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## UNDERSTANDING BUSHFIRE RISK, WARNINGS AND RESPONSES - LESSONS FROM THE 2018 REEDY SWAMP FIRE

### ABOUT THIS PROJECT

The NSW Rural Fire Service (NSW RFS) commissioned the Bushfire and Natural Hazards CRC to undertake research into community preparedness and responses to the Reedy Swamp fire which impacted on Reedy Swamp and Tathra in March 2018.

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### SUMMARY

On Sunday 18 March 2018, a bushfire affected the communities of Reedy Swamp and Tathra in the Bega Valley Shire on the NSW south coast. The fire, known as the Reedy Swamp fire, destroyed 65 homes and 35 caravans and cabins, and displaced about 700 residents, as well as tourists. No human lives were lost. Themes covered in this research are community understanding of fire risk, planning, preparation, and responses during and after the fire.

Key findings centre around the need to educate people further about the role that embers play in spreading bushfire into built-up areas, the dangers of late evacuation,



▲ ABOVE: THE BUSHFIRE THREATENS TATHRA. PHOTO: CALEB KEENEY, TIMBERLINE HELICOPTERS.

providing greater clarity in official warning messages and how warnings may not be delivered in the event of power or technology failure. The study found that many people consider bushfire preparation as something that is undertaken when directly threatened by fire, not well in advance of an active threat. Many people within Tathra had not thought that a bushfire could impact the town, or had not considered the potential for fire to penetrate beyond the bush at the western edge of town. The research found

that many of those who left at the last moment said they would leave earlier in a future bushfire and would be more prepared to gather animals and valuable items to take with them when they evacuated.

Based on this research, the NSW RFS continues to review and refine its approach to public information and warnings, and the structure and content of warning messages. The Service is piloting the use of Community Field Liaison teams to provide consistent messages and advice on the ground.

### CONTEXT

The study addresses key questions relating to people's perceptions of bushfire risk generally and on the day; community planning and preparation; their response to warnings and their experiences in the aftermath. Importantly, it investigates how people intend to plan, prepare and respond to bushfires in the future. The research builds on previous NSW RFS contracted research including major bushfires in the Blue Mountains, Coonabarabran and Southern

Highlands areas, and for fire agencies in Victoria, Tasmania, Western Australia and South Australia.

### BACKGROUND

Reedy Swamp and Tathra are located in the Bega Valley Shire on the NSW south coast, approximately 450 kilometres south of Sydney. Tathra is a seaside town that is mostly comprised of freestanding houses on residential blocks, and is a popular destination for tourists. Reedy Swamp is

located approximately 5-10 kilometres north west of Tathra, on the northern side of the Bega River. The area is mostly comprised of small acreages and rural residential blocks. Many properties are located within the forest and are accessible by long, unsealed roads that are flanked by bush.

Sunday 18 March 2018 was a day of Total Fire Ban for the Far South Coast Fire Area. At 12:26pm emergency services received a Triple Zero call reporting a bushfire at Reedy Swamp Road, Reedy Swamp. While

the matter is subject to a coronial inquiry, an investigation by the NSW RFS identified electrical infrastructure on Reedy Swamp Road as the cause of the fire.

The Severe Fire Danger conditions were unprecedented for the area at that time of year, and the fire destroyed 65 homes, with 48 homes damaged. Thirty five caravans and cabins were also destroyed. The fire displaced approximately 700 residents on the day, as well as an unknown number of tourists and visitors.

The fire, and response by fire agencies, was also the subject of an independent review commissioned by the NSW Government.

## BUSHFIRE AND NATURAL HAZARDS CRC RESEARCH

The research involved 87 semi-structured, in-depth interviews with 120 people affected by the fire. Interviews were audio recorded with each participant's consent and were transcribed in full, generating over 1,300 pages of interview transcript. Qualitative analysis of interview data was undertaken using the qualitative data analysis software NVivo 11. This process involved careful reading and rereading of each interview transcript and coding information related to the issues and themes under investigation to derive summary findings.

This *Hazard Note* covers findings related to the perception of risk; actions taken to prepare; how people became aware of the fire; implementation of fire plans; obtaining information about the fire; the responses of visitors to the area; expectations around warnings and effectiveness; the time of year the fire took place; post fire experiences; and what people would do differently if threatened by fire in the future.

Full details are available in the report *Understanding bushfire risk, warnings and responses: A study of the 2018 Reedy Swamp fire* (Whittaker et al., 2020).

## RESEARCH FINDINGS

### COMMUNITY PERCEPTION OF RISK BEFORE THE FIRE

Many residents within Tathra were not aware of the bushfire risk. Residents with properties within or adjoining the forest tended to be more aware of the risk posed by bushfire and were more likely to have taken action to plan and prepare. Many people within the town had not considered that a bushfire could impact on Tathra or had not considered the potential for a bushfire to penetrate beyond the forest edge (e.g. via embers). As such,



▲ ABOVE: THE FIRE SPOTTED OVER PARTS OF TATHRA AND BURNT AREAS AWAY FROM THE MAIN FIRE FRONT. PHOTO: BEN SHEPHERD, NSW RURAL FIRE SERVICE

these people had not adequately planned or prepared for bushfire.

### WHAT ACTIONS PEOPLE TOOK TO PREPARE

Many interviewees described preparation as something that is done when a fire is threatening, rather than actions taken in advance of a bushfire. Those who lived in streets adjoining or within the forest were more likely to have planned and prepared for bushfire, although levels of preparedness still varied considerably.

Only a small number of households had dedicated firefighting resources such as water tanks, pumps, and firefighting hoses. Some residents appeared to have planned and prepared for last-minute evacuation, describing measures such as getting cars out of garages and positioning them facing forward for a quick escape. Others, who had not planned to leave, described a last-minute dash around their house while they tried to collect items they considered important to take. Interviewees discussed how in the panic they forgot critical medications, papers and items of sentimental value. Many noted that in future they would keep important documents together and would have a list of what they planned to take.

### HOW PEOPLE BECAME AWARE OF THE BUSHFIRE AND HOW THEY REACTED

Most people became aware of the fire by seeing or smelling smoke, or by communication with relatives, friends or neighbours. For some residents, knowledge that there was a fire nearby caused concern

and motivated preparatory or protective action. Many others noted the presence of the fire but did not believe it was a threat to Tathra and continued with what they were doing.

### WERE PEOPLE ABLE TO IMPLEMENT THEIR FIRE PLAN?

Most of those who intended to leave were able to do so, but many reflected that they left too late. There were people who had not planned or prepared for bushfire who stayed to defend their own and neighbours' houses. Importantly, most of those who did have a plan were able to implement it.

### INFORMATION SOUGHT ABOUT THE BUSHFIRE AND HOW IT WAS OBTAINED AND USED

Many people sought information about the fire through direct observation of smoke, flames and the activities of neighbours and emergency services. The loss of electricity, mobile phone reception and issues relating to the broadcast of emergency information into the local area impeded the delivery of warnings, information and advice.

As identified in previous research, including into the Sir Ivan, Currandooley and Carwoola fires (Whittaker J and Taylor M, 2018), many people travelled to places where they could observe the fire for themselves, such as the Mogareeka carpark and Thompsons Drive.

### HOW DID VISITORS TO THE AREA RESPOND TO THE BUSHFIRE?

A range of local businesses were hosting non-residents when Tathra came under

threat. These businesses included caravan parks, hotels, motels, restaurants, cafes, and local clubs such as the bowling and golf clubs.

All accommodation providers were able to alert their guests to the bushfire and instructed them to evacuate. Some evacuations occurred as the fire was impacting on Tathra. Mandated evacuation plans and emergency procedures assisted the evacuation process.

### COMMUNITY EXPECTATIONS OF WARNINGS AND INFORMATION, PARTICULARLY IN KNOWN MOBILE PHONE COVERAGE BLACK SPOTS

Most interviewees were aware, prior to the fire, of the limited mobile phone coverage in the Tathra and Reedy Swamp areas. Some had considered that they might not receive a SMS warning in an emergency. Some people expected warnings and advice to be provided earlier, before power and communications infrastructure failed. There was an expectation that local media would provide ongoing coverage of emergency warnings and information throughout the fire.

Interviewees identified the need for improved mobile phone network coverage in the area. Some suggested that a siren or klaxon should be installed to alert people of an emergency in the event that telecommunications infrastructure fails.

### THE EFFECTIVENESS OF WARNINGS AND THE RESULTING ACTIONS TAKEN

Many people did not receive warnings, or received warnings late, due to power and mobile phone outages and black spots. These factors, along with issues relating to the broadcast of emergency information into the local area, led to uncertainty and confusion about whether, when and where to evacuate to.

Some people who received warnings via landline telephone and SMS found the warnings useful. Although they were already aware of the fire, receipt of an official warning confirmed the threat posed by the fire and the need to take action.

Some of those who received a warning advising them to seek shelter were unsure what 'seek shelter' meant and therefore did not understand what the message was advising them to do.

### DID THE TIME OF YEAR INFLUENCE HOW PEOPLE RESPONDED?

Some interviewees had been aware that the day of the fire was forecast to be a

day of Severe Fire Danger or were aware of the forecast hot and windy conditions. Nevertheless, some expressed surprise that such a destructive bushfire could occur in mid-March. A small number of interviewees discussed how their belief that the bushfire season was over influenced their preparedness and response.

### COMMUNITY EXPERIENCES IN THE AFTERMATH OF THE BUSHFIRE

In the aftermath of the fire people experienced a range of common issues related to: evacuation centres; post-fire communication and information; the conduct of media and politicians; safety issues, including asbestos; and concerns about the local environment.

While most people were impressed with the services being provided at the evacuation centre, some were uncomfortable with the media presence and many were frustrated by rumours that were circulating about the impact of the fire on Tathra. People were distressed to find out via media reports and images, rather than official communications, that their house had been destroyed. The conduct of media within the evacuation centre was questioned by some people. Some questioned whether media should be allowed into evacuation centres.

### HOW DO PEOPLE INTEND TO PLAN, PREPARE AND RESPOND TO BUSHFIRES IN THE FUTURE?

Interviewees reflected on specific changes they would make to their properties such as removing mulch from garden beds around the house, removing trees, obtaining longer hoses, and installing sprinkler systems.

Many of those who left at the last moment said they would leave earlier in a future bushfire and would be more prepared to gather animals and valuable items.

Those who stayed to defend identified the need for better equipment and resources such as dedicated firefighting hoses, pumps and water supply, as well as personal protective equipment such as goggles, masks and appropriate clothing.

A number of people who left or evacuated during the fire said they would not leave in a future bushfire, or would be reluctant to leave. Interestingly, some said they would remain within the fire affected area not because they had a strong desire to defend their house and property, but because they wanted to avoid the inconvenience of being prevented from returning.

## WHAT WAS SAID

### On impromptu property defence

"We wheeled in here and... the smoke and everything had already arrived, and we put the car in the garage... grabbed a hose each... turned the hoses on and got out the front there. It came in through that gap there opposite, virtually opposite here. And it was 100 foot high and the house immediately across the road there virtually blew up straight away. It was on from then... literally a hail of fire... all the embers coming down. We had bare feet... we both had shorts and shirts on. I had no time to put anything on. And it just sort of rained down embers everywhere... there was no air to breathe, that was the thing I found difficult."

### On being better prepared to leave early next time

"I'd just take off very quickly. I wouldn't wait. No. I'd take off very quick. And if it [the house] burns, it burns. 'Cause you just don't know where it's going to go, you know. Your life's the main thing."

### On how businesses hosting visitors responded to the fire

"There was a lot of hesitation with people not wanting to leave. They had a look at the website themselves. Went, yeah, no, 'I don't think it's gonna come this way', because there were a lot of rumours going around at the time saying it probably wasn't gonna hit that far. So, people weren't overly concerned."

### On the time of year that the fire occurred

"Yes, I was surprised at the timing. My word, yeah. This late in the season. We should be hazard reducing. We should be lighting fires now, not preventing them."

## CONCLUSION

This research shows that there are opportunities to increase community awareness and preparedness for bushfire in built-up or urban areas through clearer communication of the potential for embers to carry fire into these locations, well beyond what many believe to be the interface between forests and houses. Such messages are extensively covered in community education and engagement resources, as well

as emergency warnings and information, but could be reinforced further.

Bushfires like the Reedy Swamp fire present valuable learning opportunities for people in bushfire risk areas. This fire in particular may present opportunities to increase awareness and understanding of the risks to coastal communities in NSW and elsewhere. Consideration should be given to including experiences and learnings from such fires in community engagement and education materials.

The study highlights that many residents planned or intended to evacuate at the last minute. This suggests a need for more education and advice about the dangers of late evacuation, including late evacuation to nearby places. Education materials and campaigns should emphasise the importance of being prepared and taking action as soon as people learn about a fire, and not waiting until they are directly threatened.

The confusion about the meaning of 'seek shelter' in warning messages suggests a need for greater dialogue and clarity of messages about safe sheltering practices. Education materials and campaigns are needed that encourage planning and preparation for active sheltering (defending a home and seeking shelter as the fire impacts), but discourage planning for sheltering as a sole response (inactive sheltering without attempting to regularly monitor conditions inside and outside the place of shelter, as well as actions to protect the shelter and its occupants). The tendency for people to gather at informally designated refuges or places of shelter reinforces the need for community dialogue about the suitability of local places of shelter. Since the Reedy Swamp fire, the Tathra Beach Country Club change rooms, where many gathered during the fire, has been formally designated as a Bushfire Neighborhood Safer Place.

## FURTHER READING

Whittaker J, Blanche R, Haynes K, Leonard J, Opie K (2017), Experiences of sheltering during the Black Saturday bushfires: Implications for policy and research, *International Journal of Disaster Risk Reduction* 23, pp. 119-127.

Whittaker J, Haynes K, Tofa M, Wilkinson C, Taylor M (2020), Understanding bushfire risk, warnings and responses: A study of the 2018 Reedy Swamp fire, Bushfire and Natural Hazards CRC.

Whittaker J and Taylor M (2018), Community preparedness and responses to the 2017 NSW bushfires, *Hazard Note* 45, Bushfire and Natural Hazards CRC.

Whittaker J and Taylor M (2018), Community preparedness and responses to the 2017 NSW bushfires, Bushfire and Natural Hazards CRC.

## END-USER STATEMENT

"The bushfire which impacted on Reedy Swamp and Tathra in March 2018 has had, and continues to have, a long-lasting effect on the community.

"The area is like so many across NSW and Australia, in that it is in a high risk setting, with a large population surrounded mainly by bushland, and limited access options.

"Through this contracted research, the NSW RFS has gained valuable insight into the community's perception of this risk, and what people did to reduce their personal risk of being impacted by a bushfire.

"Of particular note, many in the community understood that areas closest to the bush were at risk but others did not appreciate there was a risk to more built-

up areas when embers blew into the town and started numerous spot fires. Some of these destroyed homes well away from the main fire front. It highlights a need to constantly reinforce messages around the risk of embers, and the importance of preparation well before a fire.

"We continue to learn how varied human reactions can be in an emergency, and how many people unfortunately leave their decision making until the last minute.

"The community has also provided insight into the effectiveness of warning messages. While the delivery of official information and warnings has improved significantly in recent years, there is still a strong reliance on technology. As has been seen many times in emergency events, technology can fail and prevent access to up to date information.

"Additionally, the research highlights the importance of partnering with traditional media to ensure information is delivered in a timely manner, and media coverage of a disaster is executed in a respectful way.

"This research builds on an increasing knowledge base of post-incident reviews and analysis, and will help further refine community engagement and warnings well into the future.

"The NSW RFS thanks the community of Tathra and the surrounding area for assisting with the research and ensuring their views are captured, and that lessons are learned for future fires."

**- Shane Fitzsimmons AFSM, Commissioner,  
New South Wales Rural Fire Service**

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