Bushfire in Australia

Emergency Management Post Black Saturday and the Attitudes and Behaviour of Individuals and Households in Bushfire Prone Areas

Ken Strahan

Wildland Fire Canada 2014

Halifax Nova Scotia

Abstract

Following the Black Saturday bushfires in February 2009, the Victorian Bushfire Royal Commission made a wide range of recommendations based on the learnings from the fires. Government and emergency services agencies have implemented a number of these recommendations which in many ways have improved agencies' response to bushfire and the organisational framework around emergency management in general.

Improvements to the advice on decisions residents make during bushfire, to Fire Danger Ratings and to Emergency Warnings are of particular interest and importance. At the same time there has been an increasing concern expressed by emergency agencies that the at- risk community appears complacent and unwilling to share responsibility for bushfire safety.

Research undertaken by the Country Fire Authority, by Emergency Management Victoria and by me have turned attention to the continuing mismatch between the aims and expectations of emergency management policy, processes and procedures and the attitudes and behaviours of the at risk community. For instance , while the new Prepare Act and Survive (PAS) policy clearly advocates early evacuation from bushfire, data suggest that approximately 70% of households will to some extent continue to wait and see what happens in the development of the fire before they decide what they will do.

Research findings suggest that we must question the effectiveness of bushfire policy that assumes and relies on a much greater degree of homogeneity in the at risk community than exists in reality. Rather there is a pressing need to develop policies, programs and processes that reflect the actual needs and circumstances of people in bushfire prone areas.

Introduction

Thank you for the opportunity to bring you up-to-date with some of the things that are going on in the area of community bushfire safety in Australia.

This is a somewhat narrower topic than the one you've given me of "Bushfire in Australia" but my background over the last 20 or so years has been in the area of research into community attitudes, perceptions and behaviour primarily in relation to bushfire. So I think I'll stick to that.

I have worked as a self-employed private sector researcher and consultant since the early 1980s and during some of that time have been employed as a consultant to State and Federal government ministers in a range of areas including industry and regional development, local government, energy and transport. In all that time I've consistently found that Canadian ideas and initiatives have been highly respected and taken up as models for policies and programs in these and a range of other areas. So it's pleasing to return the favour and tell you a little bit about what's going on in relation to bushfire in Australia.

I intend to talk a little about community bushfire safety in Australia in general, the 2009 Black Saturday bushfire; the Royal Commission and the Implementation Monitor which followed; some of the changes that have been made to the Bushfire Safety Policy Framework following the Royal Commission; research that has been done on the attitudes and behaviour of people in bushfire prone areas in Victoria; and my perspectives on where things are headed in the future. Because I expect that most of you will have a fairly good knowledge of our approach to bushfire safety, the Black Saturday Bushfires and the Royal Commission, I won't spend too much time on that except to provide a context.

I would like to give you an insight into what I see from my perspective as some of the key changes that have been implemented in response to recommendations of the Royal Commission and give you a taste of where things might be headed. On the way I would like to tell you a little about research I'm doing on self-evacuation from bushfire.

Finally, I'll discuss some of the issues that I think are likely to arise in relation to community bushfire safety in Australia in the future.

I have drawn on the work of many of my colleagues and clients and thank them for their inputs but take full responsibility for all errors and omissions. I'd like to thank specifically John Handmer, Josh Whittaker, Alan Rhodes and John Gilbert for their assistance in preparing this paper.

Community Bushfire Safety in Australia

Prior to the Black Saturday bushfires the focus of community bushfire safety in Australia was the PSDLE whereby bushfire prone residents choose to prepare and stay and defend their properties or to prepare to leave well in advance of any fire (AFAC 2005). People who were physically and emotionally fit and equipped with appropriate skills and resources were believed to be able to defend their property.

The policy was founded on Australian's extensive experience of bushfire, bushfire research and the attributes of self-reliance and practicality that are prevalent within the Australian rural community. The policy reflected four propositions:

1. Well prepared properties can be successfully defended and provide refuge as the fire front passes.
2. Late evacuation from bushfire is extremely dangerous.
3. Fire and emergency authorities lack the resources to assist everyone who might need it in protecting their property or in evacuating from a bushfire
4. Of those confronted by bushfire, some will prefer to stay and defend and others will wish to evacuate. Their preferred actions are based on the complexity of attitudes, beliefs and preferences.

Whittaker et al (2013) concluded that "the policy simply formalised an approach to bushfire safety long adopted by Australian residents, while emphasising the dangers of late evacuation"

While it was a generally accepted policy, problems with the PSDLE had been identified including:

1. While the policy was perceived as appropriate for protecting property it was not seen as a viable strategy for protecting life. People under bushfire threat would therefore "wait and see", creating the potential for late and risky evacuation (Rhodes A. , 2005)
2. Uncertainty about when best to leave and inability to recognise when leaving was no longer safe (Tibbitts & Whittaker, 2007)
3. Only partial commitment to staying and defending by many who planned to stay but retained late evacuation as an active option.

Black Saturday Bushfires

As most of you will be aware the Black Saturday Bushfires on 7 February 2009 in Victoria caused 173 fatalities, destroyed more than 2000 homes and burnt approximately 430,000 hectares in south-eastern Australia. It was the worst day of bushfires in Australian history with extremely high temperatures (in excess of 44 C), low relative humidity (<10%) and strong winds (> 100 kph) right across the State of Victoria. Forest, bushland and undergrowth were extremely dry following a decade of drought and a very dry previous 12 months.

On that day more than 400 fires burnt across Victoria, their speed, intensity and extent drastically stretching the fire-fighting capacities of the authorities and leaving residents to largely respond to the emergency without direct assistance from the fire services.

Royal Commission of Enquiry and Implementation Monitor

Following the Black Saturday bushfires a Royal Commission of Enquiry (VBRC) was established to investigate the circumstances of the fire. It delivered its Final Report on 31 July 2010. (Teague, 2010)

The Royal commission examined a very wide range of issues and made recommendations on them.

The Bushfire Royal Commission Implementation Monitor (BRCIM) was established in 2011 to "monitor, review and report on the progress of agencies in carrying out the government's response to the VBRC's Final Report recommendations".

There are four areas on which the Royal Commission recommended which are central to the Australian approach to community bushfire safety now and in the future which I would like to comment on.

<u>Prepare, Act and Survive</u>

The PSDLE policy was criticised by the Royal Commission as contributing to fatalities because it encouraged people to stay and defend their homes in extreme conditions in which they were not defendable. The evidence given for this was the fact that 113 of the 173 fatalities occurred inside houses. Subsequent analysis indicated however that 69% of fatalities had been sheltering passively rather than attempting to defend their property.

One of the major outcomes of Royal Commission was therefore a recommended change from the PSDLE policy to a policy of "Prepare Act Survive" (PAS) which emphasises the dangers of staying and defending *during extreme fire weather conditions* and promoting leaving early as the safer option.

The PAS was designed to provide a National Framework for a scaled advice and warnings to the community including expanded fire danger and bushfire warnings systems.

There are two reasons why this policy is so important in relation to the Australian community response to the threat of bushfire. First, bushfire is a natural disaster that is defendable so those threatened with it are confronted with a very large range of choices about how they will respond to the threat. This is in contrast with many other types of natural disasters such as hurricane, tornado, earthquake, volcanic eruption and tsunami where people's response options are much more limited.

Second, although Australian emergency services authorities (except in Victoria) have the legal power to implement compulsory evacuation, the broad-based application of such powers in a major bushfire situation is highly unlikely. This is because of the risk to public officers and because the diversion of police and emergency resources away from community warning and assistance in order to forcibly evacuate a person during an extreme bushfire is highly unlikely.

<u>Fire Danger Ratings</u>

Although the Victorian community was warned well in advance of impending extreme fire danger weather, even to the extent that the Victorian Premier at the time made a public statement which was widely reported on the Friday before Black Saturday, the Royal Commission found that fire agencies had failed to provide timely warnings to communities under imminent threat of bushfire.

Following the recommendations of the Royal Commission the Victorian emergency services authorities revised the Fire Danger Rating (FDR) system and the bushfire warning system.

The FDR now includes an additional rating of Code Red (Catastrophic in all other States), beyond the previous highest rating of "Extreme". On a Code Red forecast day no amount of preparation can make defending or sheltering in place a viable response to a bushfire threat and therefore the official advice is to leave the area well before any bushfire arrives.

FDRs now provide residents with forecasts of the level of fire danger based on expected weather conditions up to 4 days in advance. Recommendations on the appropriate response or behaviour according to the FDR level are provided for the information of the public. At the highest FDR level – Code Red - people are told that "These are the worst conditions for bush or grassfire. Homes are not designed or constructed to withstand fires in these conditions. The safest place is to be away from high risk bushfire areas" (Country Fire Authority, 2014). They are told that leaving high risk bushfire areas the night before or early in the day is the safest option – they should not wait and see.

At "Extreme", the level below Code Red, people are told to expect extremely hot, dry and windy conditions so that if a fire starts and takes hold "it will be uncontrollable, unpredictable and fast moving. Spot fires will start, move quickly and come from many directions."

People are told that they would need to be physically and mentally prepared and that a home that is situated and constructed to withstand a bushfire, and that is well prepared and actively defended may provide safety.

In the BRCIM's Final Report of 2012 (Bushfire Royal Commission Implementation Monitor, 2012) the National Review of the Fire Danger Ratings system was reported as complete.

Emergency Warnings

Residents living in areas that are potentially threatened by a bushfire are now provided with staged bushfire warnings.

- The first level ("Alert") provides them with general information to keep them up-to-date with developments around a fire in the area
- The second level ("Watch and Act") informs them that an emergency threatens and that they need to start taking action to protect themselves and their family
- The third level (Emergency Warning") informs them that they are in imminent danger and will definitely be impacted by the emergency and will need to immediately evacuate or prepare their property and themselves to defend against the fire. The Emergency Warning message may also warn residents that if they have not left their property it is too late for them to leave and they should prepare to stay and defend or shelter in place.

Emergency warnings are provided through a range of channels including television and radio, automated messages on landline telephones and text messages on mobile telephones.

Messaging on mobile telephones and landlines (Emergency Alert) have become extremely important channels for bushfire warnings.

The Emergency Alert (EA) system has been operational since December 2009, with subsequent version upgrades. It has two capabilities to send warning messages to those in areas at risk:

1. **Location Based Number Store (LBNS)** that delivers voice messages to landlines and text messages to mobile phones based on the registered service address in Australia, and
2. **Location Based Solution (LBS)** that delivers text messages to mobiles based on the last known location of the handset.

LBNS applies to all customers of the three Australian network providers, Telstra, Optus and VHA, within their areas of coverage, including international visitors roaming on the three networks.

According to the BRCIM 2014 Annual Report (Bushfire Royal Commission Implementation Monitor, 2014) the Emergency Alert (EA) has been used by emergency services across Australia for 1,277 campaigns to send almost 11 million warning messages with an overall success rate of 67 per cent. Since its release in October 2013, the LBS has been used in seven jurisdictions for 176 campaigns to send in excess of one million warning messages with an average delivery success rate of 94 per cent.

Also in its 2014 Annual Report the BRCIM reported on the 4G enhancements to the system which would be completed before the 2014 – 15 bushfire season and consequently that it considers the Emergency Alert (Phase 2) has now been adequately implemented.

While the systems of Fire Danger Ratings (FDR) and Bushfire Warnings have been expanded and improved, consistent with the recommendations of the VBRC, people confronted with a bushfire emergency still face the same choices that they did under the PSDLE policy although with more and perhaps better information on which to base their decisions.

Resilience, Shared Responsibility and Complacency

Without defining it specifically the Victorian Bushfire Royal Commission called for the retention, within bushfire policy, of the principle of shared responsibility— "that there are legitimate and important roles for both individuals and the State". The VBRC saw its recommendations as giving priority to protecting human life and as being designed to reflect the shared responsibilities of governments and government agencies, communities and individuals to minimise bushfire fatalities.

The Commission's report was framed around the idea that responsibility for community safety is shared and that government, households, individuals and the broader community "must accept increased responsibility for bushfire safety in the future and that many of these responsibilities must be shared".

The VBRC considered that "community and government complacency can place some people at risk of death when bushfires occur. It believed that the State needed to help break

this cycle with sustained efforts to deliver frank education and public awareness campaigns. Individuals, household members and communities share responsibility for ensuring lasting compliance with Victoria's revised bushfire safety policy."

In its 2014 Annual Report the BRCIM expressed the view that considerable work remained to be done to develop, consolidate and implement true shared responsibility for bushfire safety in Victoria. They saw this as occurring as part of the broadly based, all agencies, all hazards emergency management system under development.

McLennan and Handmer (2014 p7) in their Sharing Responsibility Project noted that sharing responsibility is a core governance challenge for " modern democratic political systems: the changing nature of relationships between government and citizens in the face of dynamic and complex social, economic, environmental, political and technological conditions".

They concluded that "The Shared Responsibility discourse is articulating a new social contract for disaster management but half of the contract terms are missing". By this they meant that calls for shared responsibility and resilience based approaches are in fact a call for a new social contract for disaster management which strikes a new balance between the rights and responsibilities of the State and its citizens. However the rights, benefits and responsibilities of citizens are missing in the discourse over this new social contract. Such a discourse is particularly important in relation to addressing dilemmas around the "protection of citizen and property holder's rights, legitimacy and accountability of government agencies and government decisions and the uneven distribution of impacts, impositions and benefits of disaster risk and risk management activities".

It is in this context that the BRCIM (Bushfire Royal Commission Implementation Monitor, 2013) refers to a Department of Justice report on the 2012-13 Summer Fire Campaign whose "disturbing findings illustrate that there is still a great deal of work to be done to address the prevailing levels of public complacency." The BRCIM felt that a social marketing campaign was required to encourage the community to meet their personal responsibilities and that improvement in community safety will not be achieved without the active involvement of the community." The 2014 Annual Report of the BRCIM is less stridently critical, commenting positively on an apparent increase in general community awareness and responsiveness to public warnings and advice. However it notes that when memories fade, people cannot afford to become complacent about bushfire threat.

Even though the language was toned down in 2014 there appears to be a clear mismatch between the perceptions of emergency agencies and their view of how Shared Responsibility should be interpreted and achieved and the type of social processes involving more inclusive governments frameworks in Australian disaster management which are envisaged by McLennan and Handmer to achieve a societal agreement on Shared Responsibility.

Post Black Saturday Attitudes and Behaviour of High Risk Households in Victoria

Since 2009 my market research company – Strahan Research has undertaken post season research for the Victorian Country Fire Authority (CFA) targeting residents in high bushfire risk locations in Victoria. At the recent Australasian Fire and Emergency Service Authorities

Council (AFAC) conference in Wellington New Zealand John Gilbert of the CFA reported on the findings of the post season research. (Gilbert, 2014)

He noted since the Black Saturday bushfires and the VBRC, significant changes had been made across the emergency management sector and in this context the CFA's post season research was aimed at monitoring key changes in attitudes, intentions and actions of individuals and households. A minimum of 600 randomly selected households, in high bushfire risk areas and in close proximity to bushland, were surveyed each year allowing 95% confidence that results were within 4% of aggregate population values. John reported the major findings as summarised below.

Awareness of bushfire risk

General awareness of bushfire risk is high with 77 to 83% of respondents believing that a bushfire is likely to in their area and 69 to 75% agreeing that it would have a significant impact on their property. Although respondents are located in high bushfire risk areas and in close proximity to bushland, many under estimate the risk with 51 to 56% rating bushfire risk as minor or moderate.

Expectation of assistance and warnings from emergency services

While 90 to 97% of respondents say they accept responsibility for their own safety and 87 to 90% know that they need to be self-sufficient, in the 2014 survey 57% believed that they would get assistance from the fire services to protect their property and 75% believed they would be told when to leave during a bushfire.

Preparation

77 to 85% of respondents rate themselves as well prepared to deal with a bushfire. They feel well informed about factors affecting bushfire risk (77 to 81%) and about how to prepare their property (84 to 87%). But their preparations mainly involve general maintenance activities such as cutting grass (80 to 85%) and clearing leaves and branches and maintaining the property (69 to 73%) and only very limited fire protection activities such as owning firefighting equipment (30 to 36%) or having covers for windows (10 to 13%).

Household planning

While 95 to 96% of respondents said they had considered what they would do during a bushfire this was more likely to involve gathering information (72 to 75%), discussing with household members what they would do (85 to 87%) and thinking where they would go (84 to 93%) rather than practising their plan (46 to 51%), considering contingencies (47 to 55%) or writing down important things (37 to 39%). In 2014 respondents felt that during a bushfire they were well informed about when to leave (89%) and about where to go (77%).

Warnings

Respondents reported feeling well informed about how to get warnings about bushfire (69 to 84%) and in 2014 the main official channels identified included radio (82%), Internet (74%) and SMS (65%). Neighbours are the main unofficial channel (79%).

In 2014 87% of respondents said that they expected to get an official warning of a bushfire threat.

<u>Intended response</u>

Since the Black Saturday bushfires the number of respondents planning to stay and defend their properties has decreased from between 20 and 50% to 13 and 17% while the number intending to leave early has increased from 1 to 2% to 12 to 15%. However 30 to 31% intend to wait and see but leave if threatened and a further 39 to 42% say that they would leave as soon as they become aware a fire could threaten them.

Reasons for Individuals and households Response to Bushfire

Alan Rhodes of Emergency Management Victoria also presented a paper to the AFAC conference in Wellington this year entitled "Why don't they do what we think they should?" (Rhodes A. , 2014) He notes the widespread perception that people living in bushfire risk areas are complacent about bushfire safety and acting in a safe manner during bushfire, notwithstanding the extensive advice and activity of the emergency services. This, he believes, is generally explained by people's lack of information and understanding. However Alan suggests an alternative explanation- that this may be because these people do not see the advice coming from emergency services as "relevant or applicable to them in their situation. For many people, what agencies have to say does not make good sense."

In support of this proposition he cites a qualitative study of 120 households undertaken in 2013 following bushfires in the area of the participant households. Alan may present his findings on his research to a conference in the US next year so I will not go into the findings in detail but summarise outcomes in relation to what he calls "response archetypes". These archetypes describe a pattern of attitudes and behaviour rather than an individual and represent "typical ways people understand and behave in response to bushfire risk" in terms of risk perception, attitudes, intentions, priorities and behaviour.

These 6 archetypes are characterised as follows:

<u>Can-do defender</u>

They are confident and self-sufficient in their decision to stay and protect their property. They are aware of risk, have good local knowledge and are experienced with bushfire. They rely heavily on their own observations, judgement, experience and resources to deal with bushfire; improvise depending on circumstances; have their own firefighting equipment; and are unlikely to evacuate but do have an escape route in mind if needed.

<u>Considered defender</u>

They are aware of bushfire risk and consciously decide to stay and protect their property. They invest their time and resources in learning, planning and preparing for bushfire including through engaging with fire agencies and participating in programs. They tend to be cautiously confident but continuously learning and adapting their plans depending on the circumstances. They access official warnings and use technology in that regard but also observe conditions and use local networks to share information.

Livelihood defender

They are committed to staying and protecting their assets which may include stock, crops, machinery and buildings, from which they derive their livelihood. Many are long-term residents with good local knowledge, who are practical and self-reliant, and who prepare and equip themselves with the objective of asset protection. They rely on their local knowledge and networks to gather information and make their own assessment of bushfire threat. Importantly they identify fall-back locations on their property to shelter rather than leave.

Threat monitor

Their intention is to leave their property in a bushfire situation but intend to remain until they believe it's necessary to leave. They remain to observe the fire, avoid the inconvenience of leaving, prepare the property and look after animals. In many cases they believe they have multiple safe escape routes. Their preparation and planning reflects their assessment of the threat and their protection priorities. Their evacuation triggers include proximity of fire, perceived increased danger due to change in circumstances and advice from authorities. They focus strongly on monitoring and assessing the bushfire using a range of information and relying heavily on official warnings.

Threat avoider

They feel vulnerable to perceived bushfire risk because of factors such as responsibility for dependents, un-defendable property, limited capability and lack of preparation or equipment. They place protection of life ahead of protection of property. They do not seek safety information from emergency authorities and do not invest time, effort or money in preparation of the property or purchase of equipment. Because their intention is to leave, their planning is focused on tasks to prepare to leave, preparing transport and safe evacuation routes. They are likely to have clear triggers for evacuation and are especially sensitive to official warnings and direct calls to leave by the authorities.

Unaware reactor

They do not see themselves to be at fire risk, tend to be unfamiliar with the environment and do not expect to be affected by fire even though they may occur in the area. They see no need to seek information, plan or prepare for bushfire. They pay little attention to fire danger ratings and do not monitor information sources on high risk days. In a bushfire situation they rely on familiar sources such as news services or family and neighbours for information and react to the situation, waiting and leaving if they feel threatened.

Where We Are Now

So, what do I think these elements mean for the Australian bushfire scene post Black Saturday and the implementation of the VBRC's recommendations?

From the emergency services viewpoint, the Prepare, Act and Survive (PAS) policy emphasising the need to evacuate early in the face of bushfire, combined with an improved system of Fire Danger Ratings (FDR) and bushfire warnings especially the Emergency Alert (EA) system, represents a significantly improved suite of initiatives advising and informing

individuals facing a potential or actual bushfire threat. There have been real and significant improvements from the learnings of Black Saturday.

At risk individuals are pre-warned of potential high fire danger conditions through the FDR's, they are warned of an actual bushfire threat through a staged process utilising the EA system, and a range of other channels, and they know what they should do, based on the advice provided through the PAS policy which has been widely communicated throughout the community.

At the same time however, from the point of view of the emergency services, many individuals appear to act in an irrational manner and, in the language of the BRCIM, appear to be complacent and unwilling to adequately share responsibility for their own safety.

And yet research demonstrates that respondents are aware that they are at risk from bushfire, believe that they are well informed and prepared to deal with bushfire and have planned what to do if there is a bushfire. Although a deeper analysis of the data suggests that this preparedness and planning may, in many cases, be superficial, it is likely that respondents believe that their actions and behaviours are appropriate to their situation.

The research also indicates that the broader community appears to be aware of the improvements in FDR and EA as a vast majority now expect to get official warnings of bushfire, to be told when to leave when there is a bushfire and to get assistance from the fire services to protect their property.

But to the chagrin of the emergency services approximately 30% of those in a bushfire event will *wait and see* how the fire develops before they decide whether they will leave or stay and defend and only leave if they feel threatened. Many of the approximately 40% who say they will *leave as soon as they are aware that they are under threat*, do not appear to apply the PAS in the manner that the emergency services would prefer. They do not leave early and safely. In the language of Alan Rhodes' "response archetypes" the "Threat Monitor" and the "Threat Avoider" along with the "Unaware Reactor" will mostly make an assessment of the threat to them based on their particular circumstances and will make their decisions to stay or go based on their own assessment. Their perceptions of and responses to the bushfire risk makes sense to them in their context. In fact the advice of emergency services "is seen as irrelevant or even nonsensical to people who understand the risk very differently." (Rhodes A., 2014)

In my own study on self-evacuation behaviour, individuals who had been confronted with a bushfire responded in ways that the emergency services would see as totally inappropriate but made total sense to them at the time. For instance a mid-50s male living on half acre block with his wife, said his approach was to wait and see whether he would evacuate or stay and defend. He decided he would send his wife away but he would stay, because water bombers were operating in the area and he was able to bucket water out of his backyard swimming pool onto the fire burning just over his back fence. On two separate occasions fire service offices came to his property and told him he should evacuate but he refused. He said to me that he was lucky that the fire didn't jump into the tree canopy in his backyard because he would have been "toast for sure".

A mid 40s couple living on a 10 acre bush block said that their plan was to leave if they felt threatened, which they did when they thought the fire was approaching. But then they returned because they couldn't get information about where the bushfire was and from their observation it appeared that it was moving past their property at a distance. However they detected a wind change and left again but were still unable to get definitive information and so returned to their property again. They had no particular motivation for coming and going like this except that it was inconvenient and emotionally uncomfortable staying at an ex relative's home not far from their property.

A single mid 40s mother of two teenage children on a 5 acre block remained in her home sheltering from the bushfire which she knew was moving in her general direction. She believed that because her children were away, that there were no large trees close to her house or outbuildings and her home was in the centre of a large cleared area that she would be safe. Within 400 metres of her property the wind changed direction and blew the fire away from her property. She commented that later, after driving into the "hot zone" and seeing how intense the fire had been, she realised how lucky she had been and that she would not have made that decision had she known how bad the fire was.

An early 60s couple living on a half- acre block who intended to leave if they felt threatened remained in their house observing the smoke plume, listening to warnings on the radio, receiving warnings on their mobile phones and preparing to leave. It wasn't until they could see flames in trees in their street that they left. Seeing flames was their trigger for leaving because a friend in the volunteer fire services had told them that "if you see flames you have to leave".

Even those individuals who might be seen as more keyed into the messages and perspectives of the emergency services, for instance the defenders – "can do", "considered" and "livelihood" are likely to make decisions based on their information, knowledge and experience and the circumstances that they see themselves as confronted with, in ways that are in direct conflict with the views and advice of the emergency services.

For instance a "Livelihood Defender" couple who own and run a twenty-five acre horse stud said to me that they expected to be safe from a bushfire if they stayed with their horses in large sand paddocks and if they were unable to escape to there, a large dam closer to the house could also provide safety for them.

Implications for the Future

So clearly there is a gap between the emergency services' view of how people living within bushfire prone areas and/or under threat from bushfire should think about bushfire, prepare and act and how these people actually think and behave.

Based on anecdotal evidence from my work on evacuation, I believe that it's possible that this gap may grow as a result of the emergency services success in providing better information and warnings, which give people, confronted with a bushfire threat, greater confidence to wait for longer to see what the bushfire does before they make a final decision. In the future, as people get more, specific and accurate information about the location of the bushfire; its direction and speed; about weather conditions, wind speed and direction and expected wind direction changes; this will actually further empower them to make their own

decisions. These decisions will not necessarily be consistent with those that might be preferred by the emergency services.

This improved information will not only be provided through government and its agencies but will be generated through community sources based on increasingly sophisticated and trusted social media.

There is also a more negative trend that appears to be emerging. In relation to fire danger ratings, while 65% of respondents say that they intend to leave their property early in response to a Code Red forecast, in fact only 1.5 to 2% actually leave on a Code Red forecast day. There are many practical reasons why this is the case. For some people they just have nowhere to go. For others leaving may take them to another area which is just as dangerous or possibly where a bushfire may occur. Others can simply not leave their work or daily routine because the emergency services say they should do so. Some others may have left on previous high fire danger days and are unwilling to do it anymore.

This is a striking example of Alan Rhodes' point that the advice of emergency services does not make good sense and is irrelevant to their particular situation, as they see it.

From my own research I believe the logic of this can be extended to those who have evacuated from a bushfire, experienced that evacuation negatively and consequently say that they will not evacuate as easily if they are confronted with a similar situation in the future.

The emergency services are likely to see in simple positive terms a household evacuating along a safe escape route, to an evacuation centre and then staying at a relative's home for a couple of days while the fire ground is made safe. The evacuees on the other hand may well see it very differently.

In some cases they are unsure that they made the correct decision to evacuate, leaving the house vulnerable to falling embers and spot fires and even to potential looters. Having left they are unable to return and are confronted with the uncertainty, sometimes for days, as to whether or not their house has survived or burnt down.

Living somewhere other than their own home is inconvenient and they may see it as a burden on their friends or relatives. In many cases where evacuation has been sudden and disorganised, they will have left without sufficient or appropriate clothing or without medications or other essentials.

 In many cases they will have left animals that they could not find in the rush to leave and other nondomestic pets such as chickens and birds which they were unable to take with them. They worry that their pets and animals cannot be properly fed, watered and cared for while they are shut out of their homes.

Many evacuees experience the bureaucracy of evacuation in extremely negative terms. They feel subject to an impersonal bureaucracy that has no understanding of and is unconcerned about their particular circumstances and needs. They cannot understand why particular requirements and impositions are placed on them. No one attempts to justify or explain why these things are required. In some cases they even see uncaring petty

bureaucrats engaged in ego trips imposing irrational requirements on traumatised people who have already been through the wringer.

There appear to be three key implications arising out of this growing gap between the perceptions of the emergency agencies and individuals households and communities at bushfire risk.

First, the emergency services need to understand more clearly why people in bushfire risk areas, confronted with bushfire, behave in the way they do. Research will play a very important role in improving understanding. There is considerable excellent research being conducted in Australia through the Bushfire and Natural Hazards CRC, universities, the emergency services authorities and even in the private sector. I intend that my work on self-evacuation will make a contribution also.

Second, the emergency services and emergency agencies generally need to respond to the actual needs and circumstances of these people in ways that they will "see as relevant and appropriate (to) their situation and which facilitates safe responses." (Rhodes A. , 2014) Emergency services authorities need to re-consider their strategy of providing policy and operational frameworks to people at risk from bushfire and expecting that they will fall into line and behave in ways that are expected and preferred by the emergency services.

The emergency services are more likely to develop more effective policies, programs and processes that reflect the actual needs and circumstances of people in bushfire prone areas if they are designed on the basis of what McLennan and Handmer call a "socially inclusive discourse" to achieve a new social contract of shared responsibility in relation to disaster management.

So third, there is a need to establish more inclusive government frameworks to facilitate social participation in negotiating and engaging in responsibility-sharing at all levels and settings where risk management takes place. These processes need to "take place *outside of* (their emphasis) the urgency of immediate response to disaster events and their aftermath. (McLennan & Handmer, 2014)

None of this is particularly new. Drabek and Stephenson in 1971 in research on the Denver floods of 1965 said in their final paragraph "Rather than decry the stupidity and short-sightedness of civilians, might it not be more productive to view the world from their perspective and then build complimentary administrative structures that anticipate their responses and allow them to be expressed? Rather than to try and curtail or channel their responses into directions they will resist out of their own values and definitions, might it not be more effective to construct plans that capitalise on the varied and highly significant resources that threatened families represent? (Drabek & Stephenson,, 1971. P 202)

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