

26 July 2011

Mr Stephen Palethorpe
Committee Secretary
The Senate – Environment and Communications References Committee
PO Box 6100
Parliament House
Canberra ACT 2600

Sent via email: ec.sen@aph.gov.au

Dear Mr Palethorpe

Inquiry into the capacity of communication networks and emergency warning systems to deal with emergencies and natural disasters

I refer to your letter (14 July 2011) concerning this matter and to the invitation to the *Bushfire CRC* to appear before your Committee on **Tuesday, 9 August 2011**.

1. Firstly, and by way of background I can advise that:

- The *Bushfire CRC* was established in July 2003, with the strong support of the *Australasian Fire and Emergency Service Authorities Council* (AFAC), and the Ministerial Council linked *Forest Fire Management Group*. These two bodies included the fire (rural and urban), park and forest management agencies around Australia and New Zealand. The *Bushfire CRC* formation followed bushfires around Sydney in December/January 2001/02.
- Much of the work of the current *Bushfire CRC* has been aimed at finding ways of reducing the level of bushfire risk for given levels of investment and resourcing by governments and the wider community. While much has been learnt over the last few decades about the management of fire in eucalypt dominated ecosystems, and in grasslands, much remains to be understood. This is particularly true in the case of human behaviour both generally, in bushfire-prone areas and during emergencies.
- The formation of the *Bushfire CRC* in 2003 was a major step by AFAC to bring together all fire and land management agencies in Australia and New Zealand to create a much needed Australasian research effort. Funding by the Australian government (complimenting Stakeholder cash and in-kind contributions) was initially for a seven year period, 2003 – 2010. Research has been conducted by 13 research partners around Australia and New Zealand into the social, environmental and economic impacts of bushfires and into aspects of fire behaviour.

- The 2009 Federal Budget provided for the allocation of a further \$15 million of federal funds to the *Bushfire CRC*. The funding was for three years from 1 July 2010 to 30 June 2013, and was an outcome of Senate discussions over the economic stimulus package earlier that year.
- This positive move by the Commonwealth was designed to allow the *Bushfire CRC* to undertake research into issues arising from the 2009 *Black Saturday* fires in Victoria and to pursue matters raised by the Victorian Bushfires Royal Commission in its final report.

As your Committee members would be well aware in February 2009, after 13 years of drought and on a day of extreme fire conditions, 173 people died in areas to the north and east of Melbourne, the nation's second largest city, over several hours, during the most deadly bushfires in Australia's history. Around 430,000 hectares of farmland and forest were burnt and 2000 properties and 61 businesses were damaged or destroyed. Several towns were obliterated and around 78 communities were impacted upon. These fires and their consequences stunned the nation.

In the wake of this tragedy the *Bushfire CRC*, with the agreement of relevant State authorities including the Coroner, moved quickly to assemble and deploy specialist research teams to the affected areas. The specialists were sourced from agencies from around Australia, New Zealand and from the United States.

The task force teams embarked on fundamental research which continues to be analysed, the results to date generating considerable national and international interest. Outcomes from the work also proved invaluable to the subsequent *Victorian Bushfires Royal Commission* into the fires which reported in the latter part of last year.

2. Community Messaging Research

The scale of this fire-related research initiative was unprecedented nationally and is thought to be rare internationally. More recently, a somewhat similar task group was deployed in the wake of the early-2011 fires on the outskirts of Perth and work analysing that research continues. Most recently the *Bushfire CRC* has been exploring possible synergies between its research to date in areas including warnings, community perceptions and the management of risk, and the experiences associated with the Queensland floods earlier this year.

Attached as an appendix is a relevant extract from the report the *Bushfire CRC* prepared for the *2009 Victorian Bushfires Royal Commission* that is based on the work of the Task Force described above.

3. The Current Senate Inquiry

The reason for raising these research-related investigations is because, in my view, they go to key elements of matters covered by your Committee's terms of reference.

Obviously there are two sides to the emergency and natural disaster communications challenge;

- the hardware (telephone, radio, media, internet etc.), and
- the nature of messaging and its related effectiveness in terms of threatened communities and response agencies.

It is in this second area that the *Bushfire CRC* has been, and where a considerable part of its research effort remains focussed. Through its work since 2003 the *Bushfire CRC* has built-up a considerable level of expertise and related knowledge in this area. Work is currently underway to establish a research data management facility that should prove invaluable nationally, in terms of future approaches to the management of emergencies and natural disasters.

I would invite your Committee to consider the initiatives set out above and in particular the value to the nation of the establishment and development of a related, on-going research data management facility (The *Bushfire CRC*'s federal funding is currently due to cease in 2013. Discussions concerning funding beyond this time continue with the federal government). To date the *Bushfire CRC* has developed a significant research data base which includes, arguably, the largest social science related data base for bushfires globally. The *Bushfire CRC*'s Governing Board and I are keen to see this data base expanded, adding new research information as it becomes available, and digitally capturing past research data (Historic research data has a degree of urgency associated with it as it is mostly paper-based and is being progressively lost with changes in organisations around the country and as senior scientists leave the workforce). Establishment of a national research data base would represent a major step forward, in my view, in ensuring that, as a nation, we continue to learn from the future emergencies and natural disasters that will no doubt occur, and that as a consequence our management of, and recovery from such events becomes increasingly more sophisticated and effective.

Recommendation:

That the Senate Committee considers recommending the establishment of an on-going national emergencies and natural disasters digital research data base to help improve the management of, and recovery from such events and to strengthen community resilience.

4. Examples of Bushfire CRC research contributing to emergency warnings for community resilience.

Details of the research completed during the first seven years of the *Bushfire CRC*'s research, and of research currently underway can be found at: <http://www.bushfirecrc.com/>. The three projects listed below provide examples of kind of work being undertaken by the *Bushfire CRC*:

4.1 Underpinnings of the Prepare, Stay and Defend, or Leave Early Policy

Over many years, experience showed that many people who died in bushfires across Australia perished when caught on the road, whether in their cars or on foot. By the late 1990s, it was generally accepted by fire agencies that staying to defend a well-prepared home, or leaving for a safe place well before a fire threat appeared, were the two best survival options for a bushfire.

This important research project investigated the underpinnings of and the impediments to the nuanced implementation of the AFAC national guideline. It examined ways of integrating the guideline with other important factors in bushfire risk management; and it developed strategies to assist fire agencies to better implement their policies. After Victoria's *Black Saturday* tragedy, researchers were able to provide assistance to the subsequent Royal Commission and to the AFAC - led national position review.

4.2 Seasonal Weather Forecasts

Meteorological data is fundamental to predicting fire danger and fire behaviour on timescales from seasonal to very short-range. Seasonal factors affect fuel moistures and fuel availability while the variability on the very shortest time and space scales can cause marked variations in fire behaviour over very short distances or time intervals. Accurate fire weather forecasts can make all the difference to a community's safety and to the overall success and wellbeing of fire-fighters and fire authorities in preparing for adverse fire weather.

This research has resulted in a significant improvement in the operational utility of fire weather forecasts and outlooks – it focussed on enhancing the knowledge, and understanding of wind, temperature and humidity structures and distributions, on the very short term (1-12 hours), short to medium term, and seasonal time scales. Annual seasonal bushfire weather forecasts for both northern and southern Australia are a further outcome from this project.

4.3 Review of Fire Danger Ratings

This research, which is being conducted under contract for the federal Attorney-General's Department, is designed to develop and oversee the introduction of a set of new indices for the various components of the current fire danger rating system. The new system will be linked to the public warnings and will be implemented nationally through the National Emergency Management Committee (NEMC).

5. Bushfire CRC research being conducted which will contribute to emergency warnings for community resilience.

Bushfire CRC received three years Commonwealth funding (2010 – 2013) to undertake research into those significant national issues arising from the 2009 Victorian Black Saturday bushfires. Details of the research program underway can be found at: <http://www.bushfirecrc.com/>.

The scale and the consequence of the February 2009 fires in Victoria resulted in the establishment of the 2009 Victorian Bushfires Royal Commission (VBRC).

Commentary in the media and the preliminary analysis of the Bushfire CRC research suggests that the community did not fully understand the risk that it faced, and this is probably the case for most natural disasters. This underlines the warnings made in 2008 by Australasia's chiefs with fire and emergency responsibilities - that *existing fire management practices*, at all levels, *are not sustainable* in today's changing world.

The Bushfire CRC's mission is to build on the previous work, the understanding of these events to help the sector and the community address this broader challenge.

In responding to this challenge, the Bushfire CRC, in conjunction with its partners, has developed a comprehensive research plan for the next three years that will set the agenda for longer-term studies. This has drawn on an extensive data collection following the 2009 fires, discussions with leaders in the fire, land-management, local government, academic and policy arenas, and the Council Assisting the VBRC.

The critical areas of concern to the community and the broader sector fall within three main program areas, which have been aligned to the widely accepted risk-management paradigm.

5.1 The current Bushfire CRC research Programs

5.1.1 Understanding the Risk

The work in this program seeks to understand the underlying risk exposure of the community and the things it values. It will provide a better framework to understand how the risk is manifested and how communities respond, prepare and mitigate the risk in the context of their broader societal frameworks.

5.1.2 Communicating the Risk

This program of work focuses on the communication of risk and threat: how are warnings and information best communicated which communications media should be used, and how does community education fit in to this picture?

5.1.3 Managing the Threat

This program considers the impact of fire events on important infrastructure, resources and the environment. This program addresses the scenario where the risk has translated into a direct threat. This particularly considers extreme events such as Black Saturday, 7 February 2009 in Victoria; these events are irregular and are not as well understood as more routine occurrences.

5.2 Communicating the risk for emergencies and natural disasters.

From the detailed analysis of the events of 7 February 2009 by the Victorian Bushfires Royal Commission, it is clear that many warnings were not received in a timely or usable way. Although some of this is linked to operational factors that are not the subject of research, there are clear gaps in knowledge of how to effectively communicate in these situations. Many of the questions are cross-disciplinary.

The Bushfire CRC's *Communicating Risk* research program of work focuses on the communication of risk and threat: how are warnings and information best communicated and, for example, which media should be used?

A frightening aspect of the qualitative interviews conducted by the Bushfire CRC after the 7 February 2009 fires was that the anticipated behaviour of residents when faced with potentially lethal conditions was starkly different to that taken and in some cases led people into greater danger. This is an area that is not well understood, and further research needs to be conducted to understand what people actually did, why they did it, and what tools, methods and techniques can be used by public safety authorities to better ensure the safest behaviour under these types of conditions.

5.2.1 Communicating Risk research projects

Bushfire CRC is conducting a number of research projects under this *Communicating Risk* research program; they are listed below with the names of key people involved.

<u>Title</u>	<u>Project Leader</u>	<u>Lead End User</u>
<u>Effective communication - communities and bushfire</u>	<u>Prof John Fien</u>	<u>John Schauble</u>
<u>Community level influence on individual behaviours with respect to bushfire readiness and decision making in the face of immediate threat</u>	<u>Prof David Morrison</u>	<u>Damien Killalea</u>
<u>Information processing under stress: Community reactions</u>	<u>Prof David Morrison</u>	<u>Damien Killalea</u>
<u>Managing the threat through the modification of thought</u>	<u>Prof David Morrison</u>	<u>Damien Killalea</u>
<u>Decision Making under stress - understanding community members survival related decision making in bushfire (Analysis of 2009 Victorian Bushfires)</u>	<u>Prof Jim McLennan</u>	<u>Damien Killalea</u>

Additional detail on each project is available on the Bushfire CRC Web site.

<http://www.bushfirecrc.com/research/program-2>

5.2.2 Communicating risk student projects

Bushfire CRC sponsors outstanding postgraduate students to be part of a dynamic national bushfire research program for safer communities and ecological sustainability, investigating areas such as fire behaviour, management of fire in the landscape, and social and economic aspects of bushfire.

Students with strong academic records and relevant experience who are keenly interested in pursuing a PhD with a view to researching key issues for fire and land management agencies around Australia and New Zealand have the opportunity for selection and funding by the Bushfire CRC. The students and their projects linked to the *Communicating Risk* research program are listed below:

<u>Title</u>	<u>Student</u>
<u>Bushfire Survival-Related Decision Making by Couples</u>	<u>Mary Cadeddu</u>
<u>Marysville Black Saturday Bushfire Survivors' Experiences of preparedness, survival, attachment, loss, grief, resilience and recovery.</u>	<u>David Barton</u>
<u>Psychological preparedness for bushfires</u>	<u>Brenda Mackie</u>
<u>The impact of social networks on information flow in fire-risk communities</u>	<u>Sondra Dickinson</u>

6. The Committee's Public Hearing

Finally, and in relation to your Committee's offer to the *Bushfire CRC* to appear before it I must advise that on the day in question key individuals from this organisation's small national office are scheduled to be in New Zealand attending meetings with industry and research organisation stakeholders.

Nonetheless I hope the information set out above is of some assistance to your Committee. Should you wish to have further details of any of the Bushfire CRC research projects, I will contact the relevant Bushfire CRC researchers to provide you with their most recent research findings.

In conclusion I would take the opportunity to wish the Inquiry well with its important task.

Yours faithfully,

Gary Morgan, AFSM
Chief Executive Officer
Bushfire CRC

Appendix 1 - Victorian 2009 Bushfire Research Response. Household Mail Survey

Extract: Executive Summary (Section 2: Information and warnings)

'....This is the second report of the 'Human Behaviour and Community Safety Issues' team. It presents preliminary findings from a survey of approximately 6000 households in fire-affected areas. There were 1350 completed surveys returned from households that were affected by the February 7th bushfires. The findings presented in this report are based on an analysis of 1104 of these completed surveys. Those surveys returned after the first round of data entry was completed were not included in this analysis. The full dataset will be available for subsequent analysis....' (Page 1)

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Section 2: Information and warnings

- Almost all respondents (99%) reported that they were aware that February 7th was a day of Total Fire Ban.
- The majority of respondents (72%) expected to receive an official warning if there was a bushfire in their town or suburb.
 - Note: the survey did not include newspapers as a potential source of 'official warning'.
- Almost two-thirds (63%) reported that they did not receive an official warning. A majority of respondents in Kilmore East (73%), Bendigo (61%) and Murrindindi (56%) reported not receiving an official warning.
- More than two thirds (68 %) of those who reported that they received an official warning reported having had 'ample' or 'just enough' time to respond safely.
- Almost two-thirds of respondents (63%) reported that they received information and warnings about the fire from a family member, friend or neighbour.
- Respondents most commonly became aware of the fire through: sensory cues from the environment (i.e. smoke, embers, fire; 49%); a warning from family, friends or neighbours (28%); or a radio announcement (8%).
- The survey did not directly ask respondents whether they lost power and/or phone services during Black Saturday; such losses would have had obvious effects on respondents accessing the web, TVs and some phones to receive 'official warnings'.

The full report is available at:

<http://www.bushfirecrc.com/managed/resource/mail-survey-report-10-1-10-rt-2.pdf>

Yours faithfully,

Gary Morgan, AFSM
Chief Executive Officer
Bushfire CRC