

Submission to the Royal Commission into National Natural Disaster Arrangements

ABC Friends National Inc. represents ABC Friends groups from all states and territories with an estimated 50,000 members and supporters who are committed to an ABC that is adequately funded to meet its Charter as Australia's independent national public broadcaster.

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Overview

The Royal Commission into National Natural Disaster Arrangements covers a wide range of possible areas. This submission by ABC Friends National will address the need for a National Emergency Communication Plan fully incorporating ABC Emergency Broadcasting expertise.

The intensity and duration of the 2019-2020 bushfire season was predicted by the Garnaut Climate Change Review of 2008.¹ The report said that projections of fire weather "suggest that fire seasons will start earlier, end slightly later, and generally be more intense".² This was evident in the 2019-2020 fire season.

The recent devastating bushfire season attests to the ABC's position as Australia's pre-eminent emergency broadcaster. The ABC made 935 emergency broadcasts this financial year compared to 371 in 2018-19 and 256 in 2017-18.³

ABC emergency broadcasts continued in the face of ongoing funding cuts and with no additional funding to cover the resources which were poured into the effort; the cost of the ABC's emergency broadcasting coverage comes out of base funding. When the ABC's emergency broadcasting policy was created in 2011, the emergency division ran for six months of the year-now it runs for the entire year.⁴

¹ <https://www.sbs.com.au/news/how-a-climate-change-study-from-12-years-ago-warned-of-this-horror-bushfire-season>

² [http://www.hume.vic.gov.au/files/46a4d08c-9a31-4c6d-bed0-9e1c00c093b3/Garnaut Climate Change Review Report.pdf](http://www.hume.vic.gov.au/files/46a4d08c-9a31-4c6d-bed0-9e1c00c093b3/Garnaut%20Climate%20Change%20Review%20Report.pdf)

³ <https://about.abc.net.au/statements/abc-managing-director-david-anderson-makes-the-opening-statement-to-senate-environment-and-communications-legislation-committee/>

⁴ <https://www.publicmediaalliance.org/abcs-emergency-coverage-of-the-australian-bushfire-crisis/>



While other broadcasting organisations and other media have an important role, it is clear that the vast majority of Australians trust and depend on the ABC in times of crisis, and no other organisation comes close to meeting this need.

The imperative to have a reliable and accessible emergency broadcasting system operating via robust infrastructure has never been more urgent. Putting in place a National Emergency Communication Plan, incorporating ABC Emergency Broadcasting expertise which is able to provide both locally relevant information and national coverage, is a key element to improving response, resilience and adaptation to changing climatic conditions.

ABC Friends National Bushfire Survey

On 3 January, via Facebook, ABC Friends National asked for feedback about the ABC's emergency broadcasts from those affected by the bushfires. Whilst highly praised, there were reports that access to ABC broadcasts was sometimes a problem.

ABC Friends subsequent media release⁵ made an urgent call for the Federal Government to restore funding that guarantees infrastructure and transmission that is vital for emergency services broadcasting. It also advised of the launch of a survey (see Appendix 1) to obtain more formal feedback about access to emergency broadcasts. This survey was delivered on 13 January via Facebook and via email through our membership and supporter base.

712 people responded to the survey.

91.1% of those surveyed said that the ABC local emergency broadcasts were important to them during the crisis.

96.1% of those surveyed said that ABC staff with local knowledge was important to them.

98.5% of those surveyed said that it was important to them that their local ABC outlet remain open and well-staffed.

When asked if there was a need for a national plan of additional essential communications infrastructure, 95% of respondents said yes.

Across different modes of reception, a large majority of those who responded felt they were kept very well informed by the ABC coverage, but there were many people who reported that problems with reception of emergency information occurred because of: service gaps (loss of power and hence internet connection, patchy radio reception, patchy or no mobile signal at all); and damage to infrastructure (damage to broadcast equipment, transmitter towers burnt out).

For many, power outages and mobile phone reception loss meant that battery powered radio became even more important. (See Appendix 2 for representative comments).

⁵https://www.abcfriends.org.au/restore_infrastructure_transmission_funding?utm_campaign=initial_sa_bushfires&utm_medium=email&utm_source=abcfriends

As one respondent put it, it is essential that everybody has access to good communication, *“telling people to get a battery radio just doesn’t cut it.”*

Several people noted that there seemed to be information flow blockages causing vital information not to get through in what were described as *“life or death”* situations. One respondent suggested that a central body be formed linking emergency services, radio broadcasting, and communities to ensure clear lines of communication and information sharing.

The NBN put out a message: *“We do advise customers that their NBN service will not work in a power outage, and it is always wise to keep mobile devices charged in the event of an emergency.”* This did not always solve the problem with more than 100 mobile phone towers impacted at the height of the crisis, according to Communications Minister, Paul Fletcher, with the majority affected by power outages.⁶

During dangerous bushfire situations, mobile service outages can arise due to:

- Damage to infrastructure that connects base stations that relay communications within the network.
- The signal strength of radio waves, used for mobile communication, may be affected as they travel by land geography (e.g. hill height, gum trees which reflect, obstruct and absorb radio signals). Flames can produce “plasma” which interacts with the surrounding magnetic field, and this degrades signal strength.
- Being away from a mobile phone tower, often in rural areas, also results in degraded communications. Rural areas don’t receive as much coverage because installing cell towers in these areas is not particularly profitable, and towers are built on revenue estimates. There is little incentive to build networks with additional capacity in rural areas.

People were urged to leave affected areas early to avoid being stuck in mobile black spots (regional and remote areas identified as not having mobile phone coverage). However, even with a signal, at times of high demand during the catastrophe, the network was congested due to the high volume of mobile phone traffic experienced, exceeding the available network capacity.⁷

Response to the problem of failure of emergency communication during the bushfires

Infrastructure Australia, the Federal Government agency established to identify significant national projects, has recommended urgent work to improve mobile phone coverage. Liberal MP Tony Pasin said, “Recent natural disasters have reiterated the importance of mobile communications and mobile phones are now considered a critical safety device as well”. Infrastructure Australia’s Report said “Access to reliable telecommunications can also be critical in emergency situations such as extreme weather, bushfires, flooding or serious trauma accidents such as road accidents”.

In South Australia alone, a Federal Government database lists 1106 locations where there are mobile phone black spots. A spokeswoman said that many of these had been addressed through base

⁶ <https://www.google.com/amp/s/amp.abc.net.au/article/11860238>

⁷ <https://www.google.com/amp/s/theconversation.com/amp/as-flames-encroach-those-at-risk-may-lose-phone-signal-when-they-need-it-most-126827>

stations funded under the Federal mobile “black spot program” or through commercial builds. Statistics show 44 towers have been installed across SA since 2016.⁸

Many more mobile black spots across Australia need to be addressed before Australia has a reliable mobile service accessible to all. However, the threat of future bushfires will make many of these towers vulnerable. They are often on the top of hills. Hot air rises which makes fires climb to the highest point, which is where towers for mobile phones, wireless NBN, radio (except AM) and two-way radio get the maximum coverage. (See Appendix 3, Alan Hughes’ article).

Telecommunications analyst, Paul Budde, has made a call for the Federal Government to act. “What you need is a national emergency telecommunications plan - get our telecommunications companies together and then we can find solutions”. Mr. Budde said “With this crisis at hand, we can get the Government to start considering these long term options and long term funding for communications safety in rural and regional areas”.⁹

A range of priority areas, suggested by respondents to ABC Friends Bushfire survey, which could be useful when considering a National Emergency Communication plan, are listed below.

Regional radio and communications infrastructure upgrades

- Fix any radio reception blackspots in regions for emergency radio broadcasts
- Fireproofing transmission towers
- Commitments to maintaining the vital AM network
- Dedicated radio spectrum
- Mirrored ABC and emergency websites in case of problems
- Battery powered portable radio and WiFi towers available to be deployed if infrastructure is lost
- Communications infrastructure such as landlines and internet access put underground
- Satellite driven radio, mobile phone and internet
- Battery powered mobile reception and WiFi hotspots linked to satellites
- National WiFi coverage
- Better mobile phone towers not reliant on mains power

And with regard to the ABC’s regional centres

- More regional ABC offices staffed with local journalists
- More funding for regional ABC offices

Extending ABC emergency broadcasts to commercial network frequencies was also suggested.

What is abundantly clear, from the experience of the dreadful 2019-2020 bushfire season, is that multiple channels of communication have to be placed within the infrastructure and emergency broadcasting network. If one communication pathway fails, then another pathway is there to be used.

⁸ “Mobile Blackout Fix Bid”, The Advertiser, page 19, March 22, 2020.

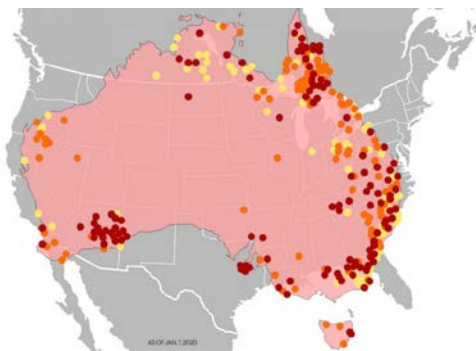
⁹ <https://www.google.com/amp/s/amp.abc.net.au/article/11860238>

Whilst the Federal Communications Minister, Paul Fletcher, has said that no system is impervious to bushfires¹⁰, there is one transmission form that could be considered alongside DAB+ radio to provide a reliable emergency communication system.

A particularly cogent plan for national emergency communication has been put forward by Mr. Alan Hughes, retired ABC trainer of technical officers and operators in Western Australia. (See Appendix 3, for Mr. Hughes' article).

Mr. Hughes describes the serious impact that fires have on critical communications equipment throughout populated areas of Australia, and he also provides real world solutions to this dangerous situation that Australians will encounter again.¹¹ It takes into account Australia's huge geographical distances and it incorporates the merits that the digital form of SW (Shortwave) radio, DRM (Digital Radio Mondiale) has to offer.

A superimposed map of Australia over the United States shows the large geographical distribution of hot spots, as of 7 Jan 2020, during the 2019-2020 bushfire season.¹²



The dots represent hotspots.¹³ Those in red are from the last 12 hours, the orange dots represent spots in the last 12-48 hours and the yellow dots are hot spots that are 48-72 hours old.

Mr. Hughes argues that, as AM and FM radio are incapable of providing a full Emergency Warning System (EWS), a solution that can provide reliable emergency warnings anywhere in Australia, and the implementation of an EWS across Australia, would go a long way towards keeping Australia's scattered population aware of impending dangers.

Such a solution could be achieved if the ABC decides to broadcast Emergency Warning System signals on all of their existing DAB+ transmitters in capital cities as well as rolling out high frequency (HF) DRM radio from central Australia to cover the whole of Australia.

¹⁰ <https://www.google.com/amp/s/amp.abc.net.au/article/11860238>

¹¹ [http://www.hume.vic.gov.au/files/46a4d08c-9a31-4c6d-bed0-9e1c00c093b3/Garnaut Climate Change Review Report.pdf](http://www.hume.vic.gov.au/files/46a4d08c-9a31-4c6d-bed0-9e1c00c093b3/Garnaut%20Climate%20Change%20Review%20Report.pdf)

¹² <https://abcnews.go.com/International/us-map-examine-scale-massive-australia-wildfires/story?id=68102703>

¹³ <https://www.ga.gov.au/scientific-topics/earth-obs/case-studies/mapping-bushfires>



Emergency services are able to specify the latitude and longitude of the corners of the area to receive the warnings, so the Emergency Warning System signals will automatically inform just that area. This will leave regular broadcasts untouched, but cause an EWS capable radio in the affected area to provide a range of emergency advice.

The best option, Mr. Hughes says, is to install a high power High Frequency (SW) DRM transmitter in the centre of Australia. This location has only very low bush, so the fire risk is minimal, it is not in a cyclone zone and is as far away as possible from the coast to negate threats from tsunamis or terrorism.

The transmission mode of this signal is not affected by geography and can be strong enough to cover the whole country. As it is not economic to have this transmitter unused most of the time, it could transmit the live-to-air programs on NewsRadio and Grandstand throughout Australia when not required for emergency situations. As well as reliable emergency communication when needed, there would be the bonus of live radio being provided to the 470,000 people who live in remote Australia when they are mobile. They lost this service when the ABC's SW service was ceased in January 2017.

The EWS can also be broadcast by all existing ABC DAB+ digital transmitters in capital cities; the receiver will select the most reliable signal automatically.

In Conclusion

ABC Friends National calls for a National Emergency Communication Plan to be investigated, articulated, costed and enacted. Whatever the composition of the group of organisations put in place to do this, the ABC should be involved. The Australian public rightly places great faith in the expertise and commitment of the ABC as Australia's Emergency Broadcaster.

A National Emergency Communication Plan, incorporating ABC Emergency Broadcasting expertise, is a key element to improving response, resilience and adaptation to changing climatic conditions.

During the devastating 2019-2020 bushfire season, ABC Friends National focused on the impact of the bushfires on local communities via social media and its website <https://www.abcfriends.org.au/>. A special bushfires edition of our newsletter *Update* was produced in early February which can be accessed here: https://www.abcfriends.org.au/national_newsletter.

Appendices 1, 2 & 3 follow



Appendix 1. ABC Friends National Bushfire Survey Questions

1. How well are/were you kept informed about specific local alerts, road closures and other essential information?
2. Have you experienced problems because of outages or gaps in emergency broadcasting? Please be specific as to where you were when you experienced the outage or gap in emergency broadcasting.
3. Are you aware of specific damage to transmission infrastructure in your area? Please provide as much detail as you have.
4. Do you consider there is a need for a national plan of additional essential communications infrastructure? Yes/No
5. Please suggest priority action for upgraded communications during National Disasters.

Multiple Choice questions. On a scale of 1 to 5 where 1 is **not very** and 5 is **very much**:

6. How important to you was the ABC local emergency broadcasts during the crisis?
7. How important is it to you that ABC staff with local knowledge convey that information to you?
8. How important is it to you that your local ABC outlet remains open and well-staffed?

Appendix 2. Representative Comments from Survey

ABC Coverage: A large majority of those who responded to the survey felt they were kept very well informed by the ABC coverage.

- Holiday makers found the coverage helpful:
"We were at our holiday property at Cuttagee on the South Coast when we had to evacuate to Bermagui in the middle of the night on NYE due to approaching bushfires. We had access to Fires Near Me and Live Traffic but neither of these gave us the immediate and current information that the local ABC radio supplied. The local ABC only reported very useful information which helped us to make the right decisions over three very scary days."
- The ABC provided *"information about shops that were open, as well as petrol stations - not covered by the RFS bulletins."*

When internet and electricity were out, battery powered and car radios become popular, if not the only source of information:

- *“We lost power and internet for 24 hours on New Year’s Day. Our daggy, old portable radio tuned to ABC local was the only source of information. When we had internet, the Fire’s Near Me app, as good as it is, could not cope. We could see the Conjola fire, where so many houses were lost, but it didn’t show on the app. ABC was our only source of information about the communities where our friends and family live”*

Infrastructure and Service Gaps

- Susie from the Mid North Coast in NSW said that *“radio reception was patchy.”*
- One respondent from Braidwood NSW said that ABC radio reception *“is not reliable in all parts of our town, including our house.”*
- One resident from Bermagui, in an area hit hard by the fires, said that he rated his awareness at *“2 out of 10... The local ABC did an awesome job and I only think it could be better if they have more information [from public services] to pass on to us.*
- Trevor from Bowraville reported that he had no warning: *“when fires overwhelmed [his] property on November 8th... except a Police helicopter over my head with siren blaring.”*
- Geraldine from Leura in the Blue Mountains said that they *“can’t receive ABC radio broadcasts”* as there is *“no signal”*. They depended on the Fires Near Me app which they *“found to be inaccurate / not updated.”*
- Juliet from NSW said that when they were in *“... Narooma, we lost radio service for a little while and it was acutely felt by me and my family. I do not know what caused the outage. The power was also out for a while, the shops were closed, the internet was off, so we really relied on the calm and professional announcers on the radio to keep us informed and let us know we were not alone.”*
- Louise from Wandella NSW was evacuated to Bermagui in the fire crisis on New Year’s Eve and said that radio *“coverage was patchy.”*
- Jenny from Bungendore NSW was holidaying at Bermagui. She said: *“Transmission is poor in Bermagui too. We were evacuated from Bermagui to Narooma, returning to Bermagui the next day as Narooma was unsafe. There was no communication available so we weren’t sure how close the fire was. It turned out to be close. We didn’t know how, when, where to escape to without someone driving to a certain place to get reception. We needed everyone and all cars to remain together, so it was terrifying when someone had to drive to a certain spot, in the direction of the fire to get ABC reception. The ABC is THE LIFELINE when all other communications fail, and as you are aware it failed on many occasions for lengthy periods of time.”*

There were some reports of infrastructure damage that affected ABC radio services:

- In Bermagui NSW, Peter reported that he *“heard of specific damage to broadcast equipment on Mumbulla Mountain, requiring the radio to be re-tuned.”*
- One respondent from Batehaven, Bateman’s Bay in NSW said that they *“were upset when our local ABC Emergency transmitter tower was burnt out, but used the other frequency when advised to until it could return to broadcasting.”*
- Susan reported from near Maula Bay around New Year’s Eve that *“transmission towers [were] down and when we could get info it was often too general to make the decisions that we needed to e.g. - conditions on Brown Mountain”*
- Another respondent from Binya/Tuross Head in NSW said that *“The local ABC was scratchy at times as [they] understand that transmitters were affected by fire.”*
- Fiona from Moruya Heads, NSW reported that she *“heard a radio communication tower in the area was damaged in the fires.”*
- Helen from Mittagong, NSW said that she heard that there was some radio tower *“damage further down the coast.”*
- One respondent said that their *“daughter in Broulee was aware of damage in Broulee/Batemans Bay area.”*

Appendix 3. Emergency Communications for Fires and Cyclones

The following article by Alan Hughes (retired ABC trainer of technical officers and operators in Western Australia) describes the serious impact that fires have on critical communications equipment throughout populated areas of Australia, and he also provides real world solutions to this dangerous situation that Australians will encounter again.

Emergency Communications for Fires and Cyclones

by Alan Hughes

Obtaining a reliable Emergency Warning System (EWS).

First a bit of basic physics and a look at existing infrastructure.

Hot air rises which makes fires climb to the highest point, which is where towers for mobile phones, wireless NBN, radio (except AM) and two way radio get the maximum coverage. Commonly the power line to the tower site burns down and most sites will not operate for more than 24 hours without resupply of diesel fuel, which needs to be delivered through fire prone areas. If solar powered, site batteries will often go flat in big fires because of the smoke, and for cyclones due to heavy cloud cover.

Old phone lines are easily burnt down and are unreliable because they are uneconomic for Telstra to maintain them.

BAI Communications (the ABC’s transmitter contractor) used a low power mobile FM transmitter to reinstate services over a lower coverage area, and at the same time they had to use another low FM power mobile transmitter in the simultaneous Queensland floods.

The current fires have highlighted the huge areas which simultaneously may require many mobile back up transmitters and the danger of trying to refuel generators every 24 hours. As an example, the transmitter site at Mt. Wandera (NSW) is surrounded by forest and access is only by dirt road through the trees, some of which were on fire.

This site contains the following transmitters and is typical of many:

NewsRadio FM	2EEE commercial radio FM	ABC TV
ABC Classics FM	2EC commercial radio FM	SBS
2BA ABC Local Radio FM	2EAR Community radio FM	Prime TV
Telstra, Optus mobile phones	Vodafone mobile phones	WIN TV
NSW State Telecoms typically emergency services etc.	Possibly NBN wireless for towns of <10k people	Southern Cross TV
Microwave link distribution systems which run across the state often commercial TV.	Essential Energy power co. for repair crews and line monitoring	Police

The 2BA transmitter was damaged by fire, and it was only the generosity of the commercial broadcaster, Grant Broadcasting, which kept the ABC on the air from Mt. Wandera for Bateman’s Bay/Moruya.

Despite all the above information, the ABC sends us the wrong message.

The ABC is promoting the use of their emergency App which uses mobile phones or the internet, which in many rural areas use NBN wireless internet, all of which use towers in vulnerable areas, as the above chart shows. Many rural/remote areas have satellite fed small cell mobile phone towers. With no radio most people will be frequently looking up the App or emergency service website, which will overload the satellite connection to the phone and internet networks because of simultaneous use.

The ABC also promotes listening to the TV Channel 25, which uses the same towers as radio, phones and NBN wireless.

In fires and cyclones electricity supply typically fails to not only mobile phone/NBN wireless/TV and FM radio transmitters, it also fails the users of these services. This means that they cannot recharge their phones or tablets unless they are in a newish vehicle with the charging cable. As a result the phone and the tablet becomes useless. Virtually all vehicles contain a radio which can operate for days powered by the vehicle battery.

If everybody has a smart speaker or uses the app all the time, they may not even possess a radio leaving them vulnerable.

SOLUTION?

As AM and FM radio are incapable of providing a full Emergency Warning System, a solution that can provide reliable emergency warnings anywhere in Australia, and the implementation of an EWS across Australia, would go a long way towards keeping our scattered population aware of pending dangers.

Such a solution will never be achieved until the ABC decides to broadcast Emergency Warning System signals on all of their existing DAB+ transmitters in capital cities as well as rolling out HF DRM radio from central Australia to cover the whole of Australia.

What is so special about an Emergency Warning System?

As the Emergency services are able to specify the latitude and longitude of the corners of the area to receive the warnings, then the EWS will automatically inform just that area. This will leave regular broadcasts untouched but cause an EWS capable radio which is in the affected area to:

1. wake the radio and tune it to the channel containing the Emergency Warning System data, or change channel if the radio is on;
2. sound a standardised siren used for emergencies;
3. increase the volume for a voice message so it can wake potential victims in the middle of the night;
4. provide additional information:
 - *Slide show* can show maps of the affected area and paths of cyclones
 - *Journaline* is an indexed text system for detailed warnings, such as which roads are blocked, indexed place by place. (See <https://radioinfo.com.au/news/bes-india-showcases-drm-expansion-plans> for public signing service and EWS demo.)
 - Inform a vehicle's GPS of blocked roads so it can recalculate the route to an evacuation centre.

Obtaining a reliable EWS system

The best option is to install a high power High Frequency (Short Wave) DRM transmitter in the centre of Australia. This location only has very low bush, so the fire risk is minimal, it is not in a cyclone zone and is as far away as possible from the coast for tsunamis and terrorism threats. The signal can be strong enough to cover our whole country. As it is not economic to have this transmitter unused most of the time, it could transmit the live-to-air programs on NewsRadio and Grandstand throughout Australia when not required for emergency situations. This would provide radio to 470,000 people who live in remote Australia their only live radio when they are mobile. It will be receivable in cities; however, interference can cause the reception to be unreliable. The EWS can also be broadcast by all existing ABC DAB+ digital transmitters in capital cities, the receiver will select the most reliable signal automatically.

For more information:-

Alan Hughes' submission to ACMA:

<https://www.acma.gov.au/consultations/2019-08/future-delivery-radio-services-australia-consultation-132019>, Submission 4.

Digital Radio Mondiale: <http://www.drm.org>.

DAB+ Digital Radio: <https://digitalradioplus.com.au/>.