An industry response to the recommendations of

Royal Commission into the National Natural Disaster Arrangements

Prepared by

Australian Radio Communications Industry Association – www.arcia.org.au

In conjunction with

University of Melbourne – Centre for Disaster Management & Public Safety
https//unimelb.edu.au/cdmps/home/

Australian Critical Communications Forum – https//criticalcommsforum.com.au/

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Hon David Littleproud - Minister for Emergency Management,
Hon Paul Fletcher - Minister for Communications,
Australian Parliament House
PO Box 6022,
Canberra ACT 2600

Ref – Recommendations from the findings of the Royal Commission into Australia's National Natural Disaster Arrangements.

On behalf of the Australian Radio Communications Industry Association (ARCIA) we welcome the opportunity to respond to the recommendations included in the reports from the Royal Commission, often referred to as the Bushfires Royal Commission. ARCIA is the peak body in Australia representing a wide range of wireless communications users as well as the historical Land Mobile Radio (LMR) or two-way radio industry, and we actively promote the best interests of our members and users, as well as the ongoing effective management of the electromagnetic spectrum.

Our Association has always taken an active role in the discussions and development of the radio/wireless communications used by our public safety agencies, often now referred to as *'First Responders'* and as well as assisting in the maintenance and supply of communications equipment and systems, many of our members are volunteers in the relevant agencies. With this background we believe that we are well placed to offer advice and potential solutions to the issues raised in the Royal Commission report, and in particular in Chapter 6. The specific areas we comment on are to do with communications inter-operability in cross-border situations (recommendation 6.3) and with the provision of a Public Safety Mobile Broadband (PSMB) service (recommendation 6.4).

We have responded to multiple enquiries with regard to the need for public safety communications to be recognised as being part of the overall Critical Infrastructure in Australia, in many cases such as the Royal Commission we work with the University of Melbourne Centre for Disaster Management and Public Safety (CDMPS) in preparing submissions and we provide the technical advice and content for many of those submissions. It is our industry who have the depth of understanding of the many issues involved in both the communications interoperability and provision of a PSMB service, both of which depend heavily on spectrum, and we have excellent working relationships with the Australian Communications and Media Authority (ACMA).

As indicated in the background comments of our submission paper regarding the provision of PSMB, we have been initially involved in discussions and for the past few years interested observers of the process (or lack of it) regarding the development of a PSMB service for Australia. Over the years the landscape for public safety communications around the world has shifted and where several years back there was a feeling that LMR systems would no longer be required, it has now been found that the mobile data systems have not replaced radio communications but become an additional safety tool for first responders. This means that concepts developed based on information from even as few as three or four years ago is now no longer valid. The changes in operating formats for first responders in overseas

experience has not seen a diminution of radio communications, but rather an emphasis on the underlying strengths of both mobile data and voice communications systems.

In addition to the realisation that voice radio communications fill an important need for first responders, there has to also be recognition that technology in the mobile data world will be changing at an ever increasing speed. Even as the world is now coming to terms with the benefits that are being gained from LTE or 4G technology, we are seeing 5G being rolled out in many areas, with discussions already taking place on the development of the 6G technology. With such dramatic development and immediacy involved in these technology advances, it puts a totally different aspect onto the implementation of a PSMB service. To the extent that it will now be impossible for any jurisdiction or agency to install their own dedicated PSMB system, the only way to manage the technology changes will be as the Productivity Commission reported, it must operate on the existing public carrier(s) networks.

Within this response there are two separate submissions, each one specifically addressing one of the key recommendations included in the findings of the Royal Commission. We believe that the suggestions that our Association makes herein are a means for the Australian Government to –

- Lead the way on resolving the issues outlined in the Royal Commission findings
- Provide opportunities to help resolve the issues with little or no direct financial contribution from the Commonwealth, yet provide solutions that will not be expensive for the State Governments to adopt
- Suggest options that can be implemented in a very timely manner to give information to the public that some of the Royal Commission issues are being addressed quickly
- Provide support to many local communities with added radio communications equipment for local brigades, something that will be welcomed in many small rural communities.

This response to the recommendations to the Bushfires Royal Commission is addressed to two Ministers, an unusual situation, however we believe that there are joint responsibilities in this case. The Emergency Management Department has the overarching responsibility to monitor and support the implementation of the recommendations of the Royal Commission, therefore it is important that Minister Littleproud receives our response. As recommended solution for dealing with communications interoperability involves spectrum management which falls under the Radiocommunications Act, and as our suggested solution relating to Public Safety Mobile Broadband will require negotiations under the Telecommunication Act, both of which are within the Communications Department portfolio and the responsibility of Minister Fletcher, we have addressed this letter and our submission to both Ministers.

We look forward to an opportunity to discuss the suggestions we have presented, as part of our preparation of this submission we have spoken to the members of our organisation who are actively involved as volunteers in public safety agencies, as well as discussing our proposals with permanent staff involved in fire services and the management of the same. The general feeling to come out of these discussions is that public safety personnel see that the solutions we are suggesting will be welcomed and would provide immediate reactions towards overcoming the issues uncovered in the Royal Commission. In each case the response was along the lines of our suggestions being simple to implement, easy to assimilate and would provide positive outcomes. We commend them to your earnest consideration.

Yours sincerely,
Australian Radio Communications Industry Association (ARCIA)

Ian Miller – Executive Officer

An industry response to the recommendations contained within the findings of the Royal Commission into Australia's National Natural Disaster Arrangements,

Part 1 – Communications inter-operability

The purpose of this document is to highlight some of the options available to the Australian Government to address the findings of the Royal Commission, in particular the recommendations contained in Chapter 6. This section of the response will deal with Recommendation 6.3 specifically, the requirement for interoperable communications for fire and emergency services across all jurisdictions.

Summary of ARCIA recommendations:

a) The Australian Government, as the responsible entity for management of the electromagnetic spectrum, make available suitable Very High Frequency (VHF) high band spectrum for use by fire services and emergency agencies around Australia for a common interoperable frequency plan that all agencies can have pre-programmed into existing VHF radio devices for emergency use when cross-border equipment operations or inter-agency communications are required.
b) In conjunction with the relevant jurisdictions, to make grant monies available to the fire services, and in particular volunteer fire brigades, to purchase handheld radios to be carried in brigade vehicles for the purpose of fire-ground communications under emergency situations.
c) To encourage the jurisdictions to have their fire services and emergency agencies re-program existing VHF radio equipment to have a commonly identified frequency program and channel identification regime to simplify training and operations under emergency situations

One important factor that needs to be understood as part of the solution to the interoperability problem, there are three totally different communications requirements contained within the general voice radio communications environment –

a) **Strategic or administrative communications** – these are the communications over a wider area that are done as support for the fire-fighting crews but will relate to information and support facilities that will be available or applicable to a much wider area and will not be as time-sensitive as the tactical communications messages. Examples of these relate to weather forecasts, resource availability, management of public information, relief of crews and general support information for the fire-fighting operation as a whole. These types of communications will be over wider area networks such as trunked radio networks or mobile phone services, they should always be separate from tactical communications systems to ensure that communications networks are not blocked for urgent safety communications
b) **Tactical or operational communications** – these refer to the actual operating communications on a fire-ground, they are the communications between fire-fighters and their immediate support facilities that are relative to what is actually happening in real time and will usually have significant bearing on the immediate protection of life and property. In many instances, even with large scale bushfires like the recent incidents, these communications are very locally oriented and will generally be handled on a dedicated communications channel, although occasionally as part of a repeater network. Rarely will they involve units or resources that are not immediately involved in the situation and most communications are time-sensitive, in other words the message is transmitted now, either to warn others or to transmit urgent situation reports.

c) **Task or control communications** – these are the communications directly between members of the fire-fighting crews and relate to immediate actions and requirements for suppression and safety. In most instances these communications will be on simplex or group communications and will be of very high importance. One of the issues raised by one of our committee members (who is also a CFA volunteer firefighter) has been the delays experienced by interstate strike teams when travelling across state borders in getting suitable handheld radios to be able to communicate with local firefighting teams as these task-related communications are of critical importance.

With these three totally different communications requirements it is essential that the solutions do not compromise any of the formats, to do so would potentially create situations that could lead to safety issues for fire suppression crews.

Background:

There are basically three main types of fire service agencies in Australia –

- Metropolitan fire services staffed by permanent career staff
- Rural fire services who have primarily volunteer firefighters managed by a core of permanent professional staff, and
- Forest fire management agencies who again are primarily paid staff

The recommendations of the Royal Commission are really applicable to the second group mentioned above, the volunteer services and more specifically their needs as they move close to and across state borders when working jointly on fire suppression, this was an issue raised by several respondents to the Royal Commission, and as mentioned above have been evident in comments from ARCIA members who are directly involved in volunteer fire brigades.

Historically the Metropolitan Fire Services in most Australian jurisdictions have operated on UHF band spectrum, and for the most part they are now using P-25 digital technology. The second and third groups listed above tend to work on VHF high band spectrum, however, there are differences both between the agencies and between states with regard to whether they operate on low band spectrum (~70MHz) or high band spectrum (~160MHz). Volunteer fire services in Victoria (CFA) and South Australia (CFS) both operate on VHF High band and have a degree of commonality between frequencies of operations and most radios have some operational channels from the adjacent state networks installed in their radios, both states have mature radio networks with radio units fitted into virtually all appliances. In New South Wales (RFS) radio communication is still not as well organised and there is a mixture of some VHF High band, UHF CB radio and the UHF Government Radio Network equipment, however, for fire-ground communications there is a very high reliance on UHF CB radios supplied by local brigade donations and not from Government resources. In Queensland there are also some haphazard communications networks based on the original forestry agency systems from before the forestry assets were privatised by the state government, those systems are still operating on VHF Low band spectrum and are now beginning to have difficulties with sourcing new equipment due to lack of suppliers in that band. Due to the distances involved the fire services from Western Australia and Tasmania tend not to have equipment and appliances involved in support of the Eastern states and we have not included information on those services in these comments.

Contained within submissions to the RC there were comments that communications between fire units became an issue when 'cross-border' units were involved, although there did not seem to be situations that were directly life-threatening, there were serious concerns for the safety of the fire crews and the public as a result of the lack of interoperable communications. As a result one of the recommendations from the RC was that two-way radio communications systems need to be managed to ensure that similar situations do not occur in the future. On the surface this sounds to be an easy situation to resolve, yet on a closer examination it becomes clear that because the various communications systems have all developed over many years and in general are designed for the operations within the specific jurisdiction, to make wholesale changes to coordinate them would be very expensive and well beyond the budgets of the relevant agencies in each jurisdiction. The variations in spectrum utilised also add to the complexity of reaching a workable solution.

ARCIA submits that there is a simple short-term solution to this situation and that it is within the capacity of the Australian Government to provide the tools for the resolution of this issue.

With the primary role of fire suppression in bushfires being done by the volunteer services from within the CFA (Victoria), CFS (South Australia), RFS (New South Wales) and QFES/RFS (Queensland) it is therefore logical that provision for interoperability should utilise spectrum that is already in use by the bulk of the users – in this case that is VHF High band spectrum with CFA and CFS having extensive networks in place. The NSW RFS also have significant VHF high band equipment, although many brigades use locally sourced UHF CB for task communications on the fire-ground, and as the QFES are investigating the potential for moving to VHF High band as an option, we submit that a move towards VHF High band would be a wise choice for long-term voice radio systems.

As the electromagnetic spectrum is managed by the Australian Communications & Media Authority, an agency of the Commonwealth Government Department of Communications, it is within the bounds of the Commonwealth to identify and make available suitable VHF High band spectrum for the establishment of the interoperable communications ability. Under the present Radiocommunications Act (1992) and presumably under the new Act which is now awaiting implementation, volunteer life-saving organisations like the CFA, CFS and RFS bodies are exempt from license fees, or are only charged at a very low annual licence fee. This means that there is basically very little cost, if any, for the Commonwealth to initiate the provision of spectrum for the interoperability facilities.

Our recommendation is that the spectrum provided should comprise multiple VHF HB single frequency simplex allocations that can be used anywhere around Australia for tactical and task communications for emergency purposes, these could also be used for other natural disaster response situations or where it is deemed necessary for the protection of life and property by other agencies. In addition, we would recommend the allocation of further VHF HB two-frequency allocations that could be utilised for repeater operation to provide the strategic communications capability for visiting agencies during times of emergency. Our suggestion is that these VHF repeaters be located at strategic locations throughout the high risk areas and capable of being inter-connected with existing repeater networks to connect between visiting agency appliances and support vehicles via gateway devices capable of being switched to operate into existing strategic networks. These frequencies could be re-used at multiple locations to provide the relevant coverage necessary without being too wasteful of spectrum.

We are conscious that the relevant agencies in each of the jurisdictions are always heavily committed in their budget processes to meet their normal operational expenses, so to find additional funds for equipment for the interoperability equipment would take some time to progress through the budget approvals process. Our suggestion is that the Commonwealth work with the states to provide grant funding to enable the timely installation of these new communications options. The individual agencies should be able to re-program existing radio units to include the new channels without any significant capital costs, simply a time management process. It is also possible that initially the state agencies might only need to re-program some key appliances that would normally make up strike teams that would be the first choice for interstate deployment rather than a full fleet re-program, the full fleet then being handled as part of routine maintenance planning.

As well as providing grant funds for the implementation of the strategic communications networks outlined above, it would then be a wise investment if the Commonwealth and States were to allocate further grant funds specifically linked to the provision of VHF HB handheld radios on the dedicated national disaster radio channels. These radios could then be used for both local operations as well as providing the basis for communications interoperability in situations where support services travel across state borders. After Cyclone Tracy caused so much damage to Darwin the relevant agencies involved reported that one of the major problems with disaster recovery was the lack of interoperable communications equipment. Out of that situation the Commonwealth allocated a block of UHF band spectrum that was reserved for Police forces to use and all Police services around Australia still share those common spectrum allocations. We would strongly suggest that this is a situation where an allocation of VHF HB spectrum for national allocations by volunteer fire services and other natural disaster recovery would be a sensible outcome.

With a commitment from the Commonwealth towards overcoming these communications problems there would then be added incentive for the agencies to move towards having VHF High band as the common spectrum sector for radio communications for the non-urban areas of Australia, this could provide the basis for development of coordinated radio communications for fire services across all of the eastern states. This alone will increase the protection levels and add to the ability of agencies to meet their primary aim of protecting life and property.

In addition to the provision of spectrum for a national disaster communications network, we believe that there also needs to be a level of national coordination with regard to the allocation of equipment and the education and training processes that will need to be undertaken to ensure maximum benefit from the new systems and equipment. With such a wide-spread and disparate group of users such as volunteer fire services, as well as having multiple state agencies involved, we believe that there does need to be a national coordinating agency to advise and manage the implementation. We stress that the actual implementation and training should be done by the relevant agencies, however, coordination of training and common allocation of channel naming formats should be managed by the Commonwealth. This could be under the guidance of the Commonwealth Emergency Management Authority, and perhaps could involve inter-agency working groups like the now defunct National Coordinating Committee for Government Radio (NCCGR) which did much work on achieving commonality of spectrum needs. The NCCGR was a committee set up by the jurisdictions and advised the ACMA on spectrum allocations and usage by the relevant public safety agencies for many years.

As we review the overall voice radio communications systems utilised in national disaster and bushfire situations, we also recognise that there are multiple technology formats and systems that are employed and each of them have specific applications and fit into the mosaic of overall communications efficiency. These include –

a) Mobile phone networks – these are an integral component of both the active fire incident communications, as well as providing a high degree of communications support for the general public. When we consider the 'Strategic communications' applications as mentioned above, the mobile phone networks can help to provide support for the fire services as part of the actual fire incident management capability. In addition, the need to provide accurate and timely information for the public will in many instances be based on the mobile phone networks and the mobile data facilities they offer. The weakness of these services, as was evident on many occasions during the recent bushfires, is the limited amount of power back-up capacity for many of the mobile telephone sites and the restricted access to the sites under emergency conditions to restore power. Failure of the mobile phone networks after several hours will not provide significant disadvantage to the fire suppression activities but will result in increased public concerns due to lack of accurate information on the situations. Although improving the back-up power capabilities of the public carriers networks is to be encouraged at all levels, the more critical element is to ensure that operational and task related communications for fire agencies are maintained at a much higher level than at present.

b) Satellite communication systems – although not utilised to any significant level at present, consideration should be given to incorporating satellite links as part of the overall strategic communications networks used for fire and other agencies during significant disasters. Although signal latency (delay) is much higher in satellite systems, for strategic communications support the coverage and access means that in many cases networks can be quickly operational in remote areas or areas presently unsupported by other communications networks. We note that NBN Co are now working towards utilising their satellite network to provide better access for public communications networks during major natural disasters and this will help with better public confidence. We would suggest that perhaps there is also a case where the NBN Co facilities might be able to be utilised to provide dedicated back-haul for fire service strategic communications networks.

c) Australian Defence Force communications systems – although the ADF usually are not involved in the operational actions for fire emergencies, there could be some consideration given to how the ADF might be able to interface their communications networks to fill in the missing sections in existing or failed emergency communications paths. In the modern world the bulk of radio and data communications equipment and systems utilise the Internet Protocol (IP) connectivity formats. It is highly likely that the ADF equipment will also have similar connectivity and it should therefore be possible that with some forward planning the ADF could be able to take their existing communications systems and interface with local agencies to provide inter-linked communications options for emergency use. This would be a very practical method of the commonwealth being able to support the efforts of the States in addressing emergency response and where the commonwealth would be seen to be acting in a strong and committed support role.

Our recommendations:

a) **The Australian Government, as the responsible entity for management of the electromagnetic spectrum, make available suitable Very High Frequency (VHF) high band spectrum for use by fire services and emergency agencies around Australia to give a common interoperable frequency plan that all agencies can have pre-programmed into existing VHF radio devices for emergency use, in particular when cross-border equipment operations take place or inter-agency communications are required.**

The very essence of not having acceptable radio communication between the various agencies lies in the manner that they have all developed their radio networks and operating procedures until now. In the case of Victoria with the Country Fire Authority and South Australia with the Country Fire Service, they have had direct cross-border incidents for many years, the fact that the borders are not physical and both are open grassland vegetation has led to this. With this ongoing situation both fire services have developed radio frequency programming plans that include radio channels from the neighbouring state. It is also evident that both fire services have been well organised and funded over many years, a situation not evident in New South Wales and Queensland where volunteer fire services have not been as well organised or funded.

If we look back to the devastation and disruption caused by Cyclone Tracy in Darwin in 1974 one of the significant outcomes from that natural disaster was the development of a spectrum to enabler all of the various Police organisations in all jurisdictions to have common radio channels, a very telling decision and the outcome proved to be a very real benefit during natural disasters from that time onwards. The pity has been that although Australia suffers bushfires regularly, as well as other natural disasters just as frequently, there has never been a viable attempt to provide fire and emergency services with the same operational and safety benefits that give our Police forces interoperable communications.

Through the Department of Communications and the Australian Communications and Media Authority (ACMA) the Australian Government has the power, resources and hopefully the incentive to correct this situation by allocating spectrum for this purpose. This should be done on the basis that providing the spectrum should be at no cost to the relevant agencies or jurisdictions, but should be a block of frequencies specifically allocated for major emergency situations and not just for normal operational activities. The spectrum should also be made available to ALL emergency agencies for use at any situation that fits within the bounds of being declared as an emergency situation, this should include agencies such as –

- Relevant State Emergency Service (SES) organisations
- Private fire suppression organisations where they are working in conjunction with appropriate fire service operations, this would include forest fire management organisations
- Local Government organisations where they are directly involved in supporting fire and emergency service operations and working under the direction of the relevant incident controllers.

b) In conjunction with the relevant jurisdictions, to make grant monies available to the fire services, and in particular volunteer fire brigades, to purchase handheld radios to be carried in brigade vehicles for the purpose of fire-ground communications under emergency situations.

One of the significant items that added to the complexity of communications interoperability during the bushfires was the fact that many of the communications were being handled on different frequency bands and with equipment that may have been sourced by volunteer brigades with limited locally raised funds. Within the NSW RFS brigades, and especially in the more remote areas, the local brigades have resorted to utilising UHF CB equipment for their fire-ground, or task oriented communications. For the bulk of their operations where fire suppression is a local requirement and may often only involve the local fire brigade and perhaps one other, the interoperability of communications is not an issue.

This does become a concern when supporting equipment is brought in from other areas and those brigades have hand-held radio equipment that can both fulfil the task oriented communications as well as tactical communications with other units working nearby. We have ARCIA members who are members of volunteer brigades and they have reported that often when 'Strike teams' are despatched interstate they will have to sit at a staging point and wait for several hours for suitable radio equipment to be sourced to enable them to work with local brigades. To ensure the safety of all involved having communications with the local units is essential, yet this delay crates an issue with the fire incident most likely gaining in magnitude whilst the incoming support agencies wait for communications.

The Australian Government should be in a position to make grant monies available through the relevant state agencies to fund the provision of VHF Handheld radios for issue to each of the volunteer fire brigades, as well as have a supply of suitable radio available for other agencies who might be involved in the fire control process. Perhaps if the Australian Government were to do this the jurisdictions could be encouraged to also make similar grants, in either case this would be a very quick way of providing better communications for the fire brigades involved, adding to the safety of volunteer firefighters as well as the general public.

c) To encourage the jurisdictions to have their fire services and emergency agencies re-program existing VHF radio equipment to have a commonly identified frequency program and channel identification regime to simplify training and operations under emergency situations

As indicated above, the CFA (Vic) and CFS (SA) already have channel plans for their radio equipment that incorporate radio networks in both states, this then means that if a fire brigade is required to work into the neighbouring state they can still communicate for all three levels of communications requirements, task or fire-ground, tactical and strategic. If there were to be a common set of radio channels made available nationally these could then be easily programmed into the existing VHF radio utilised by the NSW RFS as well as the CFA and CFS equipment, thus leading to a common channel plan for interoperability. If the channel identification format is set to a common nomenclature, the dual-band radios utilised by most of the Urban Fire & Rescue services would then also be able to quickly identify which radio

channel(s) are going to be used for an incident where multiple agencies and fire services are going to be involved.

Note – radio reprogramming like this is a simple exercise carried out by the agencies technical maintenance staff and is unlikely to require changes to equipment or costs

Although this sounds to be a relatively simple exercise it will be fraught with difficulty and will require diplomatic management of the process and then the development of training protocols. In many cases the existing operational procedures for Fire and Police services in major operations actively discourages operational staff in the field from changing radio channels, to change channels and lose the primary communications channel opens up the possibility that a warning message will not be received and safety is immediately compromised. To manage this requirement will not only require having radio channels suitably identified in each item of equipment, but the Standard Operating Procedures must be defined to ensure that there are no inadvertent errors that could compromise safety.

Note - The Commonwealth should consider a training co-ordination role in partnership with participating agencies to ensure emergency operations centre (and operator) consistency across the jurisdictions.

In Summary:

WE submit that the opportunities outlined here offer solutions to the concerns raised in recommendation 6.3 of the Bushfires Royal Commission. They offer the Australian Government a way to be involved in providing the solutions to the communications interoperability issues that can be done very quickly and with minimal cost to the Commonwealth and state agencies –

- In most instances the radio licences issued by the ACMA to volunteer agencies involved in providing public safety are at little or no cost, this then means that to provide the spectrum for the resolution as per our recommendation a) above will not reflect any loss of income to the Commonwealth and will follow existing spectrum allocation models.
- Provision of grant monies to help equip volunteer brigades with handheld radio equipment would easily fit within the Commonwealth grants for community safety purposes and would simply be a dedication for a specific purpose for a short term.
- As most existing radio equipment will only need to be reprogrammed, therefore there will be no additional impost on the existing budgets for the relevant agencies through their own local budgeting processes, other than perhaps a re-location of resources for the reprogramming exercise.
- For other states like Queensland, there is a lead on how they should develop their own Rural Fire Service communications plans and perhaps to help encourage the implementation of radio communications updates, similar grant monies could be made available to reduce the initial impost on State budgets. This could be a means to escalate the priorities of achieving cross-border interoperable communications, one of the main aims of the Royal Commission recommendations.

The underlying issue involved in all areas of communications interoperability is safety, the safety of our firefighters and their equipment, as well as the safety of the general public which is also directly affected. Our fire services all operate under the creed of 'safety of life and property', they deserve to have some serious consideration and immediate action on the communications interoperability concerns as a matter of the highest priority.

Potential outcomes:

The primary outcome from these recommendations is that the Australian Government can have an immediate and lasting effect on the efficiency of fire services in Australia, significantly add to the safety of first responders and the general public, and do so with little real impact on the budget bottom line, in essence for very little added cost other than providing some direction on grant funds and allocating some VHF spectrum on a national basis.

There is no doubt that by addressing the cross-border communications inter-operability the Government is itself taking the lead in implementing recommendation 6.3 of the findings of the Bushfires Royal Commission. In addition, the grants to increase the communications capability of volunteer fire brigades around Australia will be seen by many as a direct result of the issues raised in the Royal Commission. There is no doubt that in smaller local communities the provision of extra radio communications equipment will be seen in a very positive light from local communities.

The Australian Government can only be seen in a very positive light based on implementation of the above recommendations.

It should be noted that the States already have large investments in VHF radio terminals and in some states VHF Networks. Considering the dominant use of VHF spectrum for fire ground communications it would seem logical to make this the common standard Australia Wide.

An industry response to the recommendations contained within the findings of the Royal Commission into Australia's National Natural Disaster Arrangements,

Part 2 – Public Safety Mobile Broadband.

The purpose of this document is to highlight some of the options available to the Australian Government to address the findings of the Royal Commission, in particular the recommendations contained in Chapter 6. This section of the response will deal with Recommendation 6.4 specifically, the delivery of a Public Safety Mobile Broadband service.

Special note – in all discussions about Public Safety Mobile Broadband it is essential that it be kept in mind that it should be a ***service*** and not a ***system***, this will reinforce the fact that it will operate over the public carrier network(s) and not be a purpose-built communications network.

Summary of ARCIA recommendations:

1. The Commonwealth Government take the lead in developing the system and network design criteria, in conjunction with the telecommunications providers advice on capabilities and the relevant cyber-protection agencies advising on data security issues.
2. Each jurisdiction (including the Commonwealth agencies) seek direct input from the relevant agencies to get accurate and timely information on the actual usage formats and requirements on the mobile data requirements for the user groups
3. The Commonwealth and jurisdictions then to put together an overall demand and availability template, together with the relevant requirements for priority and pre-emption that can be put to the telecommunications providers to map out the possibilities.
4. A performance contract to then be drawn up between the Commonwealth/Jurisdictions and the relevant carrier(s) to detail what can be offered and the respective costs for the services.
5. At such time as the performance criteria and access costs have been determined it will be up to each jurisdiction/agency to manage access to the PSMB service and be responsible for the overall operation of their own agencies.

Background to Developing the Public Safety Mobile Broadband service.

Back in 2013 ARCIA was invited to be part of the discussions on developing a PSMB service for Australia, and we then took part in multiple meetings over the next twelve months. When the Commonwealth engaged the Productivity Commission to conduct an enquiry into the options for the PSMB service our Association submitted documentation and took part in interviews with the enquiry. We also encouraged the Commissioner to be involved in the industry conference, Comms Connect and assisted in getting industry involved in the discussions and outcomes. Over many years since that time we have worked with the organisers of Comms Connect to have international guests attend the conferences and we have been involved in many activities to promote the need for a PSMB system for Australia and have worked behind the scenes to help progress the discussions.

Since early 2018 the representatives of the Functional Working Group of the PSMB project have advised us that we can no longer be involved in discussions as there is a feeling from within some jurisdictions that as an organisation representing some of the potential vendors for the eventual service there could be probity issues. Although we do not share that opinion we have settled back and although trying to assist with bringing information from international resources into the discussions we have watched the progress of the PSMB project from afar.

Over the past two years we have watched as for all intents and purposes nothing has really happened, the supposed plans for a pilot system as a 'Proof of concept' was put out to tender but nothing has progressed. The supposed option of the Commonwealth funding a project office for the development of the project saw some activity from the NSW Telco Authority as the body seen to be best positioned to manage the project, but this also fell into the category of nothing really happening. The project has then been reportedly handed back for the Commonwealth to manage, yet the people involved haven't been seen to provide any impetus towards progressing the project any further to date.

To our knowledge, there have been meetings and discussions on the need for a PSMB project going on since 2013, the Productivity Commission released a report in 2016 giving recommendations on how the system should be configured, yet still there is no evidence of actual progress. In early 2017 the bureaucrats from the various jurisdictions got together and over twelve months drew up a governance document, a good start but there was little actual input from the 'First responder' community at that stage. There are comments from time to time that things are happening, but no real evidence of solid progress and there are as many stories about differences between the various jurisdictions, bickering between the states and with the Commonwealth. With the lack of concrete evidence on progress these rumours will no doubt start and they can be very counter-productive.

After observing the process for over seven years and being an interested party to the outcomes for our first responders, we believe that the recommendation from the Royal Commission simply encouraging the jurisdictions to resolve and implement the PSMB is avoiding the real need of making it happen. One of the major issues involved in the discussions so far has been that there does need to be full involvement of all levels of Government working together to achieve the aim of giving our public safety agencies the technology they will need to 'Protect life and property' for all Australians. The present process of the Commonwealth trying to do some things but not wishing to step into areas that are responsibilities of the States has resulted in all levels of Government not being fully involved.

If we look back to the start of discussions, at that stage there was a feeling by many that existing Land Mobile Radio (LMR) systems, more commonly known as two-way radio systems, would be replaced by mobile data technology. Over the past few years there has been recognition that in most cases those who have adopted the mobile data technology have in fact retained their two-way radio networks – there is no immediate and satisfactory replacement for the one-to-many format of communications offered by voice radio networks. In the real world public safety operators have again realised that voice messages are imperative for the immediacy of communications, whereas data transmissions can be marginally delayed without any immediate impact on operations.

This means that although there is a real need for public safety mobile broadband services, they can exist within the realms of the public carrier networks when the voice radio networks are still operating and providing the immediate communications. The fact that equipment manufacturers are now producing hybrid devices that will operate on both mobile data services like PSMB as well as on LMR voice radio systems further adds to the arguments for PSMB to be only a service offered over the public carrier networks at this stage. When it is considered that those areas not covered by the public carrier services can now be addressed by utilising the NBN Co satellite service, it becomes apparent that the data needs of our public carriers can indeed be met by existing data services covering virtually all of Australia.

We believe that with this background there can now be a review of both the need and format that will underpin a PSMB service for Australia, there is no longer the pressing need for it to be established as a specific purpose network, rather just be an update to the facilities offered by the carriers. This was the recommended outcome from the Productivity Commission enquiry and it is time to re-establish the priorities from those recommendations.

The ARCIA recommendations:

a) **The Commonwealth Government take the lead in developing the system and network design criteria, in conjunction with the telecommunications providers advice on capabilities and the relevant cyber-protection agencies advice on data security issues.**
The recommendation of the Productivity Commission after the enquiry into the PSMB requirements back in 2017 was that the proposed system would not be an economically viable system in its own right and therefore should be a service operated on one or more of the public carrier networks. In the time that has lapsed since that report it is becoming evident that technology will be advancing at an even greater rate in the future and although 5G is still being rolled out by carriers in Australia, discussions are already taking place in Europe on the standards and technology developments for 6G and beyond. With the operating conditions for Australian public carrier networks managed under the Telecommunications Act the Australian Government has a high degree of influence in determining operating conditions and regulating the industry, the state jurisdictions have no direct control or influence in this area.

The second area of concern lies with security, in particular cyber-security, and again this is an area under the direct control and influence of the Australian Government. With the development of technology many foreign agencies are keen to hack into and disrupt data networks, as well as some hostile domestic organisations are potentially going to do in the future. To protect the valuable data that our public safety agencies deal with on a daily basis, it is essential that security and protection of this data in a wireless environment is managed carefully and monitored closely. We believe that the requirements in both of these areas are outside of the remit and capabilities of the jurisdictions, therefore the Commonwealth becomes the essential agency in control of these facets.

b) **Each jurisdiction (including the Commonwealth agencies) seek direct input from the relevant agencies to get accurate and timely information on the actual usage formats and requirements on the mobile data requirements for the user groups**.
This will show different usage patterns from the various agencies, in particular we know there will be differences between Paramedic agencies who will most likely require high-capacity uplink formats, where Fire protection agencies are more likely to require high download capacity for mapping and building/fire ground layout details, whereas Police will require both uplink and downlink capacity at high operational availability.

It is important that each jurisdiction and their individual agencies work collaboratively within their own state as well as with other states to help develop ‘User profiles’ for their data requirements to enable network planning to be carried out by the public carriers. These User Profiles should be developed for both ‘Business as usual’ formats as well as for

minor, medium and major incidents, this information will be essential to allow the public carriers to both configure network requirements for normal operations, as well as develop plans for adjusting network priorities during times of incidents. Without proper incident plans being developed the networks will run the risk of collapse during times of major incidents and so risk the safety of public safety personnel as well as the general public.

c) **The Commonwealth and jurisdictions then to put together an overall demand and availability template, together with the relevant requirements for priority and pre-emption that can be put to the telecommunications providers to map out the possibilities**
With the User Profiles developed from the above point the public carriers can then be requested to provide feedback on network capabilities and limitations, and there will be some limitations. This should then enable realistic negotiations with the carriers regarding the network access costs that will apply, and will set guidelines on what might or might not be considered as being essential functions of the PSMB service

d) A performance contract to then be drawn up between the Commonwealth and/or Jurisdictions and the relevant carrier(s) to detail what can be offered and the respective costs for the services.
The contract must include all of the relevant performance characteristics, including acceptable standards for network resilience and restitution in case of network failures from unforeseen events or network interruptions that have been agreed as being beyond the performance guarantee as part of the negotiation of performance vs cost of provision.

e) At such time as the performance criteria and access costs have been determined it will be up to each jurisdiction/agency to manage access to the PSMB service and be responsible for the overall operation of their own agencies.
In return for the Commonwealth managing the overall network operations and supervising the relevant upgrades of the PSMB network core and security, the Commonwealth should include a small surcharge on each user terminal to cover the ongoing costs in these areas. The actual costs associated with upgrading network hardware and network core software should be incorporated into the terminal access fees and so paid by the carrier(s) operating the system.

Proposed outcomes.

ARCIA recommends that if the Commonwealth were to manage and direct the overall governance of the PSMB networks, then it follows that the states and their agencies should be directly involved in the establishment of operational parameters and in the final discussions regarding the costs and services to be applicable. This would then reflect a dual-tier approach to the PSMB service where the Commonwealth manage the governance and responsibilities of the provision of the network infrastructure, with the relevant jurisdictions managing the network access and relevant fees applicable for their agencies and other system users. We firmly believe that this would open the way for the PSMB service to fall into place and the 'first-responder communities' would then be able to define their needs and get things moving on a national basis.

It remains our strong belief that it should be the actual 'First responder' community who provide the network and system 'user profile' requirements, it is only by doing this that there can be assurances that the full benefits of mobile data will be realised. If the present format of public servants and departmental bureaucrats continue to provide the major inputs, then the needs of the actual end-users of the systems will be influenced by the opinions and positions of the bureaucrats with the risk that the real needs and benefits being subjugated to other criteria.

It is essential for both the efficiency of the proposed PSMB service, as well as for the ongoing safety of our first responders and the general public, that the people who will actually utilise the PSMB service every day are the ones who give the information that will help to ensure the benefits will be realised in the longer term.

By acting on these recommendations the Australian Government would be seen to be taking the lead in helping to resolve the issues outlined in recommendation 6.4 of the Bushfires Royal Commission. The present process has been going on for many years and still is at the 'talk-fest' stage, Commonwealth leadership will help to make things happen and all it will take is some time for the Government to corral the relevant players and set the example. It will not require any large amounts of funding to finally make it happen, just some leadership and direction.