

CAPTURING COMMUNITY BUSHFIRE READINESS: POST-BUSHFIRE INTERVIEW STUDIES 2009-2014



▲ **Above:** THE BUSH MEETS THE URBAN INTERFACE IN THE NSW BLUE MOUNTAINS, WHERE FIRES IMPACTED COMMUNITIES IN OCTOBER 2013. AFTER THE FIRES, CRC RESEARCHERS INTERVIEWED LOCAL RESIDENTS ABOUT THEIR EXPERIENCES. PHOTO: GARY P HAYES, PROVIDED BY NSW RFS

SUMMARY

While governments will continue to fund fire and land management agencies to combat bushfires, there is now an expectation that residents should share responsibility for their safety and property protection. Fire agencies expend considerable resources on community bushfire safety education. One way to review the impact of these endeavours is to interview residents who experienced a serious bushfire threat about their pre-fire bushfire risk perception, their planning and preparation, and their actions when threatened. This *Hazard Note* summarises overall findings from seven post-bushfire interview studies conducted since 2009. A significant percentage of residents interviewed did not believe that they were at-risk and neither planned nor prepared for a possible bushfire. While many reported having a plan, written versions of such plans were rare. An appreciable percentage of residents whose plan was to leave had not prepared adequately to implement their plan safely. Very few residents self-evacuated early on the basis of fire danger weather predictions. New approaches to promoting community bushfire safety need to be developed, trialled and evaluated.

ABOUT THIS PROJECT

The studies described in this *Hazard Note* were conducted by Bushfire and Natural Hazards CRC and Bushfire CRC researchers, and involved interviews with members of communities threatened by destructive bushfires in Victoria, Western Australia, Tasmania and New South Wales from 2009-2014. The studies were conducted at the request of fire agencies in those states, and their purpose was to inform agencies about how residents understood bushfire risk, planned and prepared for a possible bushfire, and responded to a serious bushfire event.

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CONTEXT

Most Australian bushfire scientists predict that there will be more frequent severe bushfires threatening life and property, for two reasons: (a) climate change resulting in reduced rainfall and higher temperatures in many regions; and (b) an increase in the number of householders choosing to reside in areas of high bushfire risk. Economic constraints will limit governments' abilities to fund increased agency bushfire suppression capability. Residents will be expected to assume greater responsibility for their bushfire safety in the future.

BACKGROUND

From 2001, the Australian Fire Authorities Council (now the Australasian Fire and Emergency Services Authorities Council) developed position statements on community safety in the face of imminent bushfire threat, culminating in 2005 with what became known as 'Prepare, stay and defend or leave early'. This position guided fire agencies' approaches to community bushfire safety prior to the 2008-2009 bushfire season. On 7 February 2009, 'Black Saturday', the worst bushfires in Australia's post-European settlement history, ravaged communities across Victoria, resulting in 173 deaths and the destruction of more than 2000 homes. Investigations for the 2009 Victorian Bushfires Royal Commission, including interviews with survivors conducted by a Bushfire CRC research task force, identified generally low levels of planning, preparation and safe responding by residents. Subsequently, AFAC developed a new position statement, *Prepare. Act. Survive.* in consultation with fire agencies, with many agencies increasing their community safety resources. After significant bushfires in WA in 2011 and 2014, and in Tasmania and NSW in 2013, the fire agencies in these states requested the



▲ Above: RESEARCHERS VISITING A HOUSE IN STRATHEWEN AFTER THE BLACK SATURDAY BUSHFIRES IN 2009.

Bushfire CRC (2011-2013) and the Bushfire and Natural Hazards CRC (2013-2014) to conduct post-bushfire interview studies in order to investigate residents' pre-bushfire risk perceptions, plans and preparations, readiness on the day of the fire, warnings received, and actions taken.

CRC RESEARCH

Table 1 (right) summarises the bushfires studied by CRC interview teams. For each of the fires studied after Black Saturday, the relevant fire agency requested the Bushfire CRC (2011-2013) or the Bushfire and Natural Hazards CRC (2013-2014) to conduct interviews with residents in the fire-affected areas. For each study a semi-structured interview guide was used. Each interview guide was developed jointly by the investigators and agency staff to cover:

- Awareness of bushfire risk before the bushfire.
- Planning and preparation for, and knowledge of, bushfire danger before the bushfire.
- Awareness of official and informal warnings generally immediately prior to and during the bushfire event
- Responses to warnings.
- Experiences during the fire event and any impacts on their property.

Before commencing an interview study, teams were briefed about the bushfire by a fire agency staff member. Team members undertook training in interview procedures, were instructed on their legal and ethical

responsibilities, and were briefed on relevant occupational health and safety issues. Team members were reminded of the possibility that some interviews could be stressful and were advised about ways to manage these. In most studies, agencies were able to provide interview teams with fire-scar maps to guide selection of locations for visits to households.

END USER STATEMENT

Understanding how the community prepares for and responds to an emergency is an issue for fire services and emergency management agencies around the world.

The New South Wales Rural Fire Service worked with both CRCs after major fires in 2013, which was one of the most challenging and dangerous years for bushfires in NSW in more than a decade.

These fires presented the NSW RFS with an opportunity to learn and refine our processes, particularly in relation to community preparedness and the delivery of information and warnings. The research has delivered benefits, influencing our approach to community engagement, as well as improving our understanding of how the public uses and responds to information and warnings, and the barriers which may prevent people responding.

The NSW RFS is also proud to contribute to the national research agenda, and contribute to the bank of research and knowledge around bushfire preparation and response.

– **Anthony Clark, Group Manager, Corporate Communications, New South Wales Rural Fire Service**

TABLE 1: BUSHFIRE EVENTS STUDIED

BUSHFIRE LOCATIONS	FIRE DANGER RATINGS	IMPACTS
Feb 2009, Victoria: Beechworth; Bendigo; Bunyip; Churchill; Horsham; Kilmore East; Murrindindi; Narre Warren	Extreme ^a	173 deaths; 2029 homes destroyed
Jan 2011, WA: Lake Clifton	High	10 homes destroyed
Feb 2011, WA: Roleystone, Kelmscott, Red Hill	High	72 homes destroyed
Jan 2013, Tasmania: Boomer Bay; Connelly's Marsh; Copping; Dunalley; Eaglehawk Neck; Forcett; Primrose Sands; Taranna	Catastrophic ^b	203 homes destroyed
Jan 2013, NSW: Coonabarabran, Yass, Shoalhaven	Extreme	51 homes destroyed
Oct 2013, NSW: Blue Mountains, Port Stephens, Wingecarribee Shire	Very High – Extreme	221 homes destroyed
Jan 2014, WA: Parkerville; Stoneville; Mt Helena	Extreme	57 homes destroyed

a Would now be Code Red/Catastrophic

b Equivalent to Code Red in Victoria

TABLE 2: PRE-BUSHFIRE RISK PERCEPTIONS, PLANS AND ACTIONS

BUSHFIRE EVENTS STUDIED	No. interviewed (no. at home when fire was reported)	% Perceived some level of risk before the fire	% Claimed had a pre-fire bushfire plan (% written plan)	% Planned to leave	% Planned to stay and defend	% Planned to either leave or to stay and defend	% Planned to wait and see	% Had no plan	% Left early, before any fire reported
Feb 2009, Victoria	496 (437)	89%	78% (2%)	24%	48%	72%	6%	22%	2%
Jan 2011, WA	40 (36)	93%	80% (2%)	65%	10%	75%	5%	20%	0
Feb 2011, WA	456 (407)	nr	72% (nr)	28%	20%	48%	28%	24%	0
Jan 2013, Tasmania	245 (217)	92%	88% (4%)	47%	26%	73%	15%	12%	1%
Jan 2013, NSW	238 (212)	85%	92% (9%)	29%	34%	63%	29%	8%	10%
Oct 2013, NSW	194 (150)	67%	68% (7%)	26%	28%	54%	14%	32%	1%
Jan 2014, WA	91 (80)	91%	81% (8%)	49%	25%	74%	7%	19%	0
Total	1760 (1539)								
Unweighted Average		86%	80% (5%)	38%	27%	66%	15%	20%	2%

nr = not recorded

For the first two studies (Black Saturday 2009 and WA January 2011), all interviews were transcribed and analysed for content. This proved a costly and time consuming procedure. In the subsequent studies, a procedure was adopted in which an interview-content checklist was completed by a member of each interview team during the course of the interview and reviewed for accuracy following the interview. Data from the checklists were subsequently entered into spreadsheets allowing rapid quantitative analyses. Samples of interviews (20%-40%) were transcribed and verbatim statements from residents were incorporated in the reports for agencies to illustrate the issues identified through the quantitative compilations of responses to the interview questions.

RESEARCH OUTCOMES

Table 2 (above) summarises residents' responses to interview questions about their pre-bushfire risk perceptions, plans and actions before the fire was reported.

Table 3 (right) summarises pre-bushfire levels of preparations for a possible bushfire.

High level findings from all studies include:

- A significant percentage of residents of the bushfire-affected communities had neither planned, nor prepared for, a possible bushfire.
- While many reported having 'a plan' as to what to do in the event of a bushfire, few (5%) had written plans.

- An appreciable percentage of residents whose plan was to leave had not prepared adequately to implement their plan safely.
- Very few people (2%) self-evacuated early on the basis of fire danger weather predictions before reports of a fire.
- Few of those interviewed had participated in organised community bushfire safety activities.
- About one-third of those interviewed in 2013 and 2014 reported reading agency material about bushfire safety.
- Less than 10 per cent reported consulting material on fire agency websites before the fire.
- There is no evidence of dramatic improvement since Black Saturday in overall levels of bushfire safety planning and preparedness based on the

accounts given by those interviewed.

Different motivations drove residents' choices of their household bushfire plan, with residents who planned to leave indicating this was because of the perceived danger that would be posed by a bushfire, especially if the household included vulnerable members such as the elderly, the disabled or young children.

Most residents who planned to stay and defend did so in order to protect their valued property - the 'valuing' could be understood as a spectrum: at one end the valuing was financial, when the property was associated with a business and income, at the other end the valuing was an emotional 'attachment to place'. Staying and defending was seldom understood by residents as a bushfire survival plan, rather it was understood by most to be asset-protection involving some level of acceptable risk.

Residents who intended to wait and see

TABLE 3: PERCENTAGE OF RESIDENTS ADEQUATELY PREPARED TO IMPLEMENT THEIR PLAN

BUSHFIRE	PLANNED TO LEAVE ^a	PLANNED TO STAY AND DEFEND ^b
Feb 2009, Victoria	8%	48%
Jan 2011, WA	6%	6%
Oct 2013, NSW	27%	17%
Jan 2014, WA	24%	70%

^a Safe destination chosen, route planned, go-kit packed ready to leave

^b Self-contained water supply, hoses and pump independent of mains power

IN RESIDENTS' OWN WORDS

"Yeah, I suppose it was a concern. When I first bought (the place) and we saw all these trees and vegetation around, I think it's the first thing you think about is fire. But then again, some of the neighbours tell us we haven't had a fire since Jesus Christ entered Jerusalem. So everything was hunky-dory and we took it on. You get that feeling it'll never happen, it'll never happen. But it did, it did, yeah." [Lake Clifton resident, 2011]

"I was told by people who had grown up on this property who are now in their 80s that there had never been a fire here and we thought that was pretty good! I now think I should have realised that we were due for a 100-year fire." [Coonabarabran resident, 2013]

"Resident to the east of our home had prepared and maintained a safe yard. Resident to our west had not removed leaves from their yard for years. They had rubbish and leaves piled up against the front fence and up their yard in the proximity of the fence." [Roleystone resident, 2011]

"Well, the house is insured and things can be replaced, and our lives come first." [Port Stephens resident, 2013]

"Obviously we're well set up. I've got equipment, water, pumps, everything. I'm as prepared, even more, than the rural fire brigade - and more passionate because this is my property." [Winmalee resident, 2013]

what developed before making a final decision typically did this because: (a) they perceived their bushfire risk to be low; (b) they believed that waiting would not add to their risk; (c) they viewed both leaving unnecessarily and having to defend against a serious fire as equally unappealing; and (d) they intended to wait and hope for the best that the fire ultimately would not threaten their property.

Two general methodological weaknesses of all the studies should be noted. Householders

aged under 30 were under-represented because they were less likely to be at home during business hours when interview teams visited. Residents whose homes had been destroyed were under-represented because many had left the area. Thus caution should be exercised in generalising the findings.

IMPLICATIONS OF THE RESEARCH FINDINGS

The findings suggest that fire agencies have been only moderately successful in their endeavours so far to raise overall levels of bushfire preparedness in at-risk communities. Impressions reported by interviewers suggest that more residents understand the inherent dangers posed by bushfires than was the case before Black Saturday and more residents view staying and defending as a course of action which involves a degree of risk and is not a choice to be made lightly. However, the findings from six post-Black Saturday interview studies summarised in this *Hazard Note* suggest that overall levels of bushfire threat readiness among residents of at-risk communities remain lower than desired by fire and emergency services agencies.

FUTURE DIRECTIONS

Probably the most pressing need is for new approaches aimed at increasing the numbers of residents in at-risk communities who have planned and prepared appropriately to survive a future serious bushfire threat to be (i) developed, (ii) trialled, and (iii) evaluated. At present many agencies rely heavily on (a) making detailed written (including web-based) information about bushfire safety available and (b) exhorting householders to read this and act upon it. Decades of research into health promotion and injury prevention demonstrate that education-based approaches alone result in limited improvements at best. Success stories such as lowering the road toll and reducing smoking rates involved costly mixes of innovative approaches to motivation and education, engineering solutions, legislation, sanctions, incentives and enforcement. There is no reason to believe that improving community bushfire safety will prove any easier.

FUTHER READING

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Hazard Notes are prepared from available research at the time of publication to encourage discussion and debate. The contents of *Hazard Notes* do not necessarily represent the views, policies, practices or positions of any of the individual agencies or organisations who are stakeholders of the Bushfire and Natural Hazards CRC.

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