

FIRE NOTE

TOPICS IN THIS EDITION

- COMMUNITY SAFETY
- RISK

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PREPARED FOR ACTION: NEW TOOLS AND INSIGHTS



▲ Householders have different goals when preparing for bushfire.

CONTEXT

Research into household bushfire preparedness has been hampered by the lack of clarity around its definition, together with inconsistencies in approaches to measurement. This project aimed to develop a formal definition of household bushfire preparedness. It also offers a standardised measure of preparedness that could be used by researchers, householders and practitioners in future.

BACKGROUND

Researchers and emergency services personnel are keen to reduce the threat of bushfire to residents in fire-prone areas. The key is to identify interventions that motivate householders and communities to prepare successfully. However, this task has proven difficult due to factors such as definitional issues and an inability to find a systemised approach to the measurement of preparedness.

As a result, there are many inconsistencies in how preparedness has been measured across different research studies, making it difficult to determine if conclusions from one study apply generally to other research settings.

Another significant limitation to the research on bushfire preparedness is the apparent lack of appreciation of the possibility that householders approach bushfire preparedness with different goals in mind. For example, some community members intend to remain with their property throughout a fire, whereas others intend to leave immediately after learning of a fire in the area. Both responses are consistent with the *Prepare. Act. Survive* approach; however, the preparatory activities that must be undertaken to enact these plans successfully are quite different.

This research attempts to address the issues by presenting a formal definition of bushfire preparedness and then systematically developing a new standardised measure of bushfire preparedness.

SUMMARY

This *Fire Note* outlines research into a new way of thinking about bushfire preparedness and its measurement. The study defines bushfire preparedness in terms of three key goals: staying and defending a property successfully throughout a fire, evacuating safely, and preparing a property to improve its chances of withstanding fire (without anybody on site to defend it). The researchers put forward a new measurement methodology for each of these different types of preparedness. The measure has been formulated from the results of expert insight and opinion from emergency services professionals, together with data gathered from residents of bushfire-prone communities.

Researchers of bushfire preparedness could adopt this measure as a standardised tool for benchmarking and comparative data sets in future research. It may also be a useful measure for practitioners to assess households against the three types of preparedness.

ABOUT THIS PROJECT

This *Fire Note* reports on the *Information Processing Under Stress: Community Reactions* project, conducted under the Bushfire CRC theme Communicating Risk.

AUTHORS

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▲ This research offers new measurement tools that can help householders prepare for bushfire.

PHASED APPROACH

The research described in this *Fire Note* consisted of four phases.

Phase one

In the first phase, a definition of household bushfire preparedness was specified. Drawing from formal policy documents (published by emergency services agencies) the research team defined bushfire preparedness to comprise any prior *cognitive or physical action that will reduce the risk to the householders' lives and/or the property in the event of a wildfire*. Further, a distinction was made between what were thought to be the three primary goals of householders during a bushfire, namely:

- Goal 1: Safe Evacuation. Preparing in a manner which maximises the survival chances of all household members and guests evacuating the property.
- Goal 2: Active Defence. Preparing in a manner which maximises the chances of successfully actively defending the property against a fire, whilst ensuring none of the defenders are injured.
- Goal 3: Improve Fire Resistance. Preparing a property so as to improve its chances of surviving a fire, without anybody being present to actively defend the property.

Phase two

The second phase of the research involved developing a large set of specific actions

END USER STATEMENT

Psychological research methods applied in this research provide practical insights into bushfire preparation and householder decision-making around staying and defending or evacuating.

The researchers define preparedness in multiple ways, separating active defence and planning to evacuate from leaving the property prepared to withstand bushfire.

Importantly, the study delivers a validated set of measures for each of these types of preparedness.

The measures will be useful for assessing the effectiveness of community safety campaigns, especially those targeted to specific goals, such as preparing communities to evacuate.

– Damien Killalea, Director, Community Fire Safety, Tasmania Fire Service.

that could potentially increase the chance of achieving any of the three goals (left). To accomplish this, the research team undertook a worldwide search of fire agency communications materials, as well as the existing academic literature on preparedness. In total, 118 unique bushfire preparedness actions were identified.

Phase three

In the third phase, the research team assembled a group of 11 experts to obtain their insights. All members of the expert group worked, or had worked, within the Australian emergency services sector for about 25 years. These experts were allocated into three groups in which they each considered one of the three types of household goals (described left). The experts were asked to rate each of the 118 preparedness actions identified in the second phase (described left) in terms of how essential the activity was for achieving the goal (see the breakout boxes on pages 3 and 4 for the exact instructions). At this point, 22 actions that were not considered at least moderately important for achieving one of the three goals were removed from the research.

Phase four

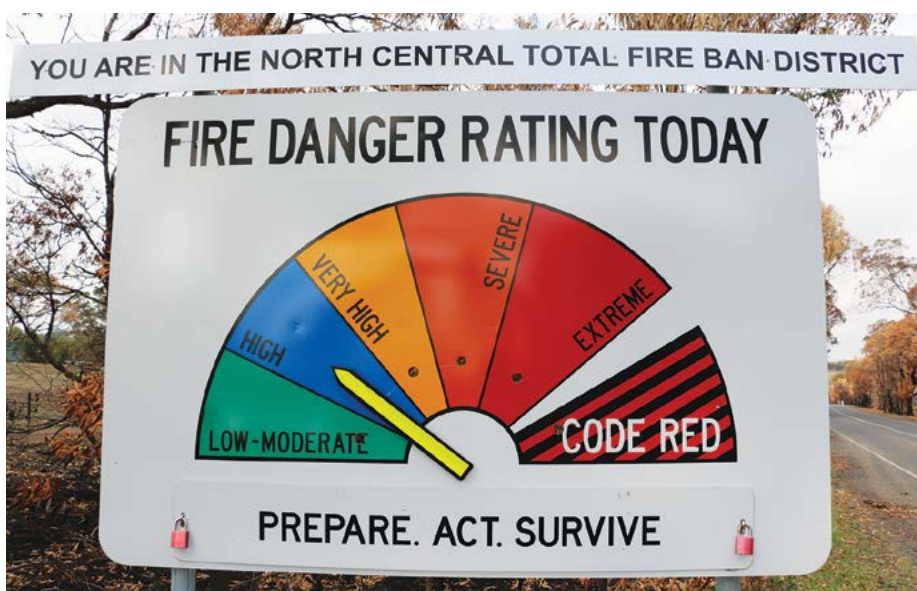
In the fourth and final phase, conducted during February and March of 2013, 354 residents of fire-prone communities in Australia, represented by 234 unique postcodes, completed an online questionnaire. The survey contained the 96 preparedness actions that were retained after the third phase. Participants were asked to indicate whether each action had been undertaken or whether it was applicable to their household situation. Actions were eliminated if they were

considered inapplicable to 25 per cent or more of the participants, or very strongly associated with other actions on the list.

New measures of preparedness

Following an analysis of the residents’ responses, two new measures of bushfire preparedness were developed. The first was an extended measure intended for use by practitioners and householders seeking to undertake a thorough evaluation of the preparedness of a particular household. This 62-question measure, called the Comprehensive Household Wildfire Preparedness Assessment (CHWPA), is unique in that it weights the more critical preparedness actions more heavily than the less critical (but still important) actions. The second measure, Household Wildfire Preparedness for Researchers (HWiPR), is a shorter measure, designed specifically for researchers of bushfire preparedness. This 38-item measure is designed to capture variability in householder preparedness, whilst keeping its overall length to a level that is appropriate for questionnaire use.

Scores on both preparedness measures were calculated for each participant and then compared to participants’ reported fire plans. These plans were stay and defend throughout; leave immediately on learning of a fire; wait and see before deciding; do as much



▲ Preparation activities required to enact the Prepare. Act. Survive approach are different for different householders.

as possible, but leave if dangerous; wait for instructions from authorities; and have not thought about it.

Generally, households that reported a plan to stay and defend throughout a fire reported the highest levels of preparedness on all fronts. Those planning to leave immediately were relatively well prepared to evacuate safely, but relatively inadequately

prepared to actively defend the property or in a manner that would improve its chances of remaining intact after a bushfire. These results suggest that the measure of preparedness developed in this study can draw valid distinctions between householders’ levels of preparedness.

DIFFERENT TYPES OF PREPAREDNESS

To date, there has been little agreement on how household bushfire preparedness is defined and how it has been measured in research studies and in practice. This research has enabled the development of a new formal definition of household bushfire preparedness. Most importantly, however, it is one of the first known studies to distinguish between preparing for different householder objectives, namely preparing to:

- evacuate safely
- defend actively and safely during a fire
- increase a home’s fire resistance

Building on the distinctions between different types of preparedness, this research project is also the first known project to draw from the judgement of emergency services experts to develop a measure of bushfire preparedness that can be used by householders and practitioners alike. It has been unclear exactly how bushfire preparedness measures have been developed in other studies and this study is the first to undertake this in a systematic manner.

Instructions, together with some sample items for the CHWPA and HWiPR, are provided in the breakout boxes on pages 3 and 4. The final measures of preparedness developed in this research will be made available for use by researchers and practitioners after publication of the associated manuscript.

RATING BUSHFIRE PREPAREDNESS

The following instructions were provided to the emergency services experts who were asked to rate the effectiveness of each bushfire preparedness action in relation to the householders’ identified goals.

Situation: The local fire danger rating is severe. Sam, a local resident, has just learned that a fire has broken out in an area somewhere about 20 kms from her property. It is clear that it may pose a threat to her property, if the conditions remain as they are. Sam has decided that she would like [her household to evacuate the home safely/ her household to stay and defend the property throughout the fire/the house to survive the fire, but she knows that nobody will be able to actively defend it and does not wish to defend it herself]. It is very important to Sam that [all householders and guests evacuate the home safely/the house survives the fire and none of the defenders get seriously injured/that the house survives the fire even though there will be nobody there to defend it] (this is Sam’s goal).

Please use the following scale when making your ratings:

0	Neglecting to complete this activity would <u>not make any difference</u> to Sam’s goal at all
1	Neglecting to complete this activity would <u>only slightly decrease</u> Sam’s chances of achieving her goal, at worst
2	Neglecting to complete this activity would <u>moderately decrease</u> Sam’s chances of achieving her goal
3	Neglecting to complete this activity would <u>strongly decrease</u> Sam’s chances of achieving her goal
4	Neglecting to complete this activity would <u>make it impossible or near impossible for Sam to achieve her goal</u>



▲ This research reveals new ways of thinking about bushfire preparedness.

RESEARCH APPLICATIONS

The measures of preparedness developed in this study have already been used by Bushfire CRC research teams in their studies into community preparedness. It is expected, however, that the measure presented in this research will become the standard for other community preparedness researchers, whether located in Australia or abroad.

FUTURE DIRECTIONS

Continuing evaluation of the measures developed in this research will be critical to

ensure that they remain contemporary and appropriate for use in research and practical settings. We encourage researchers and practitioners who use this measure to explore relationships between the scores that the measure provides and other assessments of householder preparedness (e.g. an assessment undertaken by an emergency services representative).

Using a standardised measure of preparedness in the evaluation of interventions will enable practitioners and researchers to be more confident in the results that they observe.

HWiPR AND CHWPA: SAMPLE QUESTIONS

Instructions and sample items from the Household Wildfire Preparedness for Researchers (HWiPR) and Comprehensive Household Wildfire Preparedness Assessment (CHWPA)

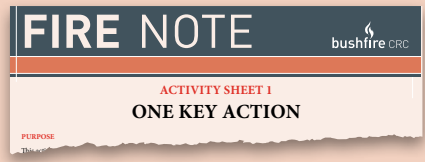
#	Action Completed	Currently True	Currently Not True	Not Applicable
1	Specific trigger(s) for evacuating (e.g. smell smoke, hear warning on radio) have been identified.			
2	Your household possesses mops or other tools to put out spot fires.			
3	Long grass in the area within 20m of the house is cut.			
4	Non-flammable (e.g. metal) gutter protection is installed.			

REFERENCES/ FURTHER READING

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NOW WHAT?

What three things stand out for you about the research covered in this *Fire Note*? What information can you actively use, and how? Tools are available at www.bushfirecrc.com/firenotes to help, along with activities you can run within your team.



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AFAC is the peak body for Australasian fire, land management and emergency services, creating synergy across the industry. AFAC was established in 1993.