



COMMUNITY UNDERSTANDING AND AWARENESS OF BUSHFIRE SAFETY: OCTOBER 2013 BUSHFIRES

PART 1: RESIDENTS' EXPERIENCES IN THREE AREAS
RESEARCH FOR THE NEW SOUTH WALES RURAL FIRE SERVICE

Jim McLennan^{1,2}, Lyndsey Wright² and Adrian Birch²

La Trobe University¹, Bushfire CRC²





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Publisher: Bushfire Cooperative Research Centre, East Melbourne, Victoria

ISBN: 978-0-9925027-3-7

Cover:

The partially burnt landscape of the Blue Mountains in New South Wales.
Photo by the Bushfire CRC.

Citation:

McLennan J, Wright L and Birch A, (2014) Community understanding and awareness of bushfire safety: October 2013 bushfires, Part 1: residents' experiences in three areas, Bushfire CRC, Australia, ISBN: 978-0-9925027-3-7

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EXECUTIVE SUMMARY

1. During October 2013, many areas of NSW were impacted by bushfires that caused significant losses. In order to learn from these fire events, NSW Rural Fire Service (NSW RFS) senior management commissioned the Bushfire Cooperative Research Centre (CRC) to undertake research in three affected areas to document the experiences of samples of residents.
2. The areas selected by NSW RFS were: greater Blue Mountains, Port Stephens, and Wingecarribee Shire. The Bushfire CRC research program had two components: (a) interviews with residents in the selected areas; and (b) invitations to residents in the selected areas to complete an online survey questionnaire. This report summarises findings from interviews with residents.
3. Over three 3-day periods, joint Bushfire CRC–NSW RFS teams visited a geographical spread of properties in each of the three areas and interviewed residents about their experiences of the October bushfire events. A total of 466 properties were visited, 227 residents were contacted, and 177 interviews were conducted. A further 17 residents were interviewed by telephone. Of the total 194 interviews conducted, the sub-totals by area were: greater Blue Mountains, 79; Port Stephens, 52; Wingecarribee, 63.
4. Of the 194 residents interviewed, 50% were men and 50% were women; their mean age was 54 years; approximately one-third reported responsibility for dependents (children under 18, elderly, disabled) and a little more than two-thirds reported having pets or livestock to take into consideration. A little less than one-quarter reported previous experience in defending against bushfire threat. Half those interviewed lived on standard-sized residential blocks; a little less than half lived on larger ‘lifestyle’ blocks; the others (4%) lived on farming or other agribusiness properties.
5. Residents interviewed in the Blue Mountains and Wingecarribee areas described their communities as appreciably more closely connected compared with the Port Stephens area. Port Stephens residents described somewhat greater reliance on official advice about bushfire threats.
6. Blue Mountains residents were more likely to report higher perceived pre-October bushfire risk levels for their homes compared with Wingecarribee residents, who, in turn, described higher bushfire risk levels compared with Port Stephens residents.
7. Across the three study areas, 73% indicated they had some form of bushfire plan before the fire however only seven percent indicated having a written bushfire plan. This low figure is consistent with that found in other comparable studies.
8. Eighty three per cent of Blue Mountains residents were able to describe their pre-October bushfire plan, compared with 67% of Wingecarribee residents and 48% of Port Stephens residents. Blue Mountains residents were twice as likely (33%) to report planning to stay and defend compared with Port Stephens residents (17%) and Wingecarribee residents (16%).
9. Of the residents interviewed a little more than one-third (68; 35%) reported obtaining a copy of the NSW RFS *Bushfire Survival Plan* document, and of these, a little less than half (31; 46%) reported making use of it in planning what they would do if threatened by a bushfire.
10. Residents who planned to stay and defend were motivated by a desire to protect valued assets and by confidence in their ability to do so, most did not view their intended action as a bushfire *survival* plan. Residents who intended to leave were motivated by concerns for their safety and that of their

family. Residents who intended to wait and see what happened following a bushfire threat warning perceived their risk to be low and viewed both leaving unnecessarily and defending against a significant fire as equally unappealing.

11. Of those who planned to leave if threatened by a bushfire, 38% reported having planned a safe destination and evacuation route; few reported undertaking actions to reduce the vulnerability of their homes to ignition and loss. Of those who planned to stay and defend, 56% reported having a water supply independent of mains water and 22% reported having a pump with a power source independent of mains electricity.
12. Across all three areas, sight of smoke was the most frequently reported source of awareness that there was a bushfire threat (60%), followed by informal phone communications (37%) and SMS or landline Emergency Alert messages (25%).
13. While social media were hardly mentioned as sources of initial awareness of potential bushfire threat a number of respondents indicated they used this to obtain additional information once they became aware of the fire threat.
14. The NSW RFS website was mentioned most frequently as the source consulted for more information once it was known that a bushfire threatened (29%), followed by local radio (19%) and Facebook pages (17%).
15. A major driver of householders' decisions when the fire threatened was their pre-bushfire plan—the link was strongest for those who planned to stay and defend.
16. A little more than one-fifth (42, 22%) of those interviewed were not at home by chance when the fire first threatened. Most (36) returned home, half of those subsequently left, the other half stayed and defended. Only two of those interviewed (1%) had chosen to leave early in the morning on the basis of fire danger weather predictions. The finding that very few residents leave solely on the basis of fire danger weather predictions has been a feature of all previous post-bushfire interview-surveys of residents: most residents react to a bushfire event, very few take proactive action on the basis of a forecast.
17. Of those who were at home when the fire threatened, 54% left for presumed safer locations, while 46% stayed to defend their property.
18. For those who decided to leave, the most frequently reported trigger to do so was sight of smoke (23%), followed by an Emergency Alert message (15%) and sight of flames or advice from police or firefighters (13%).
19. Two-thirds of those interviewed reported knowing the location of a place nearby where they could take last-resort shelter. However, a little more than one-quarter (27%) knew the location of their Neighbourhood Safer Place. For Port Stephens residents, the figure was appreciably lower (15%).
20. One-third of those interviewed (65) reported having attended a community meeting in the immediate aftermath of the fire event. The majority reported that what they most wanted was information about any ongoing threats but what they were told instead was history—what had happened—and likely future arrangements for recovery. As a result, only 18% (12) said that they found the meeting useful or helpful.

GENERAL INTRODUCTION

Overview and Background

The calendar year 2013 was one of the worst on record for destructive bushfires in NSW. In January, fires swept across numerous areas, destroying more than 50 homes. Then in October, bushfires again threatened many communities, with more than 200 homes lost. Following both of these bushfire events, NSW Rural Fire Service (NSW RFS) asked the Bushfire Cooperative Research Centre (CRC) to: (a) coordinate a program of interviews with residents in three seriously affected areas; and (b) commission an online survey of residents in the same affected areas. The purpose was to assist the organisation to learn as much as possible about residents' prior understandings of bushfire risk and their experiences during the fires, thus contributing to improved community safety for the future.

Following the January 2013 bushfires, interviews with members of 238 households were conducted across three areas: Coonabarabran, Yass, and the Shoalhaven, and 975 residents participated in an online panel survey. The findings were reported to NSW RFS (the report is available on the Bushfire CRC website at: <http://www.bushfirecrc.com/resources/research-report/community-understanding-and-awareness-bushfire-safety-january-2013-nsw-bus>). This study builds upon that work.

The Three October 2013 Bushfire Events Investigated

For this study NSW RFS identified three areas that had been impacted by significant bushfire events during October 2013: (i) greater Blue Mountains (including locations at Bell, Clarence, Dargan, Lithgow, Mount Irvine; Mount Victoria; Faulconbridge, Springwood, Winmalee, Yellow Rock)—significant fire activity 16 October–13 November; (ii) Port Stephens (including locations at Medowie, Raymond Terrace, Tomago, Williamtown; Salt Ash)—significant fire activity 13–23 October; and (iii) Wingecarribee Shire (including locations at Balmoral Village, Colo Vale, Yanderra, Yerrinbool)—significant fire activity 17–24 October. A detailed account and chronology for each fire is given in Appendix A. Appendix B provides basic demographic information for these areas.

The Research Program and Reports

In total, 194 residents were interviewed, and 775 residents responded to widely publicised invitations to complete an online survey describing their experiences during the October 2013 bushfire threat period. This report presents findings from interviews with residents in each of the three selected areas. Findings from the online survey of residents are described in a companion volume. Technical material has been kept to a minimum and where necessary has been included in the Appendices.

INTERVIEW METHODOLOGY

As with similar post-bushfire studies conducted previously by the Bushfire CRC, a semi-structured interview methodology was used. Residents in the three bushfire-affected areas were approached by two-person interview teams, each comprising a Bushfire CRC researcher and a NSW RFS staff member, and asked to describe their experiences during the October 2013 bushfire threat. A semi-structured interview occupies a middle ground between an unstructured interview and a structured interview. In an unstructured interview, all residents are typically asked the same starting question (e.g. 'Could you tell me about your experiences during the October 2013 bushfires?'). This approach allows them to tell their own story in their own way while a researcher follows a resident's account and asks for elaboration of topics raised by the resident. Such an approach is often used when researchers have very limited knowledge of the issues involved. While it provides freedom to residents to describe what they see as relevant, such an approach may mean that issues known from previous research to be important (e.g. whether residents received an SMS warning and at what time) are not addressed because they were not especially salient for a resident at the time of the interview. By way of contrast, a structured interview comprises a (usually lengthy) set of precisely worded questions constructed to cover the entire range of issues presumed by the researcher to be relevant. The semi-structured interview is preferred in studies such as this because: (i) residents' experiences of a bushfire are likely to vary greatly; many potential questions are likely to be irrelevant for some residents, thus resulting in unnecessarily lengthy and perhaps frustrating interview experiences; (ii) the interview questions may not address adequately specific topics that are very significant for some residents; and (iii) a bushfire threat can result in highly emotionally charged outcomes, and some residents may experience a structured interview as an 'interrogation' in which their individual circumstances were ignored, possibly generating ill-will toward the research endeavour.

The semi-structured interview guide used for this study was developed jointly by Bushfire CRC researchers and NSW RFS staff. It was based on the guide used following the January 2013 bushfires. The guide comprised a set of broad questions (plus supplementary prompts) addressing topics known to be important on the basis of previous research and key areas of interest to NSW RFS. The guide contained a range of probe questions for the interviewer to ask where elaboration was both possible and necessary to obtain a detailed account of relevant issues. A copy of the guide is given in Appendix C.

Face-to-face post-bushfire interviews are time-consuming compared with other methodologies and this means that only a small percentage of residents in an area threatened by a disaster-level bushfire can be interviewed. Semi-structured interviews generate essentially qualitative information from which quantitative summaries can be compiled. There is general agreement among many qualitative researchers that sample sizes above 30 are necessary to achieve what researchers call 'saturation'—the point in a series of interviews with members of a particular population (in this case, residents of a community that has been threatened by a particular bushfire event) where no uniquely new information is being elicited by further interviews (Given, 2008). In the present study, based on previous post-bushfire field interview research conducted by Bushfire CRC researchers, it was decided to aim for samples of: greater Blue Mountains, 80; Port Stephens, 50; and Wingecarribee, 60 having regard for the total area impacted by each bushfire event—an aim of 190 interviews in total.

Teams based in each fire-event area used fire-scar maps to visit a range of locations in each area. Because of time constraints, teams tended to visit properties in or near a fire scar first, at the expense of visiting properties more distant but whose residents nonetheless had received warnings of bushfire threat. Because of limited time and community dislocation, it was not possible to sample

households in any systematic way. Thus, the information elicited and the issues described in the report are those provided by the sample of residents interviewed on those days when teams were visiting a given area. It is not possible to quantify the extent to which the reports are typical of residents' experiences generally. In particular, (a) residents in Winmalee and Yellow Rock in the Blue Mountains area who lost their homes were under-represented because many no longer resided locally in December 2013 when teams visited; and (b) younger residents who worked were under-represented because they were not at home during business hours when teams called. (The online survey was intended to fill these gaps in the interview coverage.)

During the course of each interview, the NSW RFS staff team member completed an interview content summary checklist (ICSC).

Interviews were recorded digitally (with the permission of the participants). A sample of interviews ($n = 40$) across each of the three areas was transcribed by a professional transcription service. The interviews were selected using a quasi-random procedure: every fifth interview from each of the three sets of interviews was transcribed so that a range of types of residence, pre-fire intentions, and residents' actions and outcomes were covered. Transcripts were inspected for content and quotations have been used in the report to illustrate in residents' own words the issues described.

Interview Task Forces and Field Teams

To undertake the community interviews, the Bushfire CRC put together three field research task forces. These task forces were managed and coordinated by Bushfire CRC management staff. Each task force comprised several field teams, each consisting of a Bushfire CRC researcher and a NSW RFS staff member, many from the Community Engagement Division.

Each taskforce established a home base close to the three chosen fire-affected area at a NSW RFS facility: Katoomba, East Maitland, and Picton. At each, task force field teams met for an initial training and familiarisation session before deployment, and, at Katoomba and East Maitland, for briefings at the beginning and debriefings at the end of each day. For teams deployed to the Wingecarribee area, debriefings were conducted by the leader in the field or by telephone. Prior to commencing data collection, field teams were provided with a comprehensive training session covering interview procedures, including information on participants' rights; details of the principal questions being asked and follow-up probes; interviewer responsibilities and obligations; and health and safety precautions. Each task force was briefed by a local NSW RFS officer on the details of the fire and any particular issues a community had faced associated with the fire event. All members of each task force were dressed in identifying apparel as appropriate (Bushfire CRC Researcher tabards, NSW RFS work-shirt and trousers) and all wore name tags. Most locations visited had adequate mobile phone coverage so radios were unnecessary (unlike the previous deployments following the January 2013 fires where many interviews had to be conducted in remote areas).

Materials and Procedure

Each of the study areas included agribusinesses (including farms, orchards, poultry farms, equine facilities), rural residential and township urban–bushland-fringe residential properties. The study areas encompassed properties directly affected by the fire (within and adjoining the fire scar) and other areas considered to be under threat by NSW RFS at some time. While the community interview programs could not encompass truly stratified random samples of residents (because of time constraints, infrastructure loss and social dislocation in fire-affected locations), field teams visited a range of property types to ensure that a cross-section of residents was interviewed. Businesses were included as the opportunity presented. Field teams were assigned to designated

areas with detailed maps of each area showing the fire scar, locations of destroyed structures and locations of isolated dwellings. These maps enabled a representative coverage while ensuring that any household was approached on only one occasion.

As noted earlier, a semi-structured interview guide was developed by the authors in consultation with senior staff from NSW RFS. The ICSC was a printed data summary tool covering topics in the same order as the interview guide and was completed during the course of each interview by the NSW RFS member of the interview team while the Bushfire CRC researcher conducted the interview. Following each interview, answers noted on the ICSC were checked for accuracy and agreed upon by both team members. At the end of the deployment period, the information content from each ICSC was entered into a data base for quantitative analysis.

In broad outline, during each interview, residents were asked about their:

- awareness of bushfire risk before the October 2013 bushfires
- preparation for and knowledge of bushfire danger before the October 2013 bushfires
- awareness of official and informal warnings generally immediately prior to and during the bushfire event
- responses to warnings and perceived usefulness of these experiences during the fire event
- any impacts on their property.

Prior to going into the field, each team was provided with:

- Participant Information Statements, one to be given to each interviewee
- Consent Forms, one to be signed by each interviewee and retained by the team
- An interview guide
- Copies of the ICSC
- Copies of a householder help sheet, which listed contact details for sources of personal help and assistance for residents experiencing difficulties following the fire, to be left with each household
- Copies of an information flyer to be left at properties where householders were absent encouraging residents to contact the Task Force Project Officer on a dedicated mobile telephone number or email address to arrange an interview
- Maps of the area, showing the fire scar and locations of properties to be visited during the day by the team
- A digital recorder and a laboratory notebook
- Snacks and water

In most cases, residents were approached on their properties by a 'cold-call' visit from a team who drove to a location and then approached residences on foot. The purpose of the visit was explained and the resident was invited to take part in an interview to describe their experiences during the fire threat. Before commencing the formal interview, residents were given the Participant Information Statement, which described the aim of the study and assured them that participation was voluntary, and that their individual responses would be confidential and anonymous. Moreover, they were advised that they could terminate the interview at any time if they wished, and could subsequently request their interview not be included in the study. They were then asked to read and sign the Consent Form. On the few occasions where some reluctance seemed to be indicated, the resident was advised that, if they so desired, the NSW RFS member would be willing to exit the interview if that would enable the resident to speak more freely. No residents requested this action. At the end of each interview, the householder help-sheet was left with the resident.

Most participants (177) were interviewed on their properties; however, a small number (17) were interviewed by telephone. As indicated above, where residents were not on the property when the

team visited, an information flyer was left; this stated that a field team had visited and invited the resident to contact the Bushfire CRC Project Officer to arrange an interview. When a resident was at home but not able to take part in an interview at that time, an alternative time for an interview was arranged if at all possible. Based on experience gathered in previous post-bushfire interview studies (which indicated very low levels of willingness to participate on weekends), visits were conducted during weekdays, mainly between 0900 and 1700 h; some interviews were conducted at later times at the request of residents. Overall, 466 properties were visited and 194 interviews were conducted: 79 in the greater Blue Mountains; 52 in the Port Stephens area; and 63 in Wingecarribee Shire. The following table summarises the outcomes of Task Force property visits for each of the three areas.

Table 1: Summary of property visits, resident contacts and interviews

	Blue Mountains	Port Stephens	Wingecarribee	All
Property apparently not occupied (a)	5	9	25	39
Householder absent (b)	67	66	67	200
Face-to-face contacts (c)	85	67	75	227
Interviews (d)	68	50	59	177
Refusals	17/85 (20%)	17/67 (25%)	16/75 (21%)	50/277 (22%)
<i>Stated reason</i>				
<i>No time</i>	3	6	14	23 (46%)
<i>None given</i>	10	3	–	13 (26%)
<i>Not interested</i>	–	5	–	5 (10%)
<i>Too distressed</i>	2	1	–	3 (6%)
<i>Absent during fire threat</i>	2	–	–	2 (4%)
<i>Angry at RFS</i>	–	1	1	2 (4%)
<i>Illness</i>	–	1	–	1 (2%)
<i>NSW RFS staff member who declined</i>	–	–	1	1 (2%)
Subsequent telephone interview (e)	11	2	4	17
Total interviews (d + e)	79	52	63	194
Total property visits (a + b + c)	157	142	167	466

This is the first occasion on which such post-bushfire householder interview data has been compiled. In summary, it shows that a resident was present at slightly less than half the properties visited (total visits = 466; total face-to-face contacts = 227; contact rate = $227/466 = 49\%$); and the interview participation rate for those visited was a little more than three-quarters (total face-to-face interviews = 177; total face-to-face contacts = 227; participation rate = $177/227 = 78\%$). The most frequently stated reason for non-participation was lack of time. It is noteworthy that three residents ($3/227 = 1.3\%$ of those visited) declined to participate because they were still feeling too distressed by their bushfire experiences to wish to revisit these during an interview.

Ethics Approval

This research project was approved by the La Trobe University Human Ethics Committee (reference LTU UHEC 13/008). The authors appreciate the promptness with which the Chair of the Committee reviewed the application for approval, the process being facilitated by a complaint-free record of previously conducted post-bushfire interview studies.

RESULTS

The following sections present primarily quantitative information extracted from the qualitative semi-structured interviews via the ICSCs and compiled subsequently. Information is mostly presented for each area and in total. Where there appeared to be meaningful differences between areas, these have been noted. The quantitative summaries have been augmented where appropriate by qualitative extracts from the interview transcripts. The number and letter at the end of each extract is the code identifier for the interview (BM, Blue Mountains; PS, Port Stephens; W, Wingecarribee Shire). Note that: (a) percentages may not sum to 100 because of rounding errors; and (b) there may be inconsistencies among tables in percentages because of the vagaries of missing data—that is, information inadvertently not noted on the ICSC.

Interviews: Areas, Fires, Locations

The Task Force deployments to interview residents covered three geographical areas, six fires, and nineteen residential locations (Table 2).

Table 2: Number of interviews: area, fire and locations

Area	Residential locations	Number of interviews	Percentage of total
<i>Fire</i>			
Blue Mountains		79	41%
<i>State Mine</i>	Bell, Clarence, Dargan, Lithgow, Mount Irvine	16	8%
<i>Mount York Road</i>	Mount Victoria	23	12%
<i>Links View Road</i>	Faulconbridge, Springwood, Winmalee, Yellow Rock	40	21%
Port Stephens		52	27%
<i>Hank Street</i>	Medowie, Raymond Terrace, Tomago, Williamtown	42	22%
<i>Browns Road</i>	Salt Ash	10	5%
Wingecarribee Shire		63	32%
<i>Hall Road</i>	Balmoral Village, Colo Vale, Yanderra, Yerrinbool	63	32%
Total		194	100%

The initial number of interview teams to be deployed was agreed with NSW RFS based on the extent of the geographic area of interest and the associated population density. The number of interviews conducted in each area was ultimately determined mostly by: (a) the number of interview teams deployed (Blue Mountains, 6; Port Stephens, 4; Wingecarribee, 5); and (b) the amount of time required to be spent driving to locations. This was somewhat greater for the Blue Mountains deployment where teams were required to drive to widely spaced locations affected by three different fires. The number of interviews conducted was more than sufficient to achieve the broad objective of qualitative research of this nature—that is, to identify the key themes associated with major issues as perceived and reported by residents.

Those interviewed

The following table presents general descriptive characteristics of those interviewed.

Table 3: Characteristics of those interviewed in each area

Characteristic	Blue Mountains	Port Stephens	Wingecarribee	All (%)
Gender				
Male	49%	46%	54%	94 (50%)
Female	51%	54%	46%	95 (50%)
Age range (years)				
18–29	0%	6%	8%	8 (4%)
30–39	7%	21%	10%	21 (12%)
40–49	19%	18%	14%	31 (17%)
50–59	30%	12%	29%	45 (25%)
60–69	34%	21%	27%	51 (28%)
70+	11%	22%	12%	26 (14%)
Over 60	45%	43%	39%	
Mean age	56 years	53 years	54 years	54 years
Responsible for dependents				
Children ≤ 12	14%	27%	24%	40 (21%)
Children 13–17	6%	23%	6%	21 (11%)

Elderly	1%	12%	3%	9 (5%)
Disabled	3%	2%	0	3 (2%)
Responsible for pets	63%	80%	85%	137 (71%)
Previous experience with bushfire				
Active defence	23%	27%	21%	45 (23%)
Observation	46%	35%	21%	87 (45%)
Current or previous RFS member	19%	8%	17%	30 (15%)
Current or previous member of Community Fire Unit	13%	0	0	10 (5%)

Comparison of the age distribution of participants with those for the State published by the Australian Bureau of Statistics shows that those aged 18–29 were under-represented. This most likely resulted from interviews being conducted between 0900 and 1700 h, when individuals and childless couples in this age range were typically at work. As noted previously, the online survey was intended to redress this acknowledged shortcoming of the interview procedure.

One quarter of those interviewed (25%) reported being responsible for dependent children under 12 or elderly family members. Responsibility for dependent family members was notably higher for Port Stephens residents. Several of those interviewed in Winmalee (Blue Mountains) described their anxieties about children at school when they became aware of the fire threat and the difficulties they experienced in trying to ensure their safety. Although beyond the scope of this study to fully investigate, some parents' reports suggested that some schools may have lacked realistic plans for survival actions in the event of a serious bushfire threat to school premises during school hours.

When I got to the school, they told me the children were safe inside and that they were waiting for the RFS. I said, "Do you realise there is fire in the school grounds?" They didn't have a clue. Telephone Interview-6-BM

More than two-thirds of participants reported wanting to take pets into account in their response to the bushfire threat. In Port Stephens and Wingecarribee, several households described problems posed by having to ensure the safety of horses. While some were well prepared with horse floats and safe destinations, for others it was a last-minute endeavour, often relying on simply opening gates to allow the animals to avoid the approaching fire.

Two-thirds (68%) of those interviewed reported some previous experience of bushfire threat. Of those who reported a previous bushfire threat experience, for two thirds (66%) this was indirect—by observation, while one third described having previously defended a property under threat of a bushfire. Those who described having defended against previous bushfires appeared, mostly, to be somewhat more prepared and ready to respond in an effective manner to the October fire threats compared with those who had never experienced a bushfire threat previously. This difference in readiness was most noticeable for residents of Springwood, Winmalee and Yellow Rock. NSW RFS staff familiar with the area reported that many residents in these suburbs were relatively new to the area, commuted to work and lacked awareness that they resided in a high-bushfire risk area.

Properties and Insurance

In various community bushfire safety discussion forums, it has been suggested by some that (a) type of property (standard residential block; larger 'lifestyle' property; agribusiness); and (b) level of insurance coverage may both be related to (i) level of bushfire preparedness, and (ii) response to bushfire threat (leave, or stay and defend). Both issues are examined in subsequent sections of the report.

Table 4: Type of property and insurance status

	Blue Mountains	Port Stephens	Wingecarribee	All (%)
Property type				
Standard residential block	62%	21%	62%	94 (50%)
'Lifestyle' home on large block	37%	71%	34%	85 (46%)
Farm or other agribusiness	1%	8%	4%	7 (4%)
Total number (%)	73 (100%)	52 (100%)	61 (100%)	186 (100%)
Reported level of house insurance				
Fully	90%	80%	93%	166 (89%)
Under-insured	5%	0	0	4 (2%)
None	1%	10%	6%	11 (6%)
N/A: renting, visiting	0	6%	5%	6 (3%)
Contents insurance				
Fully	86%	75%	84%	160 (86%)
Under-insured	5%	0	0	4 (2%)
None	8%	19%	10%	22 (12%)
N/A: visiting	0	0	2%	1 (<1%)

There were clear differences among the three areas in overall type of residence. More Blue Mountains and Wingecarribee residents' residences were on typical (~0.1 ha) suburban-sized residential blocks; more Port Stephens residents were on larger lifestyle or agribusiness blocks.

Levels of insurance coverage (house and contents) were comparable with those found in previous post-bushfire surveys for residents of the Blue Mountains and Wingecarribee, but somewhat lower for residents of Port Stephens. Rather more Port Stephens residents interviewed were renters, which may explain the relatively lower level of contents insurance. There was no association found between insurance coverage and perceived level of bushfire risk. There was no association evident between insurance coverage and bushfire survival plan (leave, or stay and defend).

Community Connectedness and Perceived Bushfire Risk

This section summarises accounts of interviewees' perception of their communities and their bushfire risk. Later in the report, we discuss some associations between perceived community social connectedness and other aspects of community bushfire safety preparedness.

Community Connectedness

As part of the interview, participants were asked to describe the social connectedness of their community. The aim was to better understand the extent to which such social cohesion factors may be related to ways in which people prepare for possible bushfire events, gain information about such events when they occur, and make decision about what they will do under immediate threat.

Table 5: Interviewees' perceptions of their communities

Community description— level of connectedness	Blue Mountains	Port Stephens	Wingecarribee	All (%)
1. Strongly linked: people friendly, help each other	49%	31%	33%	71 (39%)
2. Networked: people cooperate as needed without much socialising	29%	20%	41%	56 (30%)
3. People know their neighbours	18%	31%	25%	43 (23%)
4. Not much interaction among residents	5%	18%	2%	14 8%
Total number (%)	74 (100%)	49 (100%)	61 (100%)	184

A sample description of each level of community connectedness (1–4 above) given by residents follows:

1. *Excellent... everyone is very family-oriented around here. Very good community spirit. Everybody wants to give each other a hand. Ring-up when somebody—‘Oh, can you give me a hand to move furniture?’ and there’s 20 people here!* (008-W)
2. *We’re quite insular in this little sub-division... There’s only the ten properties, so we all look out for each other but we’re not in each other’s pockets.* (002-PS)
3. *Oh yes, I know everyone. There are a lot of week-enders, so there are not very many permanents here now. But I am in touch with all the permanents.* (001-BM)
4. *We don’t know everybody personally. There’s a local newsletter and neighbours are inclined to sort of give you a wave and say g’day.* 001-W

There appear to be differences among the three areas in overall perceptions of what is often described as ‘sense of community’. A greater percentage of Blue Mountains residents reported higher levels of sense of community (friendliness, socialising and cooperating, 71%). For Port Stephens residents, the figure was much lower (45%) and almost one-fifth said that there was not much interaction among residents. Almost two-thirds of Wingecarribee residents (63%) described higher levels of sense of community while only 2% said that there was not much interaction among residents. Presumably these differences arise, at least in part, from differences in type of residence (see Table 4): more of those interviewed in the Blue Mountains and Wingecarribee lived in houses on suburban streets where neighbours were in close proximity. Port Stephens residents were more likely to live on widely separated large blocks.

Perceptions of Bushfire Risk

Perceived Bushfire Risk Level before the Fires

As part of the interview residents were asked to self-rate their level of bushfire risk.

Table 6: Interviewee-perceived bushfire risk to home and property before the October 2013 fires

Level of risk	Blue Mountains <i>n</i> =79	Port Stephens <i>n</i> =52	Wingecarribee <i>n</i> =63	All (%) <i>n</i> =194
1. High	25%	8%	31%	43 (22%)
2. Medium	37%	29%	19%	58 (30%)
3. Minimal	9%	19%	19%	29 (15%)
4. None	11%	13%	6%	20 (10%)
5. Had not thought about it	16%	31%	25%	44 (23%)
Total number (%)	79 (100%)	52 (100%)	63(100%)	194 (100%)

Some householder descriptions which illustrate the different self-reported risk perceptions follow:

1. *Researcher: How concerned were you about the possibility of a bushfire threatening your house?*

Interviewee: Very high. There've been fires at the other end of Winmalee. So there was a good chance one was going to come through. (004-B)

2. *Researcher: Were you guys concerned about fire risk?*

Interviewee: Yes, but it's worth it. We take the risk like everybody who lives in the bush... Because of the National Park out the back... We thought: 'It's a risk but we're willing to take it.' (004-W)

3. *Researcher: Did you think at all about the possibility of a bushfire?*

Interviewee: Not really, no, because it is quite open and stuff like that. (003-PS)

4. *Researcher: How concerned were you about a bushfire threatening?*

Interviewee: Never. Never. None. Nothing. (002-W)

5. *Researcher: How concerned were you before the fire about the possibility of a bushfire?*

Interviewee: No, I never thought about it really. No. (001-PS)

There were clear differences among areas in participants' reported overall levels of perceived bushfire risk before the October fires. Almost two-thirds (62%) of Blue Mountains residents described their perceived bushfire risk to their home as High or Medium, apparently because of the area's long history of serious bushfires (many of those interviewed spoke of the Blue Mountains as being bushfire-prone). For Port Stephens residents, the corresponding figure was 37%; for Wingecarribee residents the figure was 40%. Overall, almost one quarter (23%) of those interviewed including 16% from the Blue Mountains indicated that they had never considered possible risk of bushfire threat to their home.

Estimates of House Vulnerability to Bushfire Attack

As part of the property visits process, the NSW RFS members in the teams were asked to make an estimate of the likely proximity of fine fuels to the house structure before the October fires, wherever possible.

Table 7: Team estimates of fine-fuel level within 10 m of home

Fine-fuel level	Blue Mountains n=71	Port Stephens n=52	Wingecarribee n= 62	All (%) n=185
High	37%	2%	15%	36 (20%)
Medium	34%	21%	19%	47 (25%)
Light	29%	77%	66%	102 (55%)
Total number (%)	71 (100%)	52 (100%)	62 (100%)	185 (100%)

The estimates suggest an overall ranking of general house vulnerability in terms of fine-fuel levels near houses of: Blue Mountains most; Port Stephens least; Wingecarribee intermediate. This is consistent with the large number of homes destroyed in the Blue Mountains area.

Interview teams were asked to make a global estimate of house vulnerability based on proximity to bushland before the October fires, wherever possible.

Table 8: Interview teams' global assessments of house vulnerability to bushfire as proximity to adjacent bushland

Proximity to bushland	Blue Mountains n= 33	Port Stephens n= 36	Wingecarribee n= 39	All (%) n= 108
One block away or less	52%	6%	23%	28 (26%)
Across a road, railway line or other break	21%	19%	38%	29 (27%)
One block plus a break	6%	11%	8%	9 (8%)
100–300 m	21%	34%	8%	22 (20%)
300–600 m	0	19%	13%	12 (11%)
More than 600 m	0	11%	10%	8 (8%)

The estimates suggest an overall ranking of house vulnerability in terms of proximity to adjacent bushland of: Blue Mountains most (with more than half the properties one block or less from bushland); Port Stephens least (with nearly two-thirds of properties more than 100 m from bushland); Wingecarribee intermediate. This matched the previous ordering of general house vulnerability in terms of fine fuel load (Table 7). It is acknowledged that the estimates were crude, but they are consistent with recently published material (Blanchi *et al.*, 2012; Crompton *et al.*, 2010; Price & Bradstock, 2012) suggesting that the major driver of house losses due to bushfire is proximity to fuel.

Plans, Preparations and Readiness before the October Fires

A key aspect of the study was to determine householders' plans in the event of a bushfire threat and the preparations they had undertaken prior to the October 2013 bushfires.

Table 9: Interviewees' reported bushfire survival plans before the fire

	Blue Mountains	Port Stephens	Wingecarribee	All (%)
Initially claimed to have had a plan	84%	52%	80%	142 (73%)
– Written plan	8%	2%	10%	13 (7%)
– Unwritten plan	76%	50%	70%	129 (66%)
Did not claim to have a plan	16%	48%	20%	27%
Description of plan when details requested				
All stay and defend	33%	17%	16%	45 (23%)
Wait and see then decide	18%	15%	8%	27 (14%)
All leave	23%	8%	32%	42 (22%)
Some stay and defend, some leave	9%	8%	11%	18 (9%)
Able to describe a plan	83%	48%	67%	132 (68%)
No concrete plan described	17%	52%	33%	62 (32%)

Across the three study areas, 73% claimed to have had a bushfire plan prior to the October 2013 bushfires. There was a notable difference in reported frequency of having a plan between (a) the Blue Mountains (84%) and Wingecarribee (80%), and (b) Port Stephens (52%). It was previously noted (Table 5) that the reported overall level of community connectedness among Port Stephens residents was appreciably lower than that reported by Blue Mountains and Wingecarribee residents. This apparent association between frequency of residents having a bushfire plan and a higher level

of community connectedness seems to warrant further research. Across all three areas, only 13 (9%) of the 142 residents who claimed to have a plan said that it was a written plan.

Notwithstanding the rarity of **written** plans (7% of the 194 residents), two-thirds (68%) of all those interviewed were able to describe their pre-October bushfires survival plan. For Blue Mountains residents, the figure was considerably higher at 83%; for Port Stephens residents, it was much lower at 48%; for Wingecarribee residents, it was 67%. It is noteworthy that that almost all the Blue Mountains and Port Stephens residents who claimed initially that they had a bushfire plan were able to provide details of the plan when asked. However, while 80% of Wingecarribee residents claimed initially to have had a plan, only 67% were able to provide details of the plan.

In considering how to interpret these figures, caution is necessary: it is likely that the true number of those who actually had a bushfire survival plan prior to the October bushfires is somewhat less, owing to the so-called 'hindsight-bias effect': knowing that there was a bushfire and knowing what they did in response, it is likely that at least some of those interviewed have reconstructed their history such that they now believe, and reported, that what they did (*without* a plan) was actually their plan all along. We make this suggestion based on a 2012 survey of 584 south-eastern Australian residents of notably at-risk communities. McLennan et al. (2014) found that 37% of respondents reported having a household plan for survival if they were threatened by a *future* bushfire. Post-bushfire interviews in early 2013 with 238 residents of three NSW communities impacted by bushfires in January 2013 (Coonabarabran, Yass, Shoalhaven) found that 68% reported having had a bushfire survival plan (it should be noted that any hindsight bias effect would presumably have inflated this number also).

Inspection of reasons interviewees provided for deciding on their plan were consistent with findings from previous research.

- Those planning on staying and defending wanted to protect their valued property assets and believed that they were capable of doing so.

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. (003-BM)

- Those planning on leaving did not want to be exposed to the risk of death or injury, and accepted the possibility of losing the home and possessions.

Well, the house is insured and things can be replaced, and our lives come first. (Telephone Interview-003-PS)

- Those planning on waiting and seeing did not want to lose their house to a small fire but did not want to run the risk of death or injury in a major bushfire.

We would wait and see, we'd wait and see. We would stay and fight. But I wanted to be prepared, have the car prepared, to leave if necessary. (011-BM)

- Those whose plans were for some members of the household to stay and defend while others left all involved males staying and defending in order to protect the house, and

females (and young children) leaving so as to ensure their safety and the safety of removable valuables.

My plan is to protect the place, and I feel that I'm prepared and have the experience to do that. So basically, if we had a fire that was a major fire approaching, I would probably pack the wife and valuables off and just stay myself. (001-W)

- Those without a bushfire plan believed they were not at risk and thus never considered there was a need for a plan.

No, because it's pretty clear on the property, you see, so I never thought it would be needed, yeah. (001-PS)

A major tool prepared by the NSW RFS to assist and support those wanting to make a plan for what to do in the event of a bushfire is the *Bushfire Survival Plan* booklet. This plan is available from the NSW RFS website and upon request from NSW RFS but is **not** routinely distributed to households via letterbox drop or bulk mail out. Of the 194 residents interviewed, about one-third (35%, 68) had obtained a copy of the *Bushfire Survival Plan*. For Port Stephens residents, the figure was somewhat lower (29%).

Table 10: Reported use of the NSW RFS *Bushfire Survival Plan* document

	Blue Mountains (n = 79)	Port Stephens (n = 52)	Wingecarribee (n = 63)	All (%) (n = 194)
Had obtained a copy of the NSW RFS <i>Bushfire Survival Plan</i> document	37%	40%	29%	68 (35%)
– from NSW RFS website	13%	2%	3%	13 (7%)
– at community meetings	8%	4%	13%	16 (8%)
– from fire station or other official location	16%	34%	13%	39 (20%)
Total number who had obtained a copy of the NSW RFS <i>Bushfire Survival Plan</i> document	29	21	18	68
Of those who obtained a copy of the <i>Bushfire</i>				

Survival Plan document:				
% and number reporting use of it in their planning	41% (12)	33% (7)	67% (12)	46% (31)

Of those 68 interviewees who had obtained a copy, a little less than half (31, 46%) reported making use of it in forming their own household survival plan. That is, of the 194 residents interviewed, 31/194 = 16% reported making use of it in formulating a household bushfire plan.

We did get the fire preparation booklet and the cards. To tell the truth, you just put it down with all your other paperwork and stuff, and get on with your life. It's here somewhere. (013-BM)

Overall, interviewees who lived on a standard residential-sized block (~0.1 ha) were somewhat more likely to report having a plan (76%) compared with those who lived on larger lifestyle-type blocks (68%). All (100%) those who resided on a farm or other agribusiness-type property reported having a plan, but the small number (7) means that the finding should be interpreted with caution.

Table 11: Reported influences on plans pre-October bushfires by pre-bushfire intention

Influences	Stay and defend (n = 45)	Wait and see (n = 27)	Leave (n = 42)	Some leave, others stay and defend (n = 18)	All (n = 132; %: n/132)*
Media: radio, television, newspapers	13%	7%	12%	6%	14 (10%)
Information from RFS	42%	48%	55%	44%	64 (47%)
Memory of previous bushfires	31%	37%	21%	22%	37 (28%)
Own knowledge—common sense	62%	48%	40%	67%	70 (53%)

* Note that several residents reported multiple influences: the 132 respondents described 185 influences.

Interviewees' accounts indicate that general media news and information about bushfire safety had only a limited impact on residents' plans. A little less than half (47%) reported that NSW RFS information influenced their planning; 55% of those whose plan was to leave mentioned NSW RFS information as an influence. Apart from those who reported making use of the *Bushfire Survival Plan* document (31/194, 16%), few residents described specific NSW RFS sources, simply mentioning 'RFS' as a generic source of their information about bushfire safety.

Long-Term Preparations for Bushfire

Interviewee-reported long-term preparations have been tabulated below in three ways: by area (Table 12), by type of property (Table 13), and by prior bushfire plan—that is, their prior intention to stay and defend, or to leave early, etc. (Table 14). A discussion of the significant points follows the three tables.

Table 12: Long-term preparations prior to the October bushfires, by area

Preparatory activity	Blue Mountains (n = 79, % n/79)	Port Stephens (n = 52, %n/52)	Wingecarribee (n = 63, %n/63)	All (%) (n = 194, %: n/194)
Had a plan	83%	48%	67%	132 (68%)
Had obtained a copy of the <i>Bushfire Survival Plan</i>	37%	40%	29%	68 (35%)
Had practised their plan	4%	2%	10%	10 (5%)
Discussed their plan with family or friends	49%	23%	37%	74 (38%)
Discussed their plan with neighbours	42%	19%	27%	60 (31%)
Had installed the <i>Fires Near Me</i> app	10%	10%	16%	23 (12%)
Had cleared vegetation around the house	66%	58%	60%	120 (62%)
Had cleaned out roof gutters	62%	35%	60%	105 (54%)
Had a water supply independent of mains	49%	25%	22%	66 (34%)
Had a source of power for a pump independent of mains	22%	15%	10%	32 (16%)
Had installed a fire protection sprinkler system	9%	13%	6%	18 (9%)

Had organised protective clothing	23%	15%	10%	32 (16%)
Had planned a safe destination and mapped out an evacuation route	27%	19%	16%	41 (21%)
Had a bushfire <i>GO KIT</i> ready	30%	27%	32%	58 (30%)

Table13: Long-term preparations prior to the October bushfires, by type of property

Preparatory activity	Standard residential block (n = 94)	Larger lifestyle property (n = 85)	Farm or other agribusiness (n = 7)	All n (%: n/186)
Had a plan	68%	68%	100%	126 (68%)
Had obtained a copy of the <i>Bushfire Survival Plan</i> document	52%	18%	0	64 (34%)
Had practised their plan	6%	2%	0	8 (4%)
Discussed their plan with family or friends	44%	32%	43%	71 (38%)
Discussed their plan with neighbours	33%	28%	29%	57 (31%)
Had installed the <i>Fires Near Me</i> app	16%	6%	0	20 (11%)
Had cleared vegetation around the house	57%	67%	57%	115 (62%)
Had cleaned out roof gutters	59%	47%	43%	98 (53%)
Had a water supply independent of mains	24%	19%	14%	62 (33%)

Had a source of power for a pump independent of mains	13%	14%	14%	25 (13%)
Had installed a fire protection sprinkler system	12%	7%	0	17 (9%)
Had organised protective clothing	15%	18%	29%	31 (17%)
Had planned a safe destination and mapped out an evacuation route	24%	19%	14%	40 (22%)
Had a bushfire <i>GO KIT</i> ready	36%	26%	14%	57 (31%)

Table 14: Long-term preparations prior to the October bushfires, by prior bushfire plan

Preparatory activity	Stay and defend (n = 45)	Wait and see (n = 27)	Leave (n = 42)	Some leave, others stay and defend (n = 18)	All n (%: n/132)
Had obtained a copy of the <i>Bushfire Survival Plan</i> document	13%	41%	43%	61%	46 (35%)
Had practised their plan	7%	4%	12%	6%	10 (8%)
Discussed their plan with family or friends	47%	56%	40%	78%	67 (51%)
Discussed their plan with neighbours	31%	37%	40%	56%	51 (39%)
Had installed the <i>Fires Near Me</i> app	13%	11%	14%	17%	18 (14%)
Had cleared vegetation around the house	71%	70%	52%	94%	90 (68%)
Had cleaned out roof gutters	89%	52%	64%	72%	85 (64%)

Had a water supply independent of mains	56%	33%	19%	56%	52 (39%)
Had a source of power for a pump independent of mains	22%	22%	5%	28%	23 (17%)
Had installed a fire protection sprinkler system	11%	4%	10%	28%	15 (11%)
Had organised protective clothing	29%	26%	7%	39%	30 (23%)
Had planned a safe destination and mapped out an evacuation route	11%	41%	38%	22%	36 (27%)
Had a bushfire <i>GO KIT</i> ready	29%	44%	45%	39%	51 (39%)

Key observations from the tabulations above are:

Preparations by geographic area (Table 12): Overall, levels of long-term bushfire safety preparations were highest for Blue Mountains residents, lowest for Port Stephens residents, and intermediate for Wingecarribee residents. A key related difference between areas appears to be the level of discussion of the plan with family, friends and neighbours. This was appreciably lower in Port Stephens than in the other two areas and is consistent with the corresponding perception of the nature of the community (Port Stephens residents described a lower level of social connectedness and engagement among neighbours). In contrast, it is interesting to note differences in reported vegetation clearing around the home were small—Blue Mountains, 66%; Wingecarribee, 60%; Port Stephens, 58%.

With respect to preparations by property type (Table 13): differences among the three types of property in terms of long-term bushfire safety preparatory actions undertaken were not great with the exception of those reporting they ‘had obtained a copy of the *Bushfire Survival Plan* document’ (standard-sized residential block, 52%; larger lifestyle block, 18%; agribusiness, 0). Despite this difference in obtaining an information source, it appears that property type (standard residential block versus larger lifestyle block) was not a predictor of the bushfire threat mitigation preparatory actions that individual property owners undertook.

With respect to preparations by prior bushfire safety plan (Table 14): Overall, relatively more long-term bushfire safety preparatory activities had reportedly been carried out by households in which some members planned to stay and defend while others left for a safer location, as might be expected in order to accommodate two parallel courses of intended action by members of a

household. Notably fewer households who planned to leave had cleared vegetation from around the home. It is unclear what would be judged to be 'satisfactory' levels of long-term preparation to improve the probability of a house surviving bushfire threat. The levels of preparatory activity reported here were appreciably lower than those described by McLennan *et al.* (2014) from their 2012 survey of 584 residents of at-risk communities in south-eastern Australia. However, the different methodologies (opt-in survey *versus* post-bushfire interviews) mean that caution should be used when making any such comparisons. A summary of the findings reported by McLennan *et al.* is given in Appendix D.

In all three tables were no meaningful differences in the take-up of the *Fires Near Me* app prior to these fires, suggesting that adoption of the app was related primarily to how 'new-technology savvy' an individual householder was.

Information and Communication

Having discussed prior bushfire risk perception and long-term preparedness for bushfires, interviewers then asked residents about their recollections of information about bushfire risk in the days immediately **prior to** the October bushfire, when NSW RFS was actively warning of predicted increased threat of fire in coming days via a range of media.

Table 15: Information-seeking and monitoring activities the day(s) immediately before the October bushfires, by area

Information-seeking activity	Blue Mountains (n = 79)	Port Stephens (n = 52)	Wingecarribee (n = 63)	All (%)
Listened to the radio for news about fires	11%	25%	14%	31 (16%)
Watched TV for news about bushfires	10%	13%	19%	27 (14%)
Checked the RFS website	15%	12%	8%	23 (12%)
Phoned Bushfire Information Line	5%	4%	1%	7 (4%)
Called friends, family, neighbours to discuss possible bushfires	16%	6%	14%	25 (13%)

Table 16: Preparatory readiness activities the day(s) before the October bushfires, by area

Preparatory activity	Blue Mountains (n = 79)	Port Stephens (n = 52)	Wingecarribee (n = 63)	All (%)
Returned to home from holidays/family/business trip	6%	10%	0	10 (5%)
Organised valuables to take to safety	19%	13%	10%	28 (14%)
Arranged for the safety of pets/livestock	10%	15%	5%	19 (10%)
Tested firefighting equipment	1%	10%	3%	8 (4%)
Organised protective clothing	5%	8%	5%	11 (6%)

Table 17: Preparatory readiness activities the day(s) before the October bushfires, by prior plan

Preparatory activity	Stay and defend (n = 45)	Wait and see (n = 27)	Leave (n = 42)	Some leave, others stay and defend (n = 18)	All n (%: n/132)
Organised valuables to take to safety	11%	19%	26%	28%	26 (20%)
Arranged for the safety of pets/livestock	11%	11%	14%	6%	15 (11%)
Tested firefighting equipment	7%	4%	2%	11%	7 (5%)
Organised protective clothing	11%	11%	2%	11%	11 (8%)

On the basis of the above three tables, it seems that the fire danger weather conditions as (a) predicted by agencies and (presumably) experienced by residents preceding imminent bushfire threat, and (b) described in general media coverage of potential bushfire threats motivated only a relatively small percentage of interviewees in all three areas to either (i) actively seek and monitor sources of information about emerging fire dangers or threats (Table 15); or (ii) take steps to prepare for a possible fire (Table 16). While 19% of Wingecarribee residents reported ‘watching TV for news about bushfires’, it seems likely that such a percentage of residents may well have been watching television news services simply as a matter of daily household routine. The most frequently reported bushfire readiness activity reported was to organise valuables to take to safety if threatened—however, this was undertaken by less than one in five of those whose bushfire survival plan was to leave if threatened.

Consistent with previous findings, it seems that relatively few residents alter their behaviour in major ways solely on the basis of fire danger weather **predictions**. In the present study, only two residents—1% of the total—left home early on the morning of the day the fire impacted because of the predicted fire danger weather.

Overall, the levels of bushfire readiness preparatory activities reported here seem to be lower than might be expected. They were appreciably lower than those described by McLennan *et al.* (2014) from their 2012 survey of 584 residents of at-risk communities in south-eastern Australia. However, the different methodologies (opt-in survey *versus* post-bushfire interviews) mean that caution should be used when making any such comparisons. A summary of the findings reported by McLennan *et al.* is given in Appendix D.

Table 18: Pre-October bushfires: influences on readiness for a possible bushfire

Influence	Blue Mountains (n = 79)	Port Stephens (n = 52)	Wingecarribee (n = 63)	All (%)
Media: radio, television, newspapers	6%	8%	11%	16 (8%)
Information from RFS	49%	19%	38%	73 (38%)
Memory of previous bushfires	22%	29%	22%	46 (24%)
Own knowledge— common sense	38%	56%	43%	86 (44%)

Table 18 shows the influence on the readiness activities that people undertook. Here it is clear that NSW RFS played the most significant role in the Blue Mountains and Wingecarribee, with Port Stephens as the 'odd man out', with appreciably fewer reports of NSW RFS as an influence of bushfire readiness, and correspondingly more reports of reliance on householders' own knowledge and common sense.

Table 19: Pre-October bushfires: Awareness of sources of information about possible level of bushfire threat

Source	Blue Mountains (n = 79)	Port Stephens (n = 52)	Wingecarribee (n = 63)	All (%)
Media news and information	30%	33%	38%	65 (34%)
Radio news and warnings	23%	23%	19%	42 (22%)
Fire danger ratings	20%	25%	17%	40 (21%)
Telephone Bushfire alerts: SMS, landline	29%	21%	22%	48 (25%)
Total Fire Ban announcements	13%	15%	11%	25 (13%)
RFS website	8%	2%	3%	10 (5%)
RFS fire truck sirens	9%	13%	6%	18 (9%)
<i>Fires Near Me</i> app	15%	15%	22%	34 (18%)

The summary of reports of interviewees' awareness of sources of information about possible levels of bushfire threat in Table 19 indicate few meaningful differences across the three areas. The relatively small number of mentions of the NSW RFS website as a source of information (5%) is noted and might be explained by the fact accessing the website is a conscious action of individuals seeking information on the level of fire threat. By way of comparison 25% stated that their awareness of the fire threat came through notifications such as the Bushfire alerts, messages to land lines or via SMS which are provided to individuals and households.

The next part of the interview guide concerned residents' experiences when the bushfire threatened homes.

Table 20 summarises reports of how the interviewees at home on the day the fire threatened homes became aware that there **was** a bushfire posing a potential threat. There are some key commonalities and interesting apparent differences among the three areas. For each area, sight of smoke was most frequently reported as the first indication of fire, although a much larger percentage of Port Stephens residents reported sight of smoke as a first indication compared with those in the Blue Mountains area. Another key indicator of emerging threat, particularly for those in the Blue Mountains and Wingecarribee areas, was a phone call or direct contact from family, neighbours or friends. The relatively lower level of direct contact in this way by Port Stephens residents is again consistent with the perception of lower levels of community connectedness and interaction among neighbours reported by Port Stephens area residents, and this probably accounts for their relatively greater reliance on official sources of information.

Table 20: On the day of the fire: how interviewees became aware of an impending bushfire threat (many residents named several sources)

Source	Blue Mountains* (n = 65)	Port Stephens* (n = 32)	Wingecarribee* (n = 53)	All (%: n/150)
Saw smoke	48%	78%	65%	90 (60%)
Smelled smoke	6%	19%	17%	19 (13%)
Saw flames	15%	6%	13%	19 (13%)
Phone contact from family/friends/neighbours	42%	25%	40%	56 (37%)
Heard official warning on radio	5%	0	4%	5 (3%)
Saw official warning on TV	5%	3%	4%	6 (4%)
Official warning: SMS or landline	11%	35%	37%	37 (25%)
Directly from neighbours	15%	25%	27%	32 (21%)
Directly from police/SES/fire	5%	6%	13%	13 (9%)
Heard sirens	1%	19%	4%	9 (6%)
<i>Fires Near Me</i> app	1%	13%	10%	10 (7%)
RFS website	1%	0	6%	4 (3%)
Facebook posting	1%	3%	6%	5 (3%)

Twitter	0	0	0	0
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* Numbers not home on the day due to chance—not by choice related to possible bushfire threat—Blue Mountains = 12; Port Stephens = 20; Wingecarribee = 10; total = 42. Two Blue Mountains residents left early on the basis of predicted fire danger weather.

Further interesting observations from Table 20 are (a) that social media (Facebook, Twitter) hardly figured as initial indicators of bushfire threat; and (b) that 35–37% of respondent in the Port Stephens and Wingecarribee areas reported official SMS or landline Emergency Alerts as first indications of a fire threat compared with the much lower 11% of residents of the Blue Mountains area.

The next section looks specifically at residents' perceptions of the usefulness of the Emergency Alerts issued.

Table 20a summarises responses by interviewees to questions about their perceptions of Emergency Alerts.

Table 20a: Comments by interviewees on the usefulness of Emergency Alerts

Comment	Blue Mountains	Port Stephens	Wingecarribee	All
Too late	18	5	6	29 (21%)
Sufficiently frequent	10	21	22	53 (38%)
Not sufficiently frequent	4	7	1	12 (9%)
Clear	5	7	15	27 (20%)
Confusing	2	2	–	4 (3%)
Information not sufficiently detailed	5	3	5	13
Total				138

Overall, of the 138 comments, 80 (58%) were positive (sufficiently frequent, clear) while 58 (42%) were negative (too late, not sufficiently frequent, confusing, not sufficient detail). Note that most of the 'too late' comments from Blue Mountains interviewees were made by Mount Victoria or Winmalee residents impacted by relatively fast-moving fires.

After describing how they became aware of the bushfire threat in their area, interviewees were then asked about their use of sources to find more information about the threat (several reported more than one source was used).

Table 21: Sources used to obtain more information about the immediate fire threat

Source	Blue Mountains (n = 65)	Port Stephens (n = 32)	Wingecarribee (n = 53)	All (%: n/150)
Internet websites— mostly NSW RFS	28%	19%	37%	43 (29%)
Local radio*	15%	34%	15%	29 (19%)
Social media— Facebook**, Twitter	5%	28%	25%	25 (17%)
Phone/text contact with family, friends, neighbours	15%	16%	17%	24 (16%)
TV news	15%	19%	10%	21 (14%)
Contacted acquaintance in NSW RFS	11%	3%	10%	13 (9%)
Contacted Bushfire Information Line	1%	0	0	1 (1%)
Stated 'no need'	18%	38%	25%	36 (24%)

* Where identified, this was ABC. ** Where identified, this was NSW RFS.

An interesting feature of Table 21 is that while few interviewees (5%) reported that social media was their initial source of information about an emerging fire threat (Table 20), an appreciable number of residents (17% overall and 28% in the Port Stephens area) reported using this as a means of obtaining **more** information about the now-known developing threat. Other key sources of additional information were websites (mostly the NSW RFS website) and local radio.

What Table 20 and Table 21 together suggest is that (a) despite predicted high bushfire danger weather, relatively few residents are likely to be monitoring information-rich agency sources such as websites and Facebook pages in case a bushfire threatens; but (b) when they know there is a potential threat, such information-rich agency sources will be checked quickly by many, which suggests the need for such sources to updated as soon as possible after an imminent threat has been first identified.

Table 21a summarises the Facebook pages identified by interviewees.

Table 21a: Number of respondents identifying Facebook pages specifically as information sources used

Facebook page	Blue Mountains <i>n</i> =4	Port Stephens <i>n</i> =13	Wingecarribee <i>n</i> =17	All <i>n</i> =34
RFS	2	5	9	16 (47%)
Family/friends	1	5	2	8 (23%)
Local brigade	–	2	4	6 (18%)
Other individuals	1	–	2	3 (9%)
Other organisations	–	1	–	1 (3%)
Total	4	13	17	34 (100)

The numbers involved are probably too small to warrant detailed interpretative comment, save perhaps to note that the RFS Facebook page accounted for almost half of the reported usage.

Actions Under Imminent Bushfire Threat

Interviewees were then asked what they decided to do once they were aware of an immediate fire threat. Of the 194 residents interviewed, 150 were at home when the bushfire threatened. They were asked what actions they decided to take in light of the threat (Table 22). Table 23 summarises the source of the information that they used to make that decision. Table 24 compares that decision with their prior plan—that is what they had intended to do in the event of a fire. (Note that 44 of the 194 residents were not at home by chance when the fire threatened, not by deliberate choice based on perceived bushfire danger.)

Table 22: Decision taken when fire threat known

Decision	Blue Mountains (<i>n</i> = 65)	Port Stephens (<i>n</i> = 32)	Wingecarribee (<i>n</i> = 53)	All (%: <i>n</i> /150)
Stay and defend	37%	38%	23%	48 (32%)
Wait and see	26%	22%	33%	41 (27%)
Leave	25%	25%	44%	47 (31%)
Some household member leave, others stay and defend	12%	16%	2%	14 (9%)
Number not at home on the day by chance	12	20	10	42
Left early	2			2

For just over one quarter (27%) of those interviewees at home when they became aware of an emerging fire threat, their initial decision was to ‘wait and see’. This is despite admonitions in community bushfire safety information warning against the dangers of doing so. The percentage is consistent with the finding reported by McLennan and Elliott (2013)—on the basis of a survey of 584 residents of at-risk communities—that about 29% of residents *planned* to wait and see how a bushfire threat developed before committing to a final course of action. McLennan and Elliott’s explanation for their finding was that most residents whose plan was to wait and see following a bushfire threat warning: (a) perceived their bushfire risk to be low; (b) judged that waiting and seeing would not entail additional risk; (c) did not want to leave unnecessarily but did not want to have to face a serious bushfire threat; and thus (d) waited, hoping for the best that no serious threat would eventuate.

Another interesting feature of the present analysis is the relatively higher percentages of Blue Mountains (37%) and Port Stephens (38%) residents who decided to stay and defend their property compared with Wingecarribee residents (22%).

Table 23 shows the information used to make that decision.

Table 23: Information used by interviewees to make their initial decision (stay, wait, leave)

Source	Blue Mountains (n = 65)	Port Stephens (n = 32)	Wingecarribee (n = 53)	All (%: n/150)
Information from family, friends, neighbours via phone	28%	3%	28%	34 (23%)
Direct information from neighbours	18%	13%	15%	24 (16%)
RFS website	15%	6%	17%	21 (14%)
Radio	8%	3%	11%	12 (8%)
TV news	9%	3%	13%	11 (7%)
Social media—FaceBook, Twitter	0	3%	13%	8 (5%)

The above findings suggest that for more than one third of residents, information from personally known, and thus presumably trusted, sources (family, friends, neighbours) was a basis for their initial decision in the face of impending bushfire threat. Once again, this table reflects the relative lack of community connectedness described by the Port Stephens residents, where a much smaller percentage (16%) reported using information from these sources. Also interesting is the appreciably higher level of utilisation of social media sites reported by those in the Wingecarribee area (13%)—particularly compared with Blue Mountains residents (0%). This is possibly due to the percentage of

Wingecarribee residents in the 18–29 years age group (8%), cf. Blue Mountains residents: 0%. However, the numbers involved are not sufficient to draw a firm conclusion.

Table 24: Prior plan by initial decision

<i>Initial decision</i>	Prior plan				
	Stay and defend (<i>n</i> = 43; 38%)	Wait and see (<i>n</i> = 30; 27%)	Leave (<i>n</i> = 37; 33%)	Some resident leave, others stay and defend (<i>n</i> = 3; 2%)	All (%: <i>n</i> /113)
<i>Stay and defend</i>	88%	10%	5%	33%	43 (38%)
<i>Wait and see</i>	5%	50%	11%	33%	22 (20%)
<i>Leave</i>	0	30%	63%	0	33 (29%)
<i>Some leave, others stay and defend</i>	7%	10%	21%	33%	15 (13%)
Total	100%	100%	100%	100%	113 (100%)

Note: The shaded areas are those cells where **Prior plan** coincided with *Initial decision*

The above findings are consistent with previous post-bushfire research: a major driver of householders' initial responses to bushfire threat is their prior bushfire plan, and this relationship is strongest for those whose prior plan was to stay and defend (McLennan *et al.* 2012, 2013).

Table 25 compares interviewees' initial decision and action (on finding out that a bushfire potentially threatened) with their final decisive decision and action in the face of imminent bushfire threat.

Table 25: Initial decision by final decision

Initial decision (awareness of potential threat)	Final decisive action (imminent threat)		
	Stayed	Left	All
<i>Stay and defend</i>	86% (30)	14% (5)	35 (100%)
<i>Wait and see</i>	31% (9)	69% (20)	29 (100%)
<i>Leave</i>	18% (6)	82% (28)	34 (100%)
<i>Some leave others stay and defend</i>	50% (3)	50% (3)	6 (100%)
Total	46% (48*)	54% (56**)	104 (100%)

* Includes one resident who did not defend actively, but sheltered passively; **includes two residents who left early in the morning before any warnings on the basis of fire danger weather predictions. Note: shading indicates where the initial decision matched the final decision.

For those interviewees whose final, decisive, decision was to leave, Table 25a summarises the triggers for leaving.

Table 25a: Triggers for leaving; listed in descending order of frequency (most residents reported more than one trigger in combination)

Trigger for leaving	Blue Mountains	Port Stephens	Wingecarribee	All
Sight of smoke	16 (21%)	12 (23%)	21 (24%)	49 (23%)
Emergency Alert message	8 (11%)	5 (10%)	22 (26%)	35 (15%)
Sight of flames	16 (21%)	8 (15%)	4 (5%)	28 (13%)
Advice from police/firefighters	6 (8%)	10 (19%)	12 (14%)	28 (13%)
Information from family/friends (mobile/landline)	11 (14%)	3 (6%)	10 (12%)	24 (11%)
Ordered to evacuate by police	7 (9%)	5 (10%)	3 (3%)	15 (7%)
Media information/warning (radio, TV)	–	4 (8%)	7 (8%)	11 (5%)
Information from neighbours (face-to-face; phone)	6 (8%)	2 (4%)	2 (2%)	10 (5%)
All house protection measures taken-‘nothing else to do’	2 (3%)	3 (6%)	3 (3%)	8 (4%)
Fire impacted property	3 (4%)	–	–	3 (2%)
Heard/saw aircraft	1 (1%)	–	2 (2%)	3 (2%)
Total	76 (100%)	52 (100%)	86 (100%)	214 (100%)

The overall pattern of triggers for leaving is consistent with previous findings. Most frequently, visual cues served as unequivocal physical evidence of an impending threat (sight of smoke and/or flames). Second, information and advice from trusted sources (police and firefighters; fire agency; family or friends) was accepted as sufficient reason to make decisions to actually leave. There are some differences among the three locations, presumably reflecting how the different fire events progressed: (a) the rapidly developing threats to homes associated with the Linksvie Road and Mount York Road fires in the Blue Mountains, and (b) the extended period of varying threat to residents in the Port Stephens area.

Fifteen (10%) of the 150 householders interviewed who were at home on the day the fire threatened to impact their homes reported that the trigger for leaving was being ordered to do so by police officers. Of these fifteen interviewees ordered to evacuate, five reported extreme dissatisfaction at being forced to leave what they regarded as a well-prepared and defensible property (Blue Mountains, 2; Port Stephens, 3). Three of these reported being physically restrained and forcibly removed in police vehicles. A fourth reported his surprise and disappointment at how the order was enforced:

I thought the house would take care of itself. My wife was pregnant and I didn't want to cause trouble in a dangerous situation. I asked the officer, 'At XXXXX Road, should I turn right or left? Which is safer'? He shouted 'I don't know and I don't care, just get out of here. Leave now'. (JM-005P)

One of those who was physically removed with his wife in a police vehicle and driven to an evacuation centre described how he subsequently phoned a neighbour to come and collect him, and then used local knowledge of roads to circumvent road blocks and return to his agribusiness and resume (successfully) defending the property. A Wingecarribee resident described being ordered to leave but refused so vigorously that the two police officers abandoned attempts to force him to leave. He defended his property successfully.

Table 26: Interviewees' final decisions by outcomes for the properties

Outcome	Final decisive action		
	Stayed	Left	All
House undamaged	41% (39)	59% (55)	94 (100%)
Minor damage	62% (8)	38% (5)	13 (100%)
Major damage	(0)	100% (2)	2 (100%)
House destroyed	29% (2)	71% (5)	7 (100%)
Total number	42% (49)	58% (67)	116 (100%)

The findings suggest that many of those interviewees who stayed and defended occupied properties close to bushland where bushfire risk was relatively higher, and householders had planned and prepared to protect their homes and possessions.

Table 27: Initial actions of those interviewees who were not at home by chance when the fire threatened and ultimate actions

Initial decision	Left	Stayed and defended	All
Return home	50% (18)	50% (18*)	36 (100%)
Remain away	–	–	6
Total			42

* Includes one resident who sheltered passively.

For most interviewees, their initial decision to return was based on vague information about the initial fire threat. The ultimate choice to subsequently leave was influenced by additional information about the level of threat posed—for several Blue Mountains residents, the decision to leave was based on advice or instructions from police or NSW RFS firefighters.

Additional Information from Interviewees: Safer Locations, Community Meetings

Locations of Relative Safety

Table 28 summarises responses to a question about knowledge of Neighbourhood Safer Places.

Table 28: Interviewees' knowledge of their Neighbourhood Safer Place (NSP)

Know about NSP?	Blue Mountains n=79	Port Stephens n=52	Wingecarribee n=63	All n=194
Yes	24 (41%)	6 (15%)	12 (21%)	42 (27%)
No	34 (59%)	34 (85%)	45 (79%)	113 (73%)
Total	58 (100%)	40 (100%)	57 (100%)	155 (100%)
Not applicable (no NSP near)	21	12	6	41
Total	79	52	63	

Table 28 shows clear differences among the three areas in residents' knowledge of about Neighbourhood Safer Places: Blue Mountains interviewees were more than two-and-a-half time more likely than Port Stephens interviewees to be able to identify their Neighbourhood Safer Place. This difference may be related to the difference in community connectedness between the two areas.

Table 29 summarises responses to a question about knowledge of a nearby (unofficial) location that could be used as a place of last-resort shelter.

Table 29: Interviewees' knowledge of a nearby location to take last-resort shelter

Know of a nearby last-resort shelter location?	Blue Mountains n=79	Port Stephens n=52	Wingecarribee n=63	All n=194
Yes	56 (70%)	10 (71%)	33 (60%)	99 (67%)
No	23 (30%)	4 (29%)	22 (40%)	49 (33%)
Total	79 (100%)	14 (100%)	55 (100%)	148 (100%)
Missing	–	38	8	46
Total	79	52	63	194

In contrast to the pattern in Table 28, approximately two-thirds of interviewees in all three areas were able to describe a nearby location where they believed they could survive a bushfire by taking last-resort shelter. For most Blue Mountains area interviewees, the safer location identified was associated with a shopping centre, although it is known that many Yellow Rock residents drove to a nearby cleared area at a scenic lookout. Port Stephens interviewees identified large cleared areas on nearby neighbours' properties. Wingecarribee interviewees identified a range of locations: farm dams, nearby cleared areas, surrounding townships.

Community Meetings

As part of the community information and support process, NSWRFs initiated a series of community information meetings during and after the October 2013 bushfires. Interviewees were asked if they had attended any of these, and if so, how useful the meetings had been. About one-third of those interviewed reported attending such a meeting.

Table 30 summarises comments from those interviewees who attended community meetings during the bushfire events.

Table 30: Interviewees' attendance at community meetings

	Blue Mountains	Port Stephens	Wingecarribee	All
Attended	47	–	18	65
Useful, helped	6 (13%)	–	6 (33%)	12 (18%)

Most of those who described attendance at community meetings as not useful or helpful reported that what they wanted was information about possible bushfire danger in the immediate future, but

instead were given a history of what had happened and/or information about likely future recovery assistance.

Interviews with Blue Mountains Residents who are Members of the Deaf Community¹

While the scope of this research project did not extend to specifically seeking out groups with special needs (for example those with a disability), in response to a request from a Blue Mountains resident, an Auslan Sign Translator closely associated with the members of the deaf community, the first author (JM) met with members of seven deaf families to discuss their experiences of the October bushfires. It is recognised that the deaf community are not the only group who have very specific needs or issues during an emergency situation however they were the only group of this kind who directly contacted the research team and requested an interview.

In this context it should be noted that this group itself while identifying issues and concerns are speaking as individuals (and not as official representatives of their society) in the same way as other respondents quoted in this work speak as individuals. Finally it is important that the needs and concerns of this group, while important, in no way indicate that these needs are more important than those of other groups in the community.

Though the interviews it became clear that while small in number, the deaf residents are an at-risk group who believe strongly that their particular needs and vulnerabilities in relation to bushfire threat have been largely overlooked by police, fire and emergency services agencies.

Because of their disability, members of the deaf community are cut off from all aural communications—radio and television broadcasts, telephone information lines, sounds of sirens and aircraft, public address system announcements. Text messages to mobile phones are useful, but they have limited information content and deaf residents cannot avail themselves of instruction to ‘call the Bushfire Information Line’ or ‘Tune-in to your local ABC station’ for more information. The deaf residents who participated in the meetings described their experiences as being frustrating because of their inability to obtain information, and frightening as they became more and more aware of a looming danger without being able to find out what they should do.

In the course of discussion (facilitated by the translator), it was clear that, compared with most ‘hearing’ residents of the Blue Mountains interviewed over the course of the previous 3 days, the deaf families had relatively little knowledge of the dangers associated with bushfire threat or bushfire safety. The concept of a bushfire survival plan was quite foreign to them. It seemed that conventional bushfire safety information and education endeavours had by-passed these families.

It was explained that deaf members of the community socialise, interact, and communicate mostly with other deaf members, via signing. The deaf community is thus relatively isolated from general communications concerning public safety. It was explained that it was not until television stations

¹ The assistance of Ms Rebecca Cramp in arranging and facilitating the meetings with the families is gratefully acknowledged.

began to use signing translators as part of their news broadcasts that these families understood the nature of the October bushfires threat—and this communication development occurred several days after the destructive 17 October fires. The families were very appreciative of the fact that the NSW RFS briefings subsequent to 17 October incorporated sign translators.

It seems likely that deaf residents of areas at risk of bushfires are vulnerable in ways that require special attention from fire and emergency services agencies.

DISCUSSION

1. Noteworthy limitations arising from the post-bushfire interview procedure were noted earlier and are repeated here to assist the reader. Only a small percentage of the total number of residents threatened by the three October 2013 bushfire events were able to be interviewed. It thus remains uncertain how confidently the findings from those interviewed can be generalised to their wider populations of residents. However, given the relative consistency of most findings: (a) across the three areas; (b) with the online survey of residents; and (c) with previous post-bushfire interview study findings in Tasmania and in Western Australia, it is unlikely that the major issues and themes identified here are artificial. However, it is certain the following were under-represented: (i) residents whose homes were destroyed and thus were no longer living in the area; and (ii) younger employed residents who were at work during business hours when interview teams called by. For any future post-bushfire interview research studies, procedures additional to cold-calling at homes during business hours will need to be used.
2. In relation to householders' reported perceptions of their bushfire risk prior to the October fires, the findings suggest something of a 'law of thirds': about one third of the residents judged their property to be at some meaningful risk; about one-third had either never thought about it or believed they were not at risk; and the remaining third appreciated intellectually that the area might be at risk but did not personalise this as necessarily applying to their family or property. The reality is that the probability of any given property in a location deemed to be at risk of bushfire being actually threatened by a significant bushfire over the (say 20-year) life of the household is vanishingly small. For most residents, bushfires will remain events that are viewed on television, happening elsewhere and to other people. This reality presents a formidable challenge to community bushfire safety endeavours. Perhaps using analogies about the wisdom of preparing for unlikely, but potentially disastrous, events may influence more householders to plan and prepare for possible bushfire threat, for example: *Not many homes catch fire while the occupants are asleep. But if that happens, a smoke detector can be a life-saver. Likewise, not many homes may be threatened seriously during a typical bushfire season, but if yours is, your bushfire plan could be your life saver.*
3. A written bushfire plan was a rarity (7% of those interviewed). However, many more households reported having discussed what members might do in the event of a bushfire threat. It may be that for some, agency emphasis of the importance of a bushfire plan being *written* inhibits discussion of bushfire readiness among household members. Perhaps more emphasis on promoting *discussion* among household members about what they should do to protect themselves in the event of a bushfire threat is worth considering.
4. It is noteworthy that few householders who planned to leave if threatened by a bushfire reported preparing their homes to survive a bushfire threat in their absence—mitigation activities were (apparently) viewed by most as what one did if the plan was to stay and defend. This seems to be a belief that could be usefully countered in future community bushfire education endeavours.

5. An overall impression emerged from the interviews that residents can usefully be divided into two classes: those who plan and prepare to stay and defend their property, and those who do not. 'Stay-and-defenders' are, mostly, psychologically engaged with the possibility of bushfire threat and preparations for such an event. Relatively few residents who do not plan to stay and defend are psychologically engaged with what is involved in leaving safely if threatened. The recent Victorian 'Leave and live' bushfire safety campaign emphasised the importance of being safe by leaving. Perhaps in future it would be fruitful for agencies to give more attention to the 'how' of leaving safely—destinations, safer routes, what to take, prior decision on the trigger to leave.
6. Very few of those who planned to stay and defend considered this to be a bushfire survival plan. For most, it was an asset protection plan that entailed some (acceptable) level of risk. Based on this it does not appear to be useful to present messages that imply that staying and defending is an alternative (to leaving) for bushfire survival when in fact the plan is to stay and defend to protect assets and things that are valued by the householder.
7. Very few residents took any special bushfire safety-related actions solely on the basis of fire danger weather *predictions*. This finding was quite consistent with previous post-bushfire studies going back to the 2009 Victorian Black Saturday bushfires (McLennan *et al.* 2013). It seems that most residents take action only when they are aware of a potentially threatening bushfire event. This highlights the need for agencies to continue efforts to reduce delays between the outbreak of a fire and the dissemination of accurate information to threatened residents. While not conclusive, the present findings suggest that social media sources such as agency Facebook and Twitter feeds may play an increasingly important role. More research is needed to: (a) develop optimum procedures for using social media as sources of accurate and timely information about bushfire threat; and (b) understand limits and any potential pitfalls associated with use of social media by agencies for such purposes.
8. The present study found evidence that the level of social connectedness among residents of a geographic community may be related to community bushfire safety. Level of social connectedness among Port Stephens residents was found to be appreciably lower compared with that of Blue Mountains and Wingecarribee residents. This appeared to be related to the generally greater physical separation of neighbours, many of whom lived on relatively large blocks. The Port Stephens residents interviewed stood out, compared with the others, by their: (a) lower levels of perceived risk of bushfire threat; (b) lower levels of bushfire planning and preparation; (c) lower frequency of reporting phone communication among friends and neighbours as a source information about an emerging bushfire threat; (d) greater use of radio and social media as a source of information about an emerging bushfire threat; and (e) lower levels of knowledge about their Neighbourhood Safer Place. These findings suggest the potential usefulness of future community-development initiatives aimed at building trusted local bushfire-safety networks.
9. Post-bushfire community meetings were not viewed positively by the majority of those interviewed who attended them. Given their apparent importance, it seems highly desirable that guidelines and procedures for such community events be reviewed and revised as necessary to improve the effectiveness of future post-bushfire community meetings.

10. By way of concluding comment, the use of interview teams each comprising a researcher and a NSW RFS member once again proved invaluable. The presence of the NSW RFS member gave credibility at the point of contact with residents and support in the form of expert knowledge of bushfire safety to the researcher. The researcher provided the assurance of a degree of independence in the reporting of findings to authorities.

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APPENDIX A: Chronology of the October 2013 NSW Bush Fires

Below is a brief summary of the events of October 2013, particularly the fires covered in this research report. It should be used as a general guide only. It is not exhaustive and does not provide detailed information on the movement of fire, timings of alerts or impacts on communities, or of fires other than those in this report.

The lead up to October 2013

In the months leading up to the October 2013, predictions were for a difficult fire season. Parts of NSW experienced their warmest winter in more than 100 years and September was the warmest on record, according to the Bureau of Meteorology.

Across September, there were a number of major fires in areas including the Blue Mountains, western and northern Sydney, Port Stephens, Clarence Valley and mid-north coast.

One home was damaged in the Hawkesbury Road fire at Winmalee on 10 September 2013, which started as a result of an escaped hazard reduction burn, while another fire on the same day destroyed one home and damaged one other at Marsden Park in Sydney's west.

Early October 2013

The statutory bush fire season commenced in NSW on 1 October 2013. Some areas had already commenced their statutory bush fire danger period due to prevailing conditions.

In the following days, warm and dry conditions persisted, with many areas falling under Total Fire Ban.

13 October 2013

Due to the continuing dry and hot conditions, Total Fire Bans remained in force for large parts of the state, including Sydney.

The Port Stephens area was affected by a number of fires including the Mooreland (Fingal Bay), Brownes Road (Salt Ash) and Hank Street (Heatherbrae) fires. A number of these fires would burn for several days, affecting properties.

The same day, a fire which spread from grass in landscaped gardens at Sydney Olympic Park destroyed 43 vehicles.

16 October 2013

At around midday, the State Mine Fire started near Lithgow during an Army explosives exercise. The fire burnt through the Defence grounds and crews had difficulty attacking it due to the risk of unexploded ordnance.

The fire was largely contained that night however people in the area were warned that containment lines could be breached the following day due to the forecast weather conditions.

17 October 2013

By 0700hrs, there were already over 70 bush, grass and scrub fires burning across NSW. Twenty of these fires were uncontained.

Severe fire danger ratings were forecast for the Greater Hunter, Greater Sydney Region and Illawarra/Shoalhaven areas and Total Fire Bans remained in force due to the gusty north to north-westerly winds forecast.

Due to the strong winds, the State Mine Fire continued to burn throughout the morning of 17 October, threatening communities including Clarence, Oaky Park and Morts Estate (at the western end of the Bells Line of Road), as well as parts of Lithgow. Emergency Warnings were issued as the fire threatened communities.

The Bells Line of Road, Darling Causeway and the main western railway line were closed causing significant impact to transport in the area.

The State Mine Fire spread approximately 30 kilometres during the afternoon and was highly visible from communities on the southern side of the Blue Mountains along the Great Western Highway.

Just after 1300hrs, a new fire was reported in the area of Mount York Road, Mount Victoria. Firefighters responded to the area and worked to contain the fire. The fire would however breach containment lines and threaten homes in Mount York Road, St George's Parade and Closeburn Drive. A number of homes were reported destroyed in St George's Parade. The fire crossed the Darling Causeway and railway line.

Around an hour later, another fire was reported in the area of Linksvie Road at Spingwood. The fire quickly crossed Hawkesbury Road, impacting on a number of streets in the area. Emergency Warnings were issued to people in the area as the fire burnt through areas of Springwood, Winmalee and Yellow Rock. This fire would become the most destructive fire of the October 2013 period.

As firefighters from across a broad area were deployed to the area, students at a number of schools sheltered in place due to the dangerous fire conditions outside.

Throughout the afternoon, firefighters worked on the three main fires across the Blue Mountains area, as well as fires in the Southern Highlands, Central Coast and Port Stephens areas.

At Port Stephens the Hank Street Heatherbrae fire, which had been burning since 13 October, closed Newcastle Airport as fire impacted on the airport grounds. The fire also closed a number of main roads in the area and threatened several homes, businesses and a service station.

In the Southern Highlands, the Hall Road Balmoral fire threatened communities including Balmoral Village and Yanderra. An Emergency Warning was issued at around midday, advising people to move in a northerly direction towards Bargo. The fire closed the busy Hume Highway, the main road transport link between Sydney and Melbourne. Aircraft, ground crews and heavy plant were used in an effort to slow the spread of this fire.

Fires also affected parts of the Central Coast, impacting on areas around Doyalson and Catherine Hill Bay.

Evacuation centres were established at a number of locations, with residents advised it would be some time before they could return to the hardest hit areas.

As night fell in the Blue Mountains, the damage from the fires was becoming clearer. In some areas, such as around Winmalee and Yellow Rock, nearly entire streets were affected by fire. At this stage it was unclear if there were any fatalities from the fires.

A man died while defending his home during a fire at Lake Munmorah on the Central Coast.

18 October 2013

At the start of the day, there were close to 100 bush, grass and scrub fires burning across the state, with thirty of these uncontained.

The most serious fires continued to burn in the Blue Mountains, Southern Highlands and Port Stephens areas, as well as the Ruttleys Road fire on the Central Coast.

Further Emergency Warnings were issued for a number of fires including the Linksvie Road fire at Winmalee and Springwood due to flare-ups. Due to fire activity and the risk of falling trees, access was restricted to residents in the Springwood area.

A number of community meetings were held in affected areas, including one at Mount Victoria which was attended by 350 people. Here, the Mount York fire had crossed the Great Western Highway and entered the Megalong Valley.

Interstate crews from Victoria and the ACT arrived in NSW, to assist and relieve local crews in areas such as the Blue Mountains.

19 October 2013

Attention remained focused on the worst of the fires still burning in the Blue Mountains, Southern Highlands, Central Coast and Port Stephens areas.

Across the day, a number of Emergency Warnings would be issued for the Linksvie Road fire in the Blue Mountains, as it moved closer to homes and other properties. These would be downgraded later that night as fire activity subsided.

Community meetings were held at Bilpin, Mountain Lagoon and Clarence to inform residents about the current situation and backburning operations, with more than 500 people attending. Emergency warnings were issued that afternoon for the areas around Bell, Berambing and Bilpin.

20 October 2013

A state of emergency was declared by the NSW Premier due to the forecast weather conditions in the coming days. This would eventually remain in place until 30 October.

An overarching Incident Management Team was established to support the incident management teams working across the Linksvie Road, Mount York and State Mine fires.

Emergency Warnings were issued for areas of Dargan and Bell along the Bells Line of Road as the State Mine Fire continued to burn in an easterly direction.

In a deliberate and high risk strategy, Remote Area Firefighting Teams from the National Parks and Wildlife Service and NSW Rural Fire Service worked to construct containment lines through the Grose Valley and join the State Mine and Mount York fires. This work became known as “The Plug”.

21 October 2013

With hot, dry and windy conditions forecast to return in the coming days, the focus remained on consolidation of containment options around the dozens of fires still burning.

Backburning operations were carried out, where local weather conditions permitted, on fires including the State Mine, Hall Road and Linksvie Road fires.

An Emergency Warning was issued however for communities including Mount Irvine and Berambing, as the State Mine Fire threatened properties once again.

Crews remained very busy dealing with flare-ups at fires however there were no properties destroyed.

This day, the NSW RFS commenced a series of regular live briefings which were aired live on television networks and streamed online. The Service held up to eight media briefings a day from its Headquarters in Sydney. These provided a central point for information, maintaining consistency of messaging to the community. These media conferences involved NSW RFS, Fire & Rescue NSW, Police, the NSW Premier, and the Minister for Police and Emergency Services.

22 October 2013

Again, the focus remained on consolidation of containment options as milder weather continued. Backburning operations were carried out where local conditions allowed.

Despite conditions having somewhat eased, there remained significant attention on the firefighting effort, the recovery process, and the weather forecast for the coming days.

The following day was expected to be a particularly challenging day, mainly due to the large amount of fires already burning in the landscape, and a return to warm and windy conditions.

As a result, a number of pre-emptive steps were taken including the closure of National Parks and schools in fire affected areas. There were a number of precautionary and pre-emptive evacuations such as nursing homes and aged care facilities.

Transport restrictions were also put in place in some areas, such as heavy vehicle movements across the Blue Mountains.

In the afternoon of 22 October, the NSW RFS Commissioner held a media conference outlining concerns for the following day, based on weather forecasts and fire prediction models. The Commissioner warned the community that the conditions were “about as bad as it gets” and that if people did not need to be in the fire affected areas, they should leave.

Additional crews from Fire & Rescue NSW, the NSW RFS and interstate agencies were deployed to areas such as the Blue Mountains ahead of the forecast conditions.

In the Blue Mountains, more than 2,500 people attended a community meeting to be updated on the fire situation.

23 October 2013

Due to the weather forecast, there was significant media and public attention on the fire threat. The NSW RFS maintained its series of regular updates to the community from its Headquarters.

Overnight leading into the 23 October, there was some light rain which fell across some of the firegrounds including across the Blue Mountains. This dampened some of the fire activity, slowing the spread of the fire and meaning fire activity was not as intense as forecast when the conditions reached their peak later in the day.

Despite conditions not being as bad as forecast in some areas, there were still significant threats to the community.

Emergency Warnings were issued to people in the area around Chapman Parade at the Linksvie Road fire, mainly due to the risk of embers being blown from the fireground towards homes.

Containment lines around the Bells Line of Road near Mount Banks came under pressure throughout the afternoon and backburning was carried out around critical infrastructure near Blackheath.

Firefighting was difficult due to the conditions and aviation resources were grounded from time to time due to strong winds.

There were a number of other serious fires, including in the Newcastle and Lake Macquarie areas which threatened homes and impacted on infrastructure such as roads.

A relocation centre was established at Penrith for people who chose to leave the Blue Mountains and Hawkesbury areas. Late afternoon, they were informed it was safe to return to these areas as conditions started to ease.

The days following

While conditions had started to ease somewhat, there remained a significant threat to the community at a number of fires.

On 24 October, an Emergency Warning was issued to communities along the Bells Line of Road west of Bilpin, advising that due to fire burning in the area it was no longer safe to leave. This warning was downgraded to a Watch and Act a few hours later. The same day, erratic fire behavior was reported on the Linksvie Road fire but it remained within containment lines.

In the coming days, crews would remain in the field consolidating containment lines. Weather conditions eased substantially, allowing further backburning in many areas.

APPENDIX B: Demographics of fire impacted communities included in this report

The following provides a general over view of the demographics of the fire affected communities along with salient geographic and socio-geographic characteristics. This information is not exhaustive but does give a context for the responses from the community and as such may be relevant to understand the experiences reported within this report.

Demographic information has been compiled from the Australian Bureau of Statistics Census of Population and Housing 2011².

Fire Event: State Mine Fire, Lithgow

Suburb	Resident Population	% of population aged 15+ employed	% Needing Assistance ³	Dwellings
Bilpin (Includes Mt Wilson, Mt Irvine & Berambing)	932	43	3.7	297
Clarence	224	47	1.3	83
Dargan & Newnes Junction	101	38	2.9	43
Kurrajong Heights	1,237	52	4.0	410
Lithgow	5,651	38	7.0	2,401
Marrangaroo ¹	829	33	2.4	174
Mountain Lagoon	327	33	2.7	79
Oaky Park	330	49	5.5	142
Total	9,631			3,629

- Note the high proportion of this population that is male (80%) of this population is male and low proportion of employment are probably owing to the Census counts of inmates of the Marrangaroo Correctional Centre.

² ABS 2011 Census of Population and Housing, Basic Community Profiles, Cat. No. 2001.0

³ Question 23 of the Census enumerates 'those people needing help or assistance in one or more of the three core activity areas of self-care, mobility and communication, because of a long-term health condition (lasting six months or more), a disability (lasting six months or more), or old age'. ABS, 2011. Census Dictionary, 2011, Reference No. 2901.0, accessed on 13 March 2014 from <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/2901.0>

Fire Event: Linksview Road, Springwood

Suburb	Resident Population	% of population aged 15+ employed	% Needing Assistance	Dwellings
Faulconbridge	3,990	64.3	2.8	1,419
Springwood	8,437	57.6	7.5	3,132
Winmalee	6,593	66.7	3.1	2,241
Yellow Rock	915	74.1	2.2	295

The ABS data shows that the population of the Springwood area is significantly more likely to be employed than the national population (57.2%). However, the suburb of Springfield has a higher percentage of people who need assistance, particularly the aged, and a lower percentage of population in the workforce.

Fire Event: Port Stephens Hank Street, Heatherbrae

Suburb	Resident Population	% of population aged 15+ employed	% Needing Assistance	Dwellings
Heatherbrae	492	42.9	0.8	247
Medowie	8,867	48.3	3.4	2,474
Raymond Terrace	12,725	39.8	6.3	4,647
Tomago	271	46.1	5.5	135
Williamtown	875	50.6	5.6	327
Salt Ash	1,099	45.7	5.6	369

Background

Heatherbrae is a small light-industrial estate on the Pacific Highway about 15km north of Newcastle and about 13km north west of the coast. The nearest large town is Raymond Terrace, about 1km to the north. The fire started in an area of bushland south east of Hank St, Heatherbrae behind some factories. There are a number of significant assets abutting the bushland where the fire started including: the WeatherTex weatherboard factory and timber yard about 600m to the north, the Grahamstown water treatment plant and Westrac earthmoving dealership about 3km to the south east, the Tomago aluminium smelter about 3km to the south south west, the Hunter Region

Botanical Gardens about 1km south west and Williamstown RAAF Base/Newcastle domestic airport 8km to the east.

The aluminium smelter is a major industry in the area, producing over 500,000 tonnes of aluminium per year, about 25% of Australia's total production. Like other aluminium smelters it is a major consumer of electricity and has a large substation on the western side of the plant. It forms part of the electricity supply security strategy for NSW as it is able to temporarily switch off load of about 900 MW at short notice freeing up surge capacity for the rest of the state⁴. Major transmission lines run from north to south linking to the substation.

RAAF Base Williamstown is the home base for the tactical fighter element of the Air Combat Group and the Airborne Early Warning and Control element of the Surveillance and Reconnaissance Group. It employs about 3,500 people and another 1,000 contractors and support personnel. It shares its runway with Newcastle Airport, which handles 300 flights per week and has a throughput of almost 1.2million passenger movements per year⁵.

The Grahamstown water treatment plant is the Hunter Valley's largest water treatment plant, and treats water from the Grahamstown Reservoir and the Tomago sandbeds⁶. Hunter Water extracts rainwater that filters through approximately 100km² of sandbeds in the Tomago and Williamstown areas, essentially the area where the fires burnt. There is a significant electrical substation attached to the water treatment plant. On the south side of Tomago Road, opposite the water plant is a new Westrac complex, one of the largest heavy earthmoving equipment dealers in Australia.

There is also a significant electrical substation on Tomago Road about 800m west of Masonite Road and just south of the water treatment plant and a number of transmission lines run through the bush between Tomago and Masonite Roads.

Fire Event: Hall Road, Wingecarribee Balmoral Village

Balmoral Village is a community of about 360 people situated in the Southern Highlands at an altitude of about 500m. It developed around a railway station on a section of the Sydney-Melbourne railway line between Picton and Mittagong which was bypassed in 1919 and ceased operation in 1978.

The area is surrounded on both sides by bushland forming part of the Sydney Catchment Metropolitan Special Area, which has been closed to most human activities for about 130 years⁷. The terrain is steep with heavily dissecting gullies. The Special Area includes the Avon, Cataract, Cordeaux and Nepean Dams (Sydney Water Supply) and Upper Nepean State Conservation Area to the east of Balmoral Village.

⁴ Tomago Aluminium Pty Ltd, 2010, Press Release dated 12 November, 2010. Accessed on 12 March 2014 at http://www.tomago.com.au/client_images/1361603.pdf.

⁵ Newcastle Airport Pty Ltd, 2013. 2012-13 Annual Report, accessed 12 March 2014 from <http://www.newcastleairport.com.au/corporate/about/annual-reports#.Ux-4sz-SySo>.

⁶ Hunter Water Corporation, 2014. Website accessed 12 March 2014, at <http://www.hunterwater.com.au/Water-and-Sewer/Water-Supply/Water-Treatment-Plants.aspx>.

⁷ Sydney Catchment Authority, 2014. Accessed on 13 March 2014 from <http://www.sca.nsw.gov.au/catchment/sub-catchment/nepean>

The community of Yanderra is located about 4km to the east of Balmoral Village on the Hume Motorway. It has about double the population of Balmoral Village. The larger community of Bargo, and also Pheasant's Nest and Wilton are north east and Yerrinbool and Hill Top are to the south.

As the fire started on the eastern side of Balmoral Village and burnt to the east, the village suffered limited impact, however firefighters did good work keeping the fire out of Yanderra, Yerrinbool and Wilton.

Significant infrastructure affected by the fire included the Hume Motorway and the Main South Railway, both of which are trunk routes between Sydney, Canberra and Melbourne. The fire burnt mostly in the Upper Nepean Catchment which services the four dams and also disrupted electrical supply to the water filtration plant and threatened a gas pipeline. After crossing the catchment the fire forced closure the Picton Road which links Wollongong to Picton. It also threatened the Cordeaux Colliery located halfway along the Picton Road.

Suburb	Resident Population	% of population aged 15+ employed	% Needing Assistance	Dwellings
Balmoral Village	363	55.0	2.7	128
Bargo	4,130	47.1	3.8	1,407
Hill Top	2,506	45.4	4.5	827
Pheasants Nest	592	51.2	4.1	188
Wilton	1,890	53.0	2.3	595
Yanderra	683	43.2	5.1	218
Yerrinbool	1,088	44.8	3.2	360

APPENDIX C: Interview Guide

Bushfire CRC Post Bushfire Interview Guide

NSW October 2013 Bushfires

Before the interview:

(Participant Information Statement? Consent Form? Recorder?)

Let people know that the interview has two components. In the first part, you will ask them about their preparations in the lead up to the fire. In the second part, you will ask them to tell you what happened on the day of the fire. Emphasise that they are the experts and that they can take all the time they need because everything that they have to say related to the fire is of interest to us. There are no right or wrong answers.

[INTERVIEWER REMINDER: NSW RFS IS PARTICULARLY INTERESTED IN RESIDENTS' ACCOUNTS OF WARNINGS AND INFORMATION THEY RECEIVED ABOUT THE FIRE BOTH ON THE SATURDAY BEFORE AND ON THE SUNDAY (DAY OF THE FIRE). USE YOUR JUDGEMENT IN FOLLOWING UP ISSUES OF WARNINGS]

1. First do you mind if we get some demographic information. How long have you lived here? Who usually lives here? Their approximate age(s)? Anyone with a disability? Employment Status? Previous experience of fire? House and contents insurance?
2. What were the main reasons you came to live here in this particular community?
3. What sort of a community would you say it is? (eg: is it a strongly linked community, networked, do people know their neighbours etc, would others help you out if needed) ?
4. When you came to live here, and prior to the fire, how concerned were you about the possibility of a bushfire threatening your home? (Did you think you and your family would be at risk? Do you think that others living in this area had a similar attitude towards bushfires as you?)
5. Did you (and your family) have a **bushfire survival plan**? If so, what was the plan? (Was the bushfire survival plan discussed? Written down? What were the main reasons you decided on this plan? Were you responsible for dependents/pets? If yes - Was provision made for them in their bushfire survival plan?)
6. What preparations had you made to protect your home or your family in the event that a bushfire threatened your home? (What were the main sources of information you used for making these preparations? What influenced your decisions about preparation? – RFS information? Media? Past fires? Neighbours? Common sense? In the last year, do you recall receiving material by the RFS about bushfire safety? The “Bushfire Survival Plan Guide”?).
7. When was your community first threatened by the October fires? Can you think back to the day **before** the fire? What fire danger weather predictions or warnings do you recall about the NEXT day, the day of the fire?
8. IF APPROPRIATE: What preparations did you make for a possible bushfire? (What were the main sources of information you used for making these preparations?).
9. Were you here, on your property, when the fire broke out? *IF “YES”, PROCEED TO Question 10; IF “NO” ASK ABOUT THE CIRCUMSTANCES and use your judgement about asking questions related to anything in probes 10 to 13.*

10. Walk me through the main things that happened on the day of the fire and what you decided to do as the day unfolded, starting from **before** you knew about the fire. (How did you first become aware of the fire on the Tuesday? Were you expecting a warning? Did you make phone calls?. How long before the fire arrived were you aware of it? When you first knew about the fire, how concerned were you about possible danger for you-and your family? What would you say was your main worry initially? What did you decide to do about the fire initially? How long before the fire arrived did you take decisive action? At what time did you first see smoke/embers/flames? Were you impacted by a fire front? -‘wall of flames’?-, If so, at what time? Did anything significant happen at or around the same time e.g. power failed?).

*(INTERVIEWER: your aim is to get a narrative of the significant events which occurred for the interviewee. Pay particular attention to: (a) warnings and information about the fire, official and unofficial: media warnings, calls/texts/visits from family, friends, neighbours, agencies; and **TRIGGERS FOR ACTION** such as smoke, embers, (b) the effects of these items of information—how they changed the interviewee’s understanding of the situation, and the risks and concerns; (c) decisions about what to do; and (d) actions taken. IN PARTICULAR: BE ALERT TO FOLLOW-UP ISSUES OF COMMUNICATION, ESPECIALLY WARNINGS AND SOCIAL MEDIA/NETWORKING.*

Only ask the next three questions (11a – 11c) if the relevant information has not been provided already.

11a. Did you know about a neighbourhood safer place, or another alternate safer location where you could take ‘last resort’ shelter? FOR THOSE WHO LEFT: where did you go? What happened?

11b. Looking back, what information about the fire was most important in making your final decision about what to do? For official warnings via radio and web, did you find them Useful? Timely? Frequent enough? If social media was used, who was the most relevant source? – Rural Fire Service, On-scene firefighters, On-scene others, family/friends?

11c. What information about the fire was missing that made it difficult for you to decide what to do? What is your preferred method of receiving a warning? Second preference?

12. Knowing what you know now about the fire, what if anything would you have wanted to do differently? (What do they attribute their/house’s survival to?).

13 Anything else that you think we should know about your experiences with the fire?

INTERVIEWER: be careful in discussing post-fire issues, do NOT cross the line into “counselling”, refer the interviewee to the sources of help noted on the Participant Information Statement if appropriate and the Resources For Psychological Help and Recovery sheet.

THANK RESIDENT—leave Resources For Psychological Help and Recovery sheet.

APPENDIX D: Bushfire Planning and Preparation: Response to a Survey of at Risk Households in SE – Australia

McLennan *et al.* (2012): Survey of 584 at-risk households in south-eastern Australia - Percentage of householders in each intention-group reporting preparatory actions completed.

Preparation Action	Leave (n = 273)	Stay & Defend (n = 139)	Wait & See (n = 172)
<i>Bushfire Safety Planning:</i>			
Prepared a plan involving all members of the household for what to do when a day of severe or worse fire danger weather is forecast or declared for your region	35%	56%	24%
Prepared a plan involving all members of the household for what to do when there is a warning that there is a bushfire threatening your home	39%	56%	24%
<hr/>			
<i>Preparations For Leaving:</i>			
Planned what to do if you decided to leave your home because of the risk of a bushfire (e.g., where to go and stay; the route to take; what to do about pets/livestock)	52%	62%	41%
Identified a location nearby where you, or other family members, could shelter safely if you had to leave your home because of a bushfire	61%	74%	61%
Checked that you have enough home contents and building insurances	87%	89%	86%
Stored important documents and possessions safely elsewhere, or in a fire-proof location on site, or have them packed ready to take with you when you leave.	40%	38%	37%
<i>Preparations For Active House Defense:</i>			
Installed a pump that does not depend on mains electric power (i.e. petrol, diesel-driven or electrically powered by a generator)	20%	59%	19%
Installed a water tank for firefighting purposes and/or to supply a sprinkler system	32%	68%	30%

Obtained and prepared firefighting equipment such as ladders, buckets and mops	27%	75%	35%
Prepared a kit of protective clothing and gear (boots, smoke masks, goggles for members of the household	21%	63%	22%
Obtained and prepared hoses long enough to reach all parts of the house	41%	75%	49%
Installed a sprinkler system on or around the house	8%	34%	14%
Obtained a battery-powered radio with fresh batteries	53%	76%	51%
Installed or constructed a fire shelter or bunker in which to take refuge if necessary	2%	12%	4%

Preparations For Reducing Danger to the House

Removed bushes close to the house and cut back overhanging tree branches	39%	68%	42%
Cleared leaves, twigs, long grass from around the house to a distance of 20-30 metres	46%	69%	49%
Moved combustible material such as firewood, garden furniture, lawn mower fuel, paint tins, old cars or tyres away from the house	46%	69%	49%
Used landscaping, tree planting, or the layout of the garden to protect the house from bushfires	29%	59%	39%

Preparations for Reducing House Vulnerability:

Enclosed under-floor spaces to prevent embers or flames from entering	48%	62%	60%
Covered gaps and vents to reduce the risk of embers entering the house through openings under the roof or in walls	30%	48%	30%
Installed seals and/or draft protectors around windows and doors	32%	46%	52%
Installed roof gutter protection	26%	40%	26%
Installed shutters for windows	1%	3%	3%