fire protection

industry and representatives of those working to establish better delivery systems [subset (i)] and liaising with those seeking to better understanding fire and how to make it stop as an end in itself [the (A) team].

The latin phrase '*Ignis est servus non dominus*' – *Fire is the servant not the master*, is a term used by many fire services, it is time to make this true. I concluded the first article with, "If we have the will we can find a way", to conclude on the matter, 'We must have the will, and we must find a way',

To eradicate by the end of this decade the onset, impact and consequences of unwanted and uncontrolled fire. To better understand the quantum mechanics of fire and discover the switch that turns it off and, to change what we use, and how we deliver it to extinguish fire.

Yours sincerely

Graeme D Thom AFSM