

Submission Number: NND.001.00454

Submission Of: Alastair Mitchell Breingan

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? IT developer and manager

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?

Black Summer was the first real test of the climate change driven future and the NSW RFS and other agencies were largely successful in handling this unprecedented season. However this should not obscure the fact that volunteers worked for periods and in conditions well beyond anything that would be normally tolerated.

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

The 000 system often delays brigade response by 10 to 20 mins and more. In a system that is literally life and death this is shameful, especially as smartphone based applications can collect much of the information automatically and quickly. This sort of technology has been quickly implemented overseas at low cost. Previous recommendations for changes to this system have not been actioned.

Budgeting restrictions have left the RFS with insufficient and obsolete equipment. Many brigades including ours are still equipped with tankers lacking safety equipment such as thermal window blinds. Our truck has a cranky gearbox, the old mushroom spray, manual hose winders, and two steps up into the cab rather than the powered winders and three steps in the new trucks. While the blinds will occasionally save lives, the others don't sound like a major issue, but when you have a minimal crew of retirees scrambling in and out of the truck and deploying and rewinding the live-reels repeatedly over the course of a 12 hour or longer shift it soon adds up to the physical exhaustion many of us feel when we return home. This truck is scheduled to stay in service until 2031 which I find incomprehensible. Many brigades obviously need more light Cat-9 land cruiser tankers, as the demand for these has been extreme.

The RFS communications systems are built around obsolete pagers which do not allow two way communication and voice only radio. Fire control currently has no idea if a brigade in a rural area will be able to respond for 15 minutes or more. Use of digital communications and smartphone applications would allow both brigades and Fire Control to be kept up to date. This applies to brigade availability, response, mapping and location tracking, fire extent and communication with support services such as water trucks and dozers.

All agencies on the fireground need interoperable equipment. The Forestry Corporation was very active and effective in our area, but their hose fittings and radio were not compatible with the RFS equipment.

Many landholders in rural areas were very unprepared for a bad fire season, never mind the conditions that occurred last year. There is now a willingness to learn and it is important that property protection information and support is available.

Radio communications were overloaded during the larger fires with wait times of 5 minutes and more. I hate to think what would happen to a truck facing an emergency at these times.

Bureaucracy, designed to reduce costs, has limited emergency response. In our rural and mountainous area we were not able to use the local dozer driver who literally knows the area like the back of his hand because he was not on the approved list. The same does happen with hazard reductions, though the main impediment is the lengthening fire season.

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

The "Fires near me" app should be expanded to an "RFS App" allowing for most public interactions with the RFS. This would cover fire weather and alerts, fire reporting, information on local fires, hazard reductions, property protection and local fire groups. A full description is attached.

All RFS tankers should be refreshed or replaced to a minimum level more often than every 25 years.

More Light Cat-9 Tankers should be deployed.

The pager system should be replaced by a smartphone app allowing Fire Control access to brigade availability and responding volunteers as they happen.

All trucks should be equipped with a tablet with navigational and mapping software with visibility of the fire extent and other trucks locations. This could be used to immediately update fire extents.

Radio and firefighting equipment in all agencies should be reviewed so they are interoperable.

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

I have attached a description of my proposed "RFS App" and another document with more detail on many of the points I have raised.

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

Supporting material provided:

The RFS App.docx

submission to the bushfire inquiry.docx

A plea for an RFS App

I am a crew leader in the Lansdowne RFS, and the following suggestions come from my experiences in the fires on the mid north coast this season, plus working flat out for over two weeks as the Rumba Dump Fire swept through my community of Upper Lansdowne. I am also a retired IT developer and spent my career designing and implementing complex systems around the world.

Firstly many landowners did a terrible job of preparing their property for fire. Lots of them are now looking for help and education. Some of them will use online information, especially if there is a single point of entry and the interface is appealing as the benefits of gamification also apply to adults. However many will need personal interaction and RFS community engagement, while valuable is not available at the scale that is needed. The RFS can, however, help build and mould local fire groups.

Secondly the public need better information on local fire conditions, extents and permits and we need to much more effectively collect fire report information and pass it on to the responding brigades.

Most of the community makes increasing use of mobile phones and tablets, and it is increasingly assumed that up to date information is available on almost anything. "Fires Near Me" is an excellent start despite its problems, and I was very pleased to hear that the information presented is the latest available internally.

However one critical and several minor issues remain. The only way to report a fire is via a 000 voice call, leading to significant delays in what is a matter of life and death. This has been known for some time and it is a disgrace that it has not been corrected.

I would like to see Fires Near Me expanded into an "RFS App", a one stop shop which simplifies all public interactions with the service. It would help address all the above issues at a moderate cost. It would cover:-

- Fires Near Me - An improved version of the existing app which shows active fire extent as well as the containment area, satellite hotspots, predicted extent and fire permits.
- Fire Weather - Show predicted fire ratings and bans for this location, as well as a seasonal rating to promote early preparations.
- Report a Fire - A replacement for the 000 system, able to collect most of the important information rapidly and automatically and allow reporting a fire which is not an emergency.
- Local Fire Community – Encourage joining or starting street and village based fire groups and allow communication within groups as well between them and the RFS.
- Property Protection – Assessment tools similar to those on the RFS website and links to information including more information on fire pumps, sprinkler systems etc.
- Fire Permits – Allow fire permits to be requested and approved online, and shown to the public.

Fires Near Me

The Fires Near Me app is an excellent start, but needs work other than the updating issues:-

1. It needs to distinguish between the containment area and active fire, especially for very large fires.
2. It should show predicted extent.
3. It should show the position of approved fire permits.
4. It should show satellite hotspots.

Fire Weather

Fire ratings and any total fire bans for the local area should be shown and highlighted when severe.

A seasonal rating should be developed to encourage early preparation for dangerous seasons.

Report a Fire

There is no way for the public to report a fire other than calling 000, with the following disadvantages:-

1. Much information that can be automatically collected by a smartphone is either laboriously collected or ignored, re-entered manually, and is not available to the responding brigades.
2. There is a significant delay. On several occasions locals called me immediately after the emergency call, and I was able to save between 7 and 10 minutes of valuable response time. Others report that delays of over 20 minutes are common. For a matter of life and death this is unacceptable.
3. There is no way of distinguishing between an emergency and someone wanting to report something they believe is no immediate threat.

The process starts by selecting “Emergency” or “Non Critical Fire”. The main camera view is shown on screen, along with the other information as collected. Voice and text prompts suggest the phone is pointed at the fire and the camera zoomed to highlight the fire. The following is automatically collected:-

1. Location.
2. Phone number.
3. Direction that the phone camera is pointing.
4. The displayed image.

If internet access is not available the user is asked to move so that either wifi or mobile data is available.

Once available, information is passed to the server which starts the following:-

- Reverse Geocoding converts location to address, and returns this to the app.
- Open a voice chat connection to the app.
- An operator is assigned to the call, and starts to talk to the user. Key data which cannot be collected automatically is queried such as distance and size, speed of the fire, and the conversation captured and stored.
- The user is asked for the address as a check and corrected if necessary.
- The user is informed that the call is complete.

This process addresses most of the problems above. It significantly improves the quality of information while increasing speed. It allows fire location to be checked against fire extents and permits, with less urgent calls directed to the local brigade for follow up, rather than a full response. It ensures that the brigade has full information as soon as they are responded.

Local fire Community

Street or village based fire groups are important for the following reasons:-

1. They help improve the general fire knowledge and give people direct feedback on property protection, especially if connected to the local brigade or RFS community engagement.
2. They allow people to help each other during local fires so that those who do want to stay and defend are better prepared. Groups can move house to house in some conditions, and history shows houses with multiple defenders are considerably more likely to survive.
3. They can provide valuable information about fire extent to the group and to the RFS, especially if some of the members are known to the brigade. In the weeks after a fire passes though there are many false alarms that could be avoided by reliable local information.
4. The group allows the local control or the brigade to get information out to the community in a targeted way. This could be on back-burns, hazard reductions or changes in predicted extent.

This section operates in two modes; first encouraging the user to join a local group by displaying the nearest groups and allowing the user to join, or encouraging them to start a new group. Once joined it operates in a similar way to Messenger or WhatsApp, allowing pictures, text and voice to be directed at the group or at individuals. Each group would be attached to one or more brigades, with members able to participate, and be identified as RFS members.

Property Protection

Provide a collection of information and especially assessment tools like the excellent [Bush Fire Household Assessment Tool](#). It should contain practical information on measures to protect homes, including various types of bushfire sprinklers, window screens, and fire pumps. Importantly it must not concentrate on the ideal solutions, but include partial and DIY options, while explaining their limits.

Fire Permits

Allow fire permits to be requested and approved online, ideally with an assessment tool collecting information on size, available equipment and forecast weather. A reputation could eventually be collected and used to minimise the annoyance which the current system causes. Outside fire season it could allow landholders to inform the RFS and others of a burn, and could allow the RFS to inform the public of backburns and planned hazard reductions.

Submission to the bushfire inquiry

Your story

I am a crew leader in the Lansdowne RFS, and was heavily involved in the fires on the mid north coast this season, especially the Rumba Dump Fire which swept through my community of Upper Lansdowne. I am also a retired IT developer and manager and my working life has been spent designing and implementing complex systems around the world and in Australia, which gives me some insight into the communications and systems in use in the RFS. The limits of these aging systems became very clear during the large, widespread and continuous fires this fire season. I include detailed suggestions in the response to fires section, but there are three key elements:-

- Collect better quality information from fire calls and deliver it to the responding brigades.
- A two-way pager system where volunteers state whether they are responding, visible to the rest of the brigade and to operations.
- Provide all trucks with tablets and digital communications with a view of the topology, fire extent, position of other units and access to online weather forecasts and satellite imagery.

Much more effort is needed to improve the resilience of housing. In the past owners have been complacent, but this is changing, and lots of people are asking for advice. We now have an information gap and more detailed tools like the excellent [Bush Fire Household Assessment Tool](#) are needed. Sprinkler systems are effective but expensive, so information on recommended sprays should be provided, turning it into a straightforward plumbing job.

One of the most important actions is promoting local groups at street and village level. A “Landcare for Fires” organisation would improve local knowledge, act as a bridge to the RFS and support those who choose to stay and defend.

I include a suggestion for a one-stop “RFS App” which simplifies key public interaction with the RFS. It includes reporting a fire, an improved fires near me, information on property protection and a WhatsApp type chat group for local fire groups.

Causes and contributing factors

Simply put climate change is increasing the frequency and severity of the droughts and extreme fire weather. It will continue to get worse, but if we rapidly reduce our emissions and encourage other countries to do so we can limit the damage. If we do not many areas of inland Australia will become virtually uninhabitable this century. Contrary to the now almost hysterical federal government reaction a rapid move to a renewable economy is affordable and will help Australia’s economy in the medium term as we start to export clean power to Asia.

Preparation and planning

There was not enough aviation support this year, but this is probably best addressed at federal level.

It seems the RFS budget is considerably down on Victoria compared to the amount of activity and certainly Western Australia appears to replace their tankers more often than NSW. A Video of a tanker driving through flames while the crew struggled to hold up blankets to block out the radiant heat reminded me that our old Cat-1 still doesn’t have the thermal window blinds that have been installed on the new trucks for years now. Our truck has a cranky gearbox, the old mushroom spray, manual hose winders, and two steps up into the cab rather than the powered winders and three steps in the new trucks. While the blinds will occasionally save lives, the others don’t sound like a

major issue, but when you have a minimal crew of retirees scrambling in and out of the truck and deploying and rewinding the live-reels repeatedly over the course of a 12 hour or longer shift it soon adds up to the physical exhaustion many of us feel when we return home.

We fought for some years to have a Cat-9 Land Cruiser for the brigade and ever since then it has been heavily requested for work well outside our area, involving travel times of an hour and a half or more each way, so it is clear that many more of these trucks are needed in our district at least.

As the fires get bigger and more intense, it becomes more dangerous to face them on foot with hose in hand, which limits the truck's ability to move away quickly when needed, and the water runs out more quickly. While this will impact off road ability a larger tanker with water canon controllable from inside should be considered.

We have worked extensively with Forestry this season, and I was shocked to find they have no storz fittings or adaptors on their trucks. This stopped us using our lay-flat hoses with their units when needed, especially as their units are better adapted to forest conditions than our larger trucks. They only use UHF CB radios and this made communications difficult between Forestry and RFS vehicles to the point that personal mobile phones were often the only practical option. As the size of fires increase we need to ensure that all vehicles at fires are able to interoperate effectively.

Mapping software is often critical in rural areas, whether finding a smoke sighting by grid reference or understanding the topology to predict where the fire will run. The official maps on our tanker are paper and almost never used. All units should be equipped with a tablet and software allowing fire extent and the locations and identities of all local trucks to be seen and managed. More information on the key aspect of communications and systems is included in the next section.

Lastly the RFS has centralised much of its decision making, and in general this is a good thing. However when there is a problem, the brigade is certainly not encouraged to object, and district management are reluctant to query the central authority. This has led to some procedures that are overly bureaucratic and sometimes increase risk. A perfect example is our Cat-9 Land Cruiser, which is very useful in rugged terrain and as a patrol vehicle. It is close to its weight limit and therefore we are told not to carry a chainsaw, though we often do anyway. During the major extensive fires we have had this year this would have severely limited its use, and on a couple of occasions endangered the crew. There is also a concern about lack of hazard reduction, and while the longer fire season is the main influence, excess bureaucracy is also partly to blame.

Response to bushfires

While some brigades, including mine, have spent their own money to partly mitigate the limits of the official RFS systems, a complete standardised solution is badly needed.

The 000 Call system is antiquated and no longer fit for purpose. During the local fires I encouraged everyone I knew to call me immediately after any 000 call, and on at least 3 occasions I knew about a problem more than 7 minutes before my pager went off. Most callers are probably using a mobile phone, which can automatically collect most of the important information. Much of this information is then discarded and does not get to the responding brigades. There is also no standard way to report a fire which is not an immediate emergency, causing many unnecessary callouts, especially in the weeks following a major fire.

Data communication is almost completely lacking between operations and brigades, which rely on voice radio. The current situation that operations has a full picture of the fireground and the brigades do not need one failed repeatedly in this seasons extensive and long lasting fires.

Operations have no idea of a brigade's availability, and may not even know if a brigade will respond for 15 minutes or more after a pager call. This obviously means more brigades are called to even minor callouts. We use a system called BART which allows volunteers to share their availability, and more importantly to state if they are responding to a callout or not. A smartphone based two-way pager system of this sort should be adopted so that this information is available to operations.

The brigade has virtually no information about a callout until someone makes a radio call from the truck. While the pager used to show type of callout and address, it now does not. During the Rumba Dump fire I often made a round trip of more than 30 minutes to the fire shed and then returned to within 5 minutes of my house, delaying the response as I am one of the furthest from the station. In the weeks after a major fire there are many calls to 000 from worried residents to smoke sightings we cannot reach or are of no immediate threat. When a brigade has been working flat out for weeks this is very frustrating. All callouts should include a level of urgency, the address and the phone number of the caller as even in normal seasons we often need to contact them. The quality of the information captured at the time of the call is vital; see my suggestion for an RFS App.

Brigade trucks have no standard navigational software, no view of local topography and fire extent, no visibility of other local trucks positions, no way to report fire extent, no access to the latest weather forecast or satellite hotspots and no address lookup. A vehicle acting as divisional control is operating almost blind. Some of us carry mapping software on our phones to try and remedy this, but what is needed is a 12 or 14" tablet with digital communications and fully integrated software that can operate in no signal areas, but which refreshes automatically when possible. This could provide a host of other useful information like contact numbers for dozers and bulk water carriers operating in the area. I understand some of this is being considered for group captains, but in these extensive fires brigades were often required to stand in.

Radio communications were overloaded during the larger fires, with wait times for access to Fire Control of 5 minutes or more. I hate to think what would happen to a truck facing an emergency at these times. Ideally trucks should have a panic button which digitally transmits its location and an alert. The number of different radio channels in use is also problematic, it is common to use two PMR channels, one for Fire Control and a local tactical channel, plus the hand-held fireground radios, but as soon as Forestry or other agencies are involved then a CB radio is also necessary.

Repeating my comment in the planning section, all agencies active on the fireground must be able to communicate and interoperate effectively. At the minimum any other agency acting as divisional control should have a PMR radio, and all trucks should carry adaptors so we can share equipment.

These fires have hit rural communities hard, but the sense of community is stronger than ever, and many people want to help the RFS. The fire at Upper Lansdowne saw people putting out spot fires, clearing fallen trees, helping their neighbours, while the community hall was serving food and drinks to fireys. We also had some who put themselves at risk due to lack of knowledge and at least one who lit a back-burn they probably could not have controlled. Better links between the community and the RFS are needed and will pay large dividends although the bureaucracy around hazard reduction in particular is an obstacle in many places.

Logistics at rural fires needs review. Upper Lansdowne is not that remote, but during the 10 days of continuous 24 hour activity tankers were travelling 60 minutes round trip from the brigade station or 90 minutes from the fireground to collect food and supplies. Each village should have a designated control point, either the brigade station or a community hall or school, which can be manned by RFS volunteers and members of the public. Food and supplies can then be provided much closer to the fireground, either by support vehicles or by the community. Crews can changeover efficiently and tankers can stay close to the action.