Predictions in public: understanding the design, communication and dissemination of fire spread prediction maps to the public

Work package 9: national survey

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We acknowledge the Traditional Custodians across all the lands on which we live and work, and we pay our respects to Elders both past, present and emerging. We 1recognize that these lands and waters have always been places of teaching, research and learning.

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Executive Summary

Research in Australia has been conducted on the public's response to risk and warning communication (Dootson et al. 2019, 2021). However, less research effort has focused exclusively on maps and even less has focused on fire spread prediction maps and the Australian context. The purpose of the research reported here is to assess the extent to which community members use, comprehend, perceive and act upon maps, including fire spread prediction maps, in bushfire events. Building on the work of a nationwide survey of maps currently used in Australia (Work Package 5) and research that designed evidence-informed map concepts for fire spread prediction maps (Work Package 7), a second nationwide survey (*N* = 3190) was conducted. A total of four incident warning maps and 40 fire spread prediction maps (total = 44 maps) were tested using a co-designed bushfire event scenario, set in Western Australia. The sample comprised 53% female respondents, with approximately 49% aged 18 to 44 years old. In the overall sample, around 13% of the respondents indicated that someone in their household was a member of a state emergency service agency. Almost 60% indicated that they had previously experienced a bushfire, with over 38% indicating experience within the past five years. Thirty-six percent (36%) indicated they believe that are at risk of a bushfire where they currently live. A summary of the results is provided below. The intended audience for this report is the project team, the Steering Committee and agency people involved in map production and disseminating public information and warnings.

Awareness of a fire spread prediction map. Approximately 22% of survey respondents indicated they had used a fire spread prediction map before, with almost 44% indicating they were unsure if they had. The former is likely over-reporting as few jurisdictions had released a fire spread prediction map to the community prior to this survey.

Understanding fire spread prediction maps. When asked for a definition of a fire spread prediction map, respondents indicated that they understood the map to be: *a map showing where the bushfire will go* (77%), *a map showing the worst-case scenario for the bushfire* (54%), *a map showing where burning embers may spread* (53%) and *a map showing where people must evacuate from* (55%). In this question, participants were instructed to select 'all that apply'. Open-text responses describing the map, centered around the likelihood of *where* and *when* the fire would spread and that it communicated an *expert assessment/evaluation/model.* The results indicate a reasonable understanding of what a fire spread prediction map is, however, further community education would be required to improve understanding of what the map is and how it should be used.

Demand for fire spread prediction maps. Approximately 92% of respondents indicated they would actively seek out this type of map (compared to a similar 91% seeking out an incident warning map). The primary reason for wanting to use the fire spread prediction map was *to locate themselves in relation to the fire path* (which is the same reason stated for using an incident warning map). Respondents were more likely to use an incident warning map to find out *what action to take next*, than a fire spread prediction map. Eighty percent (80%) of respondents who saw one of the fire spread prediction maps in the survey indicated they would want to be notified of it being published in their area, with the expectation that the map information would be updated in real time (40%) or as the situation changes (41%). These findings capture a demand for maps from both people who reported having used maps in past bushfire events and those who might need to use a map in the future if they were to experience a bushfire.

Risk perceptions. Participants were asked to evaluate both the severity of the bushfire and the likelihood of it occurring, which combined to form their risk perceptions. Respondents perceived the bushfire situation shown on the map to be more severe and likely to occur when the map they saw had the respondent located inside the bushfire's predicted fire path and the respondent had reported they did not believe they knew enough about bushfires (low perceived hazard literacy) but were confident in reading maps (high perceived map literacy). The individual differences in capabilities and where they are located with respect to the fire would be more likely to see people take protective action as they perceive risk in the bushfire scenario tested.

Understanding uncertainty. Uncertainty was examined from two perspectives. First, we examined uncertainty as it was communicated in the fire spread predictions. Respondents were more likely to believe the bushfire would move as modelled on the fire spread prediction map if they were either located inside the fire's predicted path, if they had bushfire experience and if they felt confident reading a map (high perceived map literacy). For those who did not believe they had sufficient knowledge about bushfires (low perceived hazard literacy) were more likely to believe the 24-hour prediction. The latter demonstrates a lack of understanding of how quickly a bushfire can change over 24 hours. Second, we examined information seeking behaviour as it can be used as a proxy for understanding how people are managing feelings of uncertainty (Brashers, 2001). In the survey, after seeing a map, respondents indicated they were looking for information on where they were in relation to the threat, more information about the event (e.g., fire and weather conditions) and what protective actions to take. The factors influencing feelings of uncertainty and information seeking behaviour were the same, irrelevant of whether the respondent saw an incident warning map or a fire spread prediction map. This result could infer that a fire spread prediction map is not triggering any additional sense of uncertainty about a bushfire threat than a currently used incident warning map, which was a concern of agencies in previous work (Miller et al., 2025).

Protective and non-protective action intentions. Seven protective actions (*seek further information, check the Emergency App for more information, seek direction from emergency services, stay away from the shaded area on the map, stay and enact your bushfire plan, evacuate to an evacuation centre* and *evacuate to another location in a safer area*) and two non-protective actions (*stay without a bushfire plan* and *do nothing)* were examined in the survey. Respondents were more likely to intend to go to an evacuation centre if the map they saw had an evacuation route on it, if they were located in the affected area, if they reported they felt confident reading a map (high perceived map literacy), if they did not have bushfire experience and if they did not believe they had sufficient knowledge about bushfires (low perceived hazard literacy). Respondents who saw a map with a solid border around the affected areas and those that reported not having bushfire experience, low perceived hazard literacy and high map literacy, were more likely to stay away from the affected areas. Respondents were more likely to seek further information, seek direction from emergency services, or seek further information on an Emergency App if they saw a map with red colouring, if the map design used solid borders around the affected area, if they were located outside the affected area on the map, if they did not have bushfire experience, if they did not believe they had sufficient knowledge about bushfires (low perceived hazard literacy) and if they felt confident reading a map (high perceived map literacy). The latter group were also more likely to stay and enact their bushfire plan. Those respondents who believed they knew enough about bushfires (high perceived hazard knowledge) were the only respondents more likely to 'do nothing' or 'stay without a bushfire plan', the two non-protective actions included in the study.

Emotions triggered by the map. Respondents were asked the extent to which they felt a series of emotions following viewing a map including *calm, alert, interested, confident, relieved, afraid, anxious* and *worried*. Respondents who felt they did not have sufficient knowledge about bushfires (low perceived hazard literacy) were more likely to report feeling negative emotions (*afraid, worried, anxious*) while simultaneously reporting feeling *interested* after viewing the map. Conversely, those respondents who felt they had sufficient knowledge about bushfires (high perceived hazard literacy) reported feeling *relief, calm* and *confident*, which were the same reported emotions for those with bushfire experience. Those who felt confident reading a map (high perceived map literacy) reported mixed feelings of *interest, relief, calm, confidence* and *worried*. Those respondents who saw an AWS coloured fire spread prediction map reported feeling afraid in comparison to the red or grey maps. Understanding the emotions of the community based on their circumstances and individual differences could enable agencies to craft messages tailored to those emotions and to highlight the importance of staying tuned in to future warnings and public information.

Trust in the map information. Respondents were asked the extent to which they trusted the information presented in the map and judged the information to be accurate, forming their trust judgement. Respondents who were confident in reading maps (high perceived map literacy) were more likely to trust the information in the map alongside those respondents who did not feel they had sufficient knowledge about bushfires (low perceived hazard literacy). Further, if the fire spread prediction map used a solid (as opposed to a hash) texture for the fire paths or used the AWS colours for the fire path (as opposed to grey colours), respondents were more likely to trust the information in the map. The trust in AWS colours and solid texture is likely because the community is familiar with those design choices for warning polygons in incident warning maps.

The results from this study combine with the other work packages in the *Predictions in Public* research program to cumulatively underpin the future design of maps for use in the public information and warnings milieu in Australia, under the Australian Warning System. This report should not be read in isolation to other work packages.

End-user statement

Ben Shepherd, Media and Communications, New South Wales (NSW) Rural Fire Service (RFS), NSW

Maps play a vital role in informing the public, aiding operational responses and issuing warnings during bushfires in Australia. Over the years, particularly after NSW and the Australian Capital Territory (ACT) released prediction to the public during the 2019/2020 bushfire season, interest in the potential use of fire spread prediction maps as a form of public information has increased across Australia. As Australia adopts the standardised Australian Warning System, there's a unique opportunity to grasp how to design predictive bushfire map designs across regions according to community comprehension and expectations. Understanding how people utilise, interpret and respond to bushfire maps and associated warnings, including fire spread prediction maps, is crucial. This comprehension supports emergency services to customise their information dissemination during emergencies effectively. These insights, when combined with other aspects of the *Predictions in Public* research program, will facilitate the creation of evidence-based principles that encourage a nationally consistent approach to the development and distribution of fire spread prediction maps and warnings during bushfires.

Introduction

This research is a component of a wider program of research called *Predictions in public: understanding the design, communication and dissemination of predictive maps to the public*[1]. The overall aim of the three-phase research program is to optimise fire spread prediction map design and dissemination to ensure that these maps will support community protective action decision-making during a bushfire event. The research program objectives are:

- **Objective 1:** To understand how members of the fire and emergency services sector would prefer predictive maps to be distributed and used by members of the public.
- **Objective 2:** To understand how members of the public use, comprehend, perceive and take-action in response to existing predictive map designs and other types of maps used by agencies across Australia.
- **Objective 3:** To develop a set of evidence-based guidelines/principles for the design and dissemination of predictive maps to the public based on existing research on hazard mapping.
- **Objective 4:** To work with the fire and emergency services sector to develop practical project outputs to translate the research findings into fire agency policy and practice.

The research program has three phases:

- **Phase One:** Existing agency use and public awareness of predictive service products in public information and warnings
- **Phase Two:** Standardised design, dissemination and communication for predictive maps
- **Phase Three**: Communication, evaluation and learning framework

The research project reported here addresses Objective 2. The intended audience for this report is the project team, the Steering Committee and agency people involved in map production and disseminating public information and warnings.

[1] See https://www.naturalhazards.com.au/research/research-projects/predictions-public-understanding-design-communication-and-dissemination

Brief background

Research in Australia has been conducted on the public's response to risk and warning communication (Dootson et al., 2019, 2021). However, less research effort has focused exclusively on maps and even less has focused on fire spread prediction maps. While some studies have focused on the public's response to general bushfire map design (Cao et al., 2016, 2017; Cheong et al., 2016), currently missing from the literature is a clear understanding of how Australian community members use, comprehend, perceive and act upon maps, including fire spread prediction maps ('predictive maps'). Foundational research has recently been conducted in NSW after the 2019–20 Black Summer Bushfires (Whittaker et al., 2020); however, data for other Australian jurisdictions is currently lacking. The Australia Institute Disaster Resilience (AIDR) *Public Information and Warnings Handbook* (AIDR, 2021), which is national doctrine guiding the design of warnings and public information, is currently limited in its advice on the use of maps. To date, only broad information about what a map needs to include (e.g., location of hazard, route closures, prediction) and the use of a legend and consistent symbols and colours, is recommended. We believe that findings from this research program will cumulatively provide greater detail on how maps, including predictive maps, should be designed, communicated and disseminated under the new nationally standardised approach to public information and warnings required by the implementation of the Australian Warning System[2].

Maps are just one visual tool in the public information and warnings milieu. Visuals help convince people of the risk associated with a hazard and whether any protective action should be taken (Liu et al., 2020; Morss et al., 2018). Visuals are a critical part of that information mixture, bringing order to the uncertainty the community experiences by documenting the event; communicating the possible risk, impact and severity of the event; and showcasing the desired action(s) and action(s) of others (Liu et al., 2020; Morss et al., 2018). Often paired with text-based content, visual media help anchor text meaning and make the relevant information more salient, trusted and easier to interpret and remember (Mortensen et al., 2017; Zhao et al., 2018). Photographic visuals can effectively capture 'the totality of the event' (Mortensen et al., 2017, p. 221), with users perceiving visuals to be a truthful representation of reality in that moment (Feldman & Hart, 2018).

Maps are a specific type of visual that offer a representation of an emergency or hazard event, such as a bushfire, to assist agency planning and/or response operations (cf. Fiedrich & Zlatanova, 2013) and community sense-making and protective action decision-making (cf. Cova, 1999). Where maps are not provided or are indeed inaccurate, they can put emergency management workers as well as those in the community that they are assisting in harm's way (Dwyer, 2022). While reliance on maps used for emergency communication has increased, studies suggest that the format, content and accuracy of emergency maps vary, which implies that there is scope for improvement in the development, design and dissemination of these maps (Cao et al., 2016; MacPherson-Krutsky et al., 2020).

Previous work in this research program has developed a series of map design and dissemination principles that will be iteratively tested and revised throughout the life of the project. A critical element to good practice map design and dissemination, however, is to consider the recipient's cognitive processes and comprehension when viewing and interpreting a map (Cao et al., 2016; Lindell, 2020). To do so, we draw on the protective action and decision-making model (Lindell & Perry, 2012) to examine the extent to which the community are exposed to maps in use across Australia during bushfires, how well they grab attention and the extent to which the community comprehend what the map is communicating about the hazard and the associated risk. Further, the research seeks to understand the extent to which a map can signal threat and inform protective action perceptions. These perceptions then form the basis for decisions about how to respond to an imminent or long-term threat. The outcome of the protective action decision-making process, together with situational facilitators and impediments, produces a behavioural response (Lindell & Perry, 2012, p. 616) comprising further information-searching, emotion-focused coping and/or protective action.

[2] See https://www.australianwarningsystem.com.au/

Research approach

This research was conducted in Australia for bushfire hazards, one of the deadliest hazards in the country (Royal Commission, 2020). Bushfires are events with imminent threat, requiring timely execution of advised protective actions to avoid immediate negative outcomes (AIDR, 2018). The specific research aim of this survey was to examine the extent to which community members comprehend, perceive risk and uncertainty and act on fire spread prediction maps. The data were collected over December 2023 – January 2024. The research was designed in close collaboration with agencies across Australia, including: Queensland Fire and Emergency Services (QFES) now Queensland Fire Department (QFD) [3], NSW RFS, ACT RFS, Country Fire Authority Victoria (CFA VIC), Emergency Management Victoria (EMV), Tasmania Fire Service (TFS), South Australia Country Fire Service (SA CFS), Western Australia Department of Fire and Emergency Services (DFES) and Northern Territory Bushfires NT. These agencies form the Steering Committee guiding the project design and utilisation. The QUT ethics approval number for this research project is LR 2023-7715-16756.

Recruitment and respondents

A total of 44 surveys were run on an approximately representative sample of Australians (N=3,507) recruited by the market research panel Qualtrics. The sample included 53% female respondents with 48% aged 18 to 44 years old. Seven percent (7%) of the respondents were of Aboriginal and/or Torres Strait Islander descent. English was spoken at home as the primary language by 98% of the sample. The sociodemographic characteristics of the sample are provided in Table 1. Approximately 13% of the respondents indicated someone in their household was a member of a State Emergency Service Agency.

Design and stimulus

A scenario-based survey was designed to understand the extent to which community members comprehend, perceive and act upon fire spread prediction maps and incident warning maps. At the beginning of the survey, respondents were randomly assigned to one of 44 conditions. Each survey comprised three sections. Section one captured information from respondents about their bushfire experience, exposure to and use of maps and general risk perceptions and knowledge of bushfires. In section two, respondents were presented with a scenario about a bushfire event and a map embedded in a Facebook post. For the four incident maps tested, the Facebook post included a warning message, which was either an abbreviation (the warning message was cut off by a *'see more'* button) or the full warning message. A warning message was not provided, however, for the 40 fire spread prediction map conditions. The map was followed by a series of comprehension, emotion, risk perception, uncertainty, map effectiveness and protective action intention questions. Section three of the survey covered demographic information and experience in emergency services.

For a detailed understanding of how the map stimuli (and associated scenario) were designed in close collaboration with emergency services agencies across Australia, please refer to the final report for *Work Package 7: The Development of Fire Spread Prediction Map Concepts*. The map was based on a simulated bushfire event in Western Australia. All respondents saw a Western Australia map, irrespective of where they lived. See Appendix One for the stimuli and the associated scenario used across each of the 44 survey conditions.

[3] In July 2024, Queensland Fire and Emergency Services became known as Queensland Fire Department.

	Freq.	%
What is your gender?		
Male	1632	46.5
Female	1866	53.2
Other	5	0.1
Prefer not to disclose	4	0.1
What is your age?		
18-24	404	11.5
25-34	646	18.4
35-44	679	19.4
45-54	576	16.4
55-64	523	14.9
65-74	484	13.8
75 or older	195	5.6
What state do you live in?		
Queensland	402	11.5
New South Wales	403	11.5
Australian Capital Territory	395	11.3
Victoria	403	11.5
South Australia	403	11.5
Tasmania	400	11.4
Western Australia [4]	1003	28.6
Northern Territory	98	2.8
What is your highest level of education?		
Left school before Year 10	56	1.6
High school (to Year 10)	330	9.4
High school (to Year 12)	620	17.7
TAFE qualification (e.g., Certificate II, III, or IV)	994	28.3
Bachelor degree	1015	28.9
Postgraduate award (e.g., Masters degree, graduate diploma, graduate certificate)	492	14
Which category best describes your ethnicity?		
Oceanian	1774	50.6
North-West European	727	20.7
Southern and Eastern European	291	8.3
North African and Middle Eastern	38	1.1
South East Asian	191	5.4
North East Asian	75	2.1
Southern and Central Asian	72	2.1
Peoples of the Americas	33	0.9
Sub-Saharan African	26	0.7
Prefer not to disclose	280	8

TABLE 1 DEMOGRAPHICS OF SAMPLE

Measures

Pre-existing, validated items were used to measure the constructs in this study. Cronbach's (1951) alpha was used to measure the internal consistency of the scale items. Where applicable, the constructs in this report have an alpha exceeding 0.7, demonstrating reliability in the scale items used.

[4] Western Australia Department of Fire and Emergency Services funded additional data collection for a WA sample, via NHRA, explaining the difference in sample size for the study.

Map literacy was measured using a scale adapted from Clive et al. (2023) comprising questions such as it is easy for me to locate myself on a map, to find important places on a map, to help me decide where to go and reading and interpreting a map is no problem for me (α=0.89).

Hazard literacy was measured using an information insufficiency scale adapted from Yang et al. (2012), which captured how much the respondent believed they currently knew about bushfires then how much do they believe they NEED to know about bushfires. The difference between the two items provided a measure of information sufficiency.

Communicated uncertainty, defined as the uncertainty that is present within the message (Ratcliff et al., 2022), was operationalised as the perceived likelihood that the fire would occur as communicated in the map across the 6-hour, 12-hour and 24-hour time horizons.

Trust was measured using two items inspired by Lucassen and Schraagen (2011) where a trust judgement was made on the information provided in the map ("I trust the information provided in the map") alongside an assessment of accuracy ("The information provided in the map is accurate") (α=0.80). A 7-point Likert scale was used.

Emotions were measured as *negative emotions* (*anxious, afraid, worried;* α=0.90) from Yang et al. (2012), while individual emotions included *alert* (MacPherson-Krutsky et al., 2023; Watson et al., 1988), *interested* (Watson et al., 1988), *calm, confident* and *relieved* (requested inclusion from project Steering Committee).

Perceived risk (So et al., 2019) was operationalised as the mean score of five items covering the probability and severity of the bushfire threat: I believe I am at risk for this bushfire, it is likely that I will experience this bushfire, it is possible that I will see this bushfire, I believe this bushfire is a serious threat and this bushfire poses a danger to me, measured on a 7-point Likert scale (α=0.90).

Perceived *map effectiveness* (α=0.74) was measured as a mean response of four items on a 7-point Likert scale ascertaining the extent to which the participant perceived the map was easy to understand, would be easy for others to understand, was hard to understand (reverse coded) and that they were able to comprehend the information in the map (Dillard, Shen & Vail, 2007).

Protective and non-protective action intentions were co-designed with the Steering Committee. Protective actions comprised: seek further information, check the Emergency App for more information, seek direction from emergency services, stay away from the shaded area, stay and enact your bushfire plan, evacuate to the evacuation centre, or evacuate to another location in a safer area. Non-protective actions comprised: do nothing and stay without a plan

Preferences were explored by asking, "would you actively seek out this type of map during a bushfire?" and if no, "would you use this map if you happened to see it?" The reason for using a fire spread prediction map was tested using reasons identified in a previous Work Package (WP4).

Expectations were evaluated using items generated by the Steering Committee, including where would they expect to find this type of map, would they expect to receive a notification about it and how frequently would they expect the fire spread prediction map to be updated.

Demographic questions used the Australian Bureau of Statistics (ABS, 2024) to guide question design.

Data analysis

The data were analysed using SPSS by IBM version 29. Descriptive statistics, Chi-square tests, ANOVAs and T-tests were run to interrogate the data.

Research findings

Bushfire experience

As outlined in Table 2, approximately 60% indicated they had previously experienced a bushfire with just over 38% indicating they experienced a bushfire in the last five years. Over 30% of respondents indicated they had previously modified their home or land to protect themselves from bushfires and 43% indicated they had a bushfire plan. Just over 36% reported that they perceived they were at risk of a bushfire where they currently live, with 20% indicating they were unsure if they were at risk.

	Freq.	%
Are you at risk of a bushfire where you currently live?		
Yes	1270	36.2
No	1536	43.8
Unsure	701	20
When did you last experience a bushfire?		
Within the last 12 months	307	8.8
1-5 years ago	1058	30.2
6-10 years ago	296	8.4
11-15 years ago	153	4.4
16-20 years ago	80	2.3
21-25 years ago	49	1.4
25+ years ago	163	4.6
Never	1267	36.1
Don't know	134	3.8
Do you have a bushfire plan?		
Yes	1502	42.8
No	2005	57.2
Have you ever modified your home or land to protect from bushfires?		
Yes	1067	30.4
No	2440	69.6
Total	3507	100

TABLE 2 BUSHFIRE EXPERIENCE

Map experience

Over 48% of the sample indicated that they had used a map to inform themselves about bushfire threats. Over 25% of the sample had use a map as recently as the last six months. Approximately one-third of the sample indicated that they frequently relied on maps during bushfire events (Table 3). When asked about their prior awareness of and experience with fire spread prediction maps specifically, almost 22% indicated they had used a fire spread prediction map before, with approximately 44% indicating they were unsure if they had used a fire spread prediction map before and almost 35% indicating they had not used one previously. It is likely that most respondents have not used a fire spread prediction map before as these maps have only been released a few times (e.g., during 2019-2020 Black Summer) by specific jurisdictions (e.g., NSW) at the time of the survey.

	Freq.	%
Have you ever used a map to inform yourself about bushfire threats?		
Yes	1712	48.8
No	1795	51.2
Have you ever used a fire spread prediction map before?		
Yes	757	21.6
No	1220	34.8
Unsure	1530	43.6
Total	3507	100

TABLE 3 MAP EXPERIENCE

Information sources

As highlighted in Table 4, 81% of the sample indicated that their local fire agency website was where they would go for more information, followed by the Bureau of Meteorology website social media accounts and/or App (53%), the fire agencies' social media accounts and/or App (52%) and their local government, local council website and/or social media accounts (42%). Approximately the same number of respondents indicated they would go to family and friends (32%), Police Service websites and/or social media accounts and/or App (34%) and State Government website and/or social media accounts (35%) for more information about bushfires. ABC Radio (30%) and the ABC News website, TV and/or app (26%) were also common sources of information about bushfires (Table 4).

Emergency WA: For those in the sample from Western Australia, approximately 66% were aware of the Emergency WA website and approximately 48% indicated that they use the Emergency WA website.

Where would you go for more information? Please select all that apply.	Freq.	%
Fire agency website	2857	81.5
Bureau of Meteorology website, social media accounts and/or App	1863	53.1
Fire agency social media accounts and/or App	1833	52.3
Local Government / Local Council website and/or social media accounts	1469	41.9
Google (or equivalent search engine)	1235	35.2
State Government website and/or social media accounts	1225	34.9
Police service website, social media accounts and/or App	1131	32.2
Family and friends	1126	32.1
ABC radio	1039	29.6
ABC News website, TV and/or App	924	26.3
Private news media websites, TV and/or Apps (e.g., Channel 7, 9, 10, Sky News)	921	26.3
Main Roads website (or other channels) for road closure information	767	21.9
Neighbours	692	19.7
Newsfeed / front page of Facebook, TikTok, Instagram, X and/or other social media channels	636	18.1
Electrical companies e.g. Western Power for power outage information	458	13.1
Other Government agency websites (or other channels)	449	12.8
Public transport provider website (or other channels)	264	7.5
Other, please specify.	35	1
Total	3507	100

TABLE 4 SOURCES OF INFORMATION ABOUT BUSHFIRES

Fire spread prediction map knowledge

For those that saw a fire spread prediction map, respondents indicated that they understood the map to be a map showing where the bushfire will go (75%), a map showing the worst-case scenario for the bushfire (54%), a map showing where burning embers may spread (52%), or a map showing where people must evacuate from (53%) (see Table 5).

Having seen a fire spread prediction map, what do you understand this map to be? Tick all that apply.	Freq.	%
A map showing where the bushfire will go.	2401	75.3
A map showing the worse-case scenario for the bushfire.	1703	53.4
A map showing where burning embers may spread.	1657	51.9
A map showing where people must evacuate from.	1684	52.8
Other, please specify.	168	5.3
Total	3190	100

TABLE 5 FIRE SPREAD PREDICTION MAP KNOWLEDGE

Comprehension of maps

When asked to describe what they had just seen after viewing the incident map, many respondents recounted having viewed a fire-affected area or a predicted path for the fire. Many respondents explicitly indicated they were able to effectively self-localise, likely supported by the fact that the researchers localised all respondents in the survey using a star to indicate where they were on the map. Respondents were also able to determine a self-reported comprehension of risk from the scenario presented. This comprehension of risk often elicited comments about the intent to evacuate or engage in other preparatory behaviours in response to the scenario.

When asked to describe what they had just seen after viewing the fire spread prediction maps, most respondents accurately comprehended that the stimuli depicted both a fire-affected area and a predicted path for the fire. These two interpretations were consistently higher for the fire spread prediction map responses than the incident warning map conditions. Moreover, the fire spread prediction map stimuli elicited more comments about self-localisation and evidence of respondents comprehending the risk visualised in the map than the incident warning map conditions. Emergent coding further identified that numerous respondents acknowledged the presence of and understood, the instructions provided and the tiered graphical representation for the predicted path for the fire. It was further evident that numerous respondents focused their attention on information related to geographical or meteorological conditions provided within the written stimuli, such as expected changes in wind conditions. Across all stimuli, few respondents self-reported emotional reactions, familiarity with the scenario presented, or explicit map literacy, however, of these marginal variables, hazard literacy (their knowledge of bushfires), ranging from cursory to intimate, was described most frequently.

Focusing specifically on the fire spread prediction maps, respondents' descriptions centered around:

Fire-affected area: Any comment where the respondent accurately describes an area already affected by the fire or the current location of the fire.

"I just saw a map showing me where a fire has started and the area the fire has already burnt through. The map also shows me 3 areas which the fire may continue to burn through and impact in the next 24 hours and it also shows the approxiamate [sic] *times this may occur. I can also see where the evacuation centre is located and which evacuation routes are recommended to be used. You are also warned that the fire may arrive sooner or later than those times*

given and it is recommended that you check this information regularly and be prepared to act when required. If in a warning area follow instructions carefully and properly." – Map 30 Respondent

Fire path prediction: Any comment where the respondent accurately describes where the fire is or may be moving towards.

"I'm located where the black star is, the fire direction is heading north westerly- predicted impact on the fire will reach Brockton highway in approximately 24 hours" – Map 16 Respondent

Self-localisation: Any comment where the respondent accurately describes where they are on the map in relation to other map information, e.g., understanding they are located at the black star, or mentioning the fire in relation to the black star.

"A graduated coloured shading indicating which areas are likely to be impacted by the bushfire and when. It shows that I am just outside the border of the area that may be impacted tomorrow. Being that close I would keep an eye on updates and be ready to move if needed" – Map 42 Respondent

Comprehension of risk: Any comment where respondents self-reported they are at risk in response to the scenario presented.

"I can see that within the next 24 hours of this map being issued I will be close to the predicted fire front and it would be in my best interests to prepare my house for evacuation and leave northwards through minor roads to Brookton why then turn left onto Canning Road and relative safety. The urgency of departure depends upon what time I see this map." – Map 22 Respondent

Demand for fire spread prediction maps and incident maps

When it came to using fire spread prediction maps, over 92% of respondents who saw a fire spread prediction map indicated they would actively seek out this type of map during a bushfire. Of the approximately 8% that said they would not actively seek out this type of map, 67% indicated that they would use it if they happened to see it. This is in comparison to incident warning maps where 91% reported they would actively seek out this type of map during a bushfire event and for the 9% who would not, 50% indicated they would use it if they happened to see it.

For those indicating that they would use either map, the top four primary reasons were: to find where I am in relation to the fire event (75%), to get information about the fire event (62%), to monitor the extent or rate of spread using the burn area (62%) and to get information about what to do next (52%). For other reasons and reasons split based on whether they were referring to a fire spread prediction map or an incident map, see Table 6.

	Whole Sample (all 44 maps)		Those that saw an Incident Map (Maps 1-4)		Those that saw a Fire Spread Prediction Map (Maps 5-44)	
Why would you use this map? Tick all that apply.	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**
To find where I am in relation to the fire event	2619	74.7	235	74.1	2384	74.7
To get information about the fire event (i.e., fire and weather conditions)	2167	61.8	190	59.9	1977	62.0
To get information about what to do next	1811	61.6	186	58.7	1625	50.9
To monitor the extent or rate of spread using the burnt area	2159	51.8	191	60.3	1968	61.7
To cross-reference map information with other sources	1387	39.5	126	39.7	1261	39.5
To make judgements about fire spread predictions and risk levels	1958	55.8	165	52.1	1793	56.2
To inform or warn others who may be at risk	1871	53.4	152	47.9	1719	53.9
To monitor the impact on the fire on my property after I evacuate	1529	43.6	127	40.1	1402	43.9
Other, please specify	18	0.3	3	0.9	15	0.5
Total	3507	100	317		3190	

TABLE 6 REASONS FOR WANTING TO USE THE FIRE SPREAD PREDICTION MAP

Expectations of fire spread prediction maps

When asked their expectations of where they might find fire spread prediction maps (Table 7), over 84% of respondents indicated they would expect to find a fire spread prediction map on their local fire agency website over approximately 57% indicated they would expect to see them put on a local agency social media page, 50% indicated they would also expect to see it on a local council website and over 54% indicated they would also expect to see it on the local fire agency App (where applicable). This aligns with where they would expect to see an incident map, that is used today during bushfire events. The only small difference was that a fire spread prediction map was expected to be found on a local council website more so that the incident map.

	Whole Sample (all 44 maps)		Those that saw an Incident Map (Maps 1-4)		Those that saw a Fire Spread Prediction Map (Maps 5-44)	
Where would you expect to find this map? Tick all that apply.	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**
Local fire agency website (e.g., QFES, NSW RFS, ACT ESA, CFA VIC, TFS, SA CFS, WA DFES, NTFRS)	2972	84.2	270	85.2	2702	84.7
Local fire agency social media pages	2001	56.9	179	56.5	1822	57.1
Local council website	1751	49.9	143	45.1	1608	50.4
Local fire agency App	1914	54.3	172	54.3	1742	54.6
Third party App (e.g., Fires Near Me, bushfire.io)	1208	34.4	100	31.5	1108	34.7
Other, please specify.	33	2.1	1	0.3	32	1.0
Total	3507	100	317	100	3190	100

TABLE 7 SOURCE EXPECTED TO HOST THE MAP

Approximately 20% of the sample indicated that they currently receive notifications about bushfires (for example, SMS alerts, notifications from an App, email alerts, etc.), while 26% were unsure if they currently receive notifications about bushfires (Table 8).

	Whole Sample (all 44 maps)		Those that saw an Incident Map (Maps 1-4)		Those that saw a Fire Spread Prediction Map (Maps 5-44)	
Do you receive notifications about bushfires? For example, SMS alerts, notifications from an App, email alerts, etc.	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**
Yes (insert where you get notifications from in text box)	693	19.8	63	19.9	630	19.7
No	1897	54.1	166	52.4	1731	54.3
Unsure	917	26.1	88	27.8	829	26.0
Total	3507	100	317	100	3190	100
Yes (insert where you get notifications from in text box)						
Local fire agency website (e.g., QFES, NSW RFS, ACT ESA, CFA VIC, TFS, SA CFS, WA DFES, NTFRS)	168	5.3	25	7.9	143	4.5
Local fire agency social media pages	14	0.4	0	0.0	14	0.4
Local council website	11	0.3	2	0.6	9	0.3
Local fire agency App	21	0.7	2	0.6	19	0.6
Bureau of Meteorology	24	0.8	3	0.9	21	0.7
SMS Alert (undisclosed)	117	3.7	5	1.6	112	3.5
Third party App (e.g., Fires Near Me, bushfire.io)	47	1.5	14	4.4	33	1.0
Other, please specify.	50	1.6	3	0.9	47	1.5
Total	3507	100	317	100	3190	100

TABLE 8 CURRENT NOTIFICATIONS ABOUT BUSHFIRES

If a fire spread prediction map was to be published or made available in the respondent's area, over 80% said they would like to be notified of it (Table 9). This aligned with their preferences for incident maps during bushfire events.

	Whole Sample (all 44 maps)		Those that saw an Incident Map (Maps 1-4)		Those that saw a Fire Spread Prediction Map (Maps 5-44)	
If a fire spread prediction map is published or made available in your area, would you like to be notified of that?	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**
Yes	2813	80.2	255	80.4	2558	80.2
No	262	7.5	27	8.5	235	7.4
Unsure	432	12.3	35	11.0	397	12.4
Total	3507	100	317	100	3190	100

TABLE 9 INTENTION TO USE FIRE SPREAD PREDICTION MAP

When considering how often they would realistically expect a fire spread prediction map to be updated and released to the public, 40% indicated they would expect that to happen in real time and over 41% indicated as the situation changes. the rest of the respondents indicated as outlined in Table 10. These expectations of updates largely aligned with the incident map updates.

	Whole Sample (all 44 maps)		Those that saw an Incident Map (Maps 1-4)		Those that saw a Fire Spread Prediction Map (Maps 5-44)	
How often would you realistically expect bushfire predictions to be updated and released to the public?	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**
In real time	1422	40.5	124	39.1	1298	40.7
As the situation changes	1459	41.6	141	44.5	1318	41.3
Every 2 hours	338	9.6	26	8.2	312	9.8
Every 6 hours	161	4.6	15	4.7	146	4.6
Every 12 hours	74	2.1	8	2.5	66	2.1
Every 24 hours	48	1.4	3	0.9	45	1.4
Other (insert your response)	7	0.2	0	0.0	7	0.2
Total	3507	100	317	100	3190	100

TABLE 10 EXPECTATIONS OF UPDATING PREDICTIONS

Design of Fire Spread Prediction Maps

In evaluating the design of the fire spread prediction maps and where possible in comparison to the incident warning maps, several research questions were posed. Results pertaining to each of the research questions are provided in this section of the report.

Incident warning map versus fire spread prediction maps

Key question: How do the incident warning maps and the fire spread prediction maps compare when influencing perceptions of risk and intended protective actions?

To make comparisons between the incident warning maps (Maps 1-4) and the fire spread prediction maps, comparable maps were selected for examination (Maps 9-12) based on their common design elements including use of AWS colours, solid border, absence of evacuation routes and lightness texture. The differences being the incident warning maps come with a warning message attached in either an abbreviated form (Maps 1 and 2) or in long-form text (Maps 3 and 4). Half of the maps showed people located inside the warning area or fire's path (Maps 1, 3, 9, 11) and outside the warning area or fire's path (Maps 2, 4, 10, 12). The sample tested here comprised N= 317 (49.1%) respondents in the incident map conditions (Maps 1-4) and N = 328 (50.9%) in the comparable fire spread prediction map conditions (Maps 9-12).

When examining risk perceptions, the ANOVA was statistically significant, indicating that the information depicted on the maps had an impact on risk perceptions (F (7, 637) = 6.85, $p < 0.001$, h^2=0.07). A post hoc analysis with Tukey's HSD revealed that Map 4 (the incident warning map, AWS colour, full length warning message, locating the respondent outside of the isochrone) was associated with significantly lower risk perceptions (M=5.13, SD= 1.22) than Map 1 (incident warning map, abbreviated message, locating respondent inside the isochrone) (M=5.76, SD=1.03), Map 3 (incident warning map, full warning message, locating the respondent inside the isochrone) (M=5.82, SD=1.02), Map 9 (predictive map, AWS colour, solid border, evacuation route, locating respondent inside the isochrone) (M=5.95, SD=0.99), Map 10 (predictive map, AWS colour, solid border, evacuation route, locating respondent outside the isochrone) (M=5.85, SD=1.03), Map 11 (predictive map, AWS colour, solid border, no evacuation route, locating respondent inside the isochrone) (M=6.14, SD=1.01) and Map 12 (predictive map, AWS colour, solid border, no evacuation route, locating respondent outside the isochrone) (M=5.74, SD=1.06). The effect sizes were small. There was no difference between Map 4 and Map 2 (incident warning map, abbreviated message, locating respondent outside the isochrone) where the only difference was the abbreviation of the warning message (Map 2) compared to the long form warning message (Map 4).

A Pearson's chi-square test of contingencies (with a = 0.05) was used to evaluate whether Maps 1-4 (incident warning maps) and Maps 9-12 (fire spread prediction maps) were related to intention to undertake a specific protective action. The chi-square test was statistically significant for evacuating to another safe location (χ^2 (1, N = 645) = 21.36, $p < 0.005$). While the association was small, $\phi = 0.18$, the pairwise z-test did find statistically significant differences between the map and intentions to evacuate to another safe location, such that respondents in the Map 4 (incident warning map, full warning message, locating respondent outside of the isochrone) condition were the least likely to evacuate to another safer location.

This means that the incident warning map with the long form warning message attached elicited low risk perceptions and resulted in respondents being less likely to indicate they would evacuate to a safer location than the other map conditions examined. There were no other statistically significant differences between the map conditions examined to compare incident warning and fire spread prediction maps.

Design concept

Key question: Which design concept (i.e., colour, texture, border) best communicates risk and uncertainty in fire spread prediction maps?

To make comparisons between the colours (red, grey, AWS) and textures (solid, lightness, dots, hash), a random subsample had to be extracted to ensure the group sizes for comparison were equal to ensure that sample size was not impacting the result (Table 11). The borders (dash and solid) design concept was already approximately equal across the sample; thus, no random subsample was extracted to compare these design concepts.

Category of design concept	Original sample size	Adjusted sample size
Colour		
AWS	646 (20.3.%)	314 (32.4%)
Grey	627 (19.7%)	346 (35.7%)
Red	1917 (60.1%)	310 (32%)
Total	3190 (100%)	970 (100%)
Texture		
Solid	646 (20.3%)	646 (25%)
Lightness	1254 (39.3)	643 (25%)
Dots	645 (20.2%)	645 (25%)
Hash	645 (20.2%)	645 (25%)
Total	3190 (100%)	2579 (100%)

TABLE 11 ADJUSTMENTS TO SAMPLE SIZE FOR DESIGN CONCEPT COMPARISONS

Colour

The sample composition is outlined in Table 11.

When examining perceived map effectiveness, the ANOVA was statistically significant, indicating that colour had an impact on perceived effectiveness of the map, (F (2, 969) = 3.47, $p < 0.05$, η^2=0.008). A post hoc analysis with Tukey's HSD revealed that the red condition had significantly higher perceptions of map effectiveness (M=5.44, SD= 0.96) than the grey condition (M=5.26, SD=0.96). The effect size was small.

When examining emotions, the ANOVA was statistically significant, indicating that colour had an impact on emotions, specifically feeling afraid, (F (2, 969) = 3.42, $p < 0.05$, η^2=0.007). A post hoc analysis with Tukey's HSD revealed that respondents in the AWS condition reported feeling afraid (M=4.75, SD= 1.60) more so than the red condition (M=4.43, SD=1.74). The effect size was small.

When examining trust, the ANOVA was statistically significant, indicating that colour had an impact on trust judgement (F (2, 969) = 5.22, $p < 0.01$, η^2=0.011). A post hoc analysis with Tukey's HSD revealed that the AWS condition had significantly higher trust judgement (M=5.81, SD= 0.89) than the grey condition (M=5.63, SD=0.91) and the Red condition (M=5.58, SD=1.00). The effect sizes were small.

A Pearson's chi-square test of contingencies (with α = 0.05) was used to evaluate whether colour was related to intention to undertake a specific protective action. The chi-square test was statistically significant for seeking direction from emergency services (χ^2 (2, N = 970) = 7.13, $p < 0.05$), however the association was quite small ϕ = 0.09. The pairwise z-test found statistically significant differences between the Red and AWS/Grey conditions, such that respondents in the red condition were less likely to seek direction from emergency services.

Texture

The sample composition is outlined in Table 11.

When examining trust, the ANOVA was statistically significant, indicating that texture had an impact on perceptions of trust, (F (3, 2578) = 4.28, $p < 0.01$, η^2=0.005). A post hoc analysis with Tukey's HSD revealed that participants were more likely to trust the map in the Solid fill condition (M=5.78 SD= 0.89) than the Lightness condition (M=5.60, SD=1.00). The effect size was small.

Border

The sample comprised N= 316 (49.3%) respondents in the solid border condition and N= 325 (50.7%) respondents in the dash border condition.

A Pearson's chi-square test of contingencies (with $\alpha = 0.05$) was used to evaluate whether the border design was related to intention to undertake a specific protective action. The chi-square test was statistically significant for checking the Emergency App for more information ($\chi^2 (1, N = 641) = 4.44, p < 0.05$), with a small association, $\phi = -0.08$, however a pairwise Z-test found that the Dash and Solid conditions differed significantly, such that respondents in the solid line condition were more likely to check the App than those in the dash line condition. There were also statistically significant differences for staying away from the affected area ($\chi^2 (1, N = 641) = 4.17, p < 0.05$), with a small association $\phi = -0.08$, however a pairwise Z-test found that the Dash and Solid conditions differed significantly, such that respondents in the solid line condition were more likely to stay away from the affected area than those in the dash line condition.

Evacuation Route

Key question: *What information (i.e., evacuation routes) helps map users take appropriate actions in the design of fire spread prediction maps?*

The sample comprised N=1597 (50.1%) of respondents in a fire spread prediction map condition where an evacuation route was present and N=1593 (49.9%) where the route was not present.

A Pearson's chi-square test of contingencies (with a = 0.05) was used to evaluate whether the presence (absence) of an evacuation route was related to intention to undertake a specific protective action. The chi-square test was statistically significant for evacuating to an evacuation centre ($\chi^2 (1, N = 3190) = 5.76, p < 0.05$). The association was negligible, $\phi = 0.04$. The pairwise z-test did find statistically significant differences between such that respondents in a condition with an evacuation route were more likely to evacuate to an evacuation centre than those in the condition without an evacuation route marked on the map.

The results discussed above are outlined in Table 12. As there were small effect sizes, it is reasonable to interpret that no one map outperformed another for the colour, texture and border design manipulations. A design element that did have an impact was the inclusion of evacuation information, as reported below.

	Design Concept			**Information**
	Colour	**Texture**	**Border**	**Evacuation Route**
Risk perceptions	NS	NS	NS	NS
Communicated Uncertainty				
6 hours	NS	NS	NS	NS
12 hours	NS	NS	NS	NS
24 hours	NS	NS	NS	NS
Protective Action Intention				
Do nothing	NS	NS	NS	NS
Seek further information	NS	NS	NS	NS
Check the Emergency App for more information	NS	NS	Significant	NS
Seek direction from emergency services	Significant	NS	NS	NS
Stay away from the shaded area	NS	NS	Significant	NS
Stay and enact your bushfire plan	NS	NS	NS	NS
Stay without a plan	NS	NS	NS	NS
Evacuate to the evacuation centre	NS	NS	NS	Significant
Evacuate to another location in a safer area	NS	NS	NS	NS

Map Effectiveness	Significant	NS	NS	NS
Emotions	Significant	NS	NS	NS
Trust judgement	Significant	Significant	NS	NS

TABLE 12 IMPACT ON DESIGN CONCEPTS ON PERCEPTIONS AND INTENDED ACTIONS

Localisation

Key question: *Were there any differences in perceptions or risk and uncertainty and intended action between survey respondents located inside and outside of the fire path?*

The sample comprised N=1589 respondents inside the predicted fire path and N=1601 (49.8%) outside of the predicted fire path (50.2%). Table 13 summarises the results described in detail below.

When examining risk perceptions, an independent samples T-Test revealed a statistically significant impact on risk perceptions ($t(3188) = 6.48$, $p < 0.001$, $d = 0.23$, 95% CI of the mean difference [0.16, 0.29]), such that those located inside the fire path reported higher perceptions of risk (M=5.9, SD=1.052 than those located outside of the fire path (M=5.768 SD=1.0). The effect size was small.

When examining perceptions of communicated uncertainty, an independent samples T-Test revealed a statistically significant impact of localisation on perceptions of communicated uncertainty for the 6-hour timeframe, ($t(3188) = 2.93$, $p = 0.003$, $d = 0.10$, 95% CI of the mean difference [0.03, 0.17]), such than those located inside the fire path were more likely to perceive that the fire would occur as modelled for the 6-hour timeframe (M=60.18, SD=31.01) that those located outside of the fire path (M=56.91, SD=32.06). The effect size was negligible. A similar result was found for the 12-hour timeframe, ($t(3188) = 3.85$, $p < 0.001$, $d = 0.14$, 95% CI of the mean difference [0.68, 0.21]), such that those located inside the fire path were more likely to perceive that the fire would occur as modelled for the 12-hour timeframe (M=64.58, SD=29.17) than those located outside of the fire path (M=60.51, SD=30.47). The effect size was negligible. There was no statistically significant difference for the 24-hour timeframe.

A Pearson's chi-square test of contingencies (with $\alpha = 0.05$) was used to evaluate whether localisation was related to intention to undertake a specific protective action. The chi-square test was statistically significant for evacuating to an evacuation centre (χ^2 (1, $N = 3190$) = 30.31, $p < 0.001$), with a small effect size $\phi = 0.10$, evacuating to a safer area (χ^2 (1, $N = 3190$) = 16.95, $p < 0.001$) with a small effect size $\phi = 0.07$ and seeking information (χ^2 (1, $N = 3190$) = 15.03, $p < 0.001$) with a small effect size $\phi = 0.07$. A Pairwise Z-test found that the inside and outside localisation conditions differed significantly, such that those inside the fire path were more likely to evacuate to an evacuation centre and to a safer place than those outside the affected area on the map and those outside the affected area were more likely to seek information than those inside the affected area.

	Localisation
Risk perceptions	Significant
Communicated Uncertainty	
6 hours	Significant
12 hours	Significant
24 hours	NS
Protective Action Intention	
Do nothing	NS
Seek further information	Significant
Check the Emergency App for more information	NS
Seek direction from emergency services	NS
Stay away from the shaded area	NS

Stay and enact your bushfire plan	NS
Stay without a plan	NS
Evacuate to the evacuation centre	Significant
Evacuate to another location in a safer area	Significant
Map Effectiveness	NS
Emotions	NS
Trust judgement	NS

TABLE 13 IMPACT ON LOCALISATION ON PERCEPTIONS AND INTENDED ACTIONS

Individual characteristics

Key question: How do individual characteristics (including bushfire experience, perceived hazard literacy, perceived map literacy) influence perceptions risk and uncertainty and protective action intentions for fire spread prediction maps?

To make comparisons between the individual characteristics of bushfire experience and map literacy, a random subsample had to be extracted to ensure the group sizes for comparison were equal to ensure that sample size was not impacting the result (Table 14). Hazard literacy was already approximately equal across the sample; thus, no random subsample was extracted to compare this individual characteristic.

Category of design concept	Original sample size	Adjusted sample size
Bushfire experience		
Experience	1912 (62.4%)	1180 (50.6%)
No experience	1153 (37.6%)	1153 (49.4%)
Total	3065 (100%)	2333 (100%)
Map literacy		
Low map literacy	1333 (41.8%)	1333 (50.1%)
High map literacy	1857 (58.2%)	1327 (49.95)
Total	3190 (100%)	2660 (100%)

TABLE 14 ADJUSTMENTS TO SAMPLE SIZE FOR INDIVIDUAL CHARACTERISTIC COMPARISONS

Bushfire experience

Bushfire experience was treated as a dichotomous construct where people either did or did not have experience with a bushfire event.

The sample composition is outlined in Table 14 above.

When examining perceptions of communicated uncertainty, an independent samples T-Test revealed a statistically significant impact of bushfire experience on perceptions of communicated uncertainty for the 6-hour time interval ($t(2262) = 2.60$, $p < 0.01$, $d = 0.11$, 95% CI of the mean difference [0.03, 0.19]), the 12-hour time interval ($t(2265) = 2.73$, $p < 0.01$, $d = 0.11$, 95% CI of the mean difference [0.03, 0.19]) and the 24-hour time interval ($t(2270) = 3.11$, $p < 0.01$, $d = 0.13$, 95% CI of the mean difference [0.05, 0.21]). In each case, those with bushfire experience were more likely to perceive that the fire spread would occur as modelled (6-hour: M=60.46, SD=29.50; 12-hour: M=64.26, SD=27.95; 24-hour: M=69.84, SD=29.90) than those without bushfire experience (6-hour: M=57.00, SD=34.38; 12-hour: M=60.83, SD=32.43; 24-hour: M=65.69, SD=34.44) The effect sizes were small.

A Pearson's chi-square test of contingencies (with $\alpha = 0.05$) was used to evaluate whether bushfire experience was related to intention to undertake a specific protective action. The chi-square test was statistically significant for protective actions:

- seeking direction from emergency services (χ^2 (1, N = 2333) = 7.35, p < 0.01). While the association was small, ϕ = -0.07, the pairwise z-test did find statistically significant differences between experience and intentions to seek direction from emergency services, whereby those without experience were more likely to seek direction from emergency services.
- staying away from the affected area, (χ^2 (1, N = 2333) = 4.67, p < 0.05). While the association was small, ϕ = -0.05, the pairwise z-test did find statistically significant differences between experience and intentions to stay away from the affected area, such that those with no experience are more likely to stay away from the affected area.
- evacuate to another safe location (χ^2 (1, N = 2333) = 7.74, p < 0.01). While the association was small, ϕ = -0.06, the pairwise z-test did find statistically significant differences between experience and intentions to evacuate to another safe location, whereby those without bushfire experience were more likely to evacuate to another safe location.

When examining perceived map effectiveness, an independent samples T-Test revealed a statistically significant impact of bushfire experience on how effective the map was perceived to be (t(2264) = 2.21, p < 0.05, d = 0.09, 95% CI of the mean difference [0.01, 0.17]), such that those with bushfire experience reported higher perceptions of map effectiveness (M=5.40, SD=0.94) than those with no bushfire experience (M=5.31, SD=1.09). The effect size was small.

When examining emotions, an independent samples T-Test revealed a statistically significant impact of bushfire experience on emotions, specifically:

- calm (t(2328) = 7.16, p < 0.001, d = 0.28, 95% CI of the mean difference [0.42, 0.74])
- confident (t(2331) = 5.59, p < 0.001, d = 0.23, 95% CI of the mean difference [0.25, 0.53])
- relieved (t(2328) = 7.13, p < 0.001, d = 0.30, 95% CI of the mean difference [0.43, 0.75])

Those with past bushfire experience reported higher feelings of calm (M=3.61 SD=2.02), confident (M=4.11, SD=1.71) and relieved (M=3.23, SD=2.07) than those without past bushfire experience (calm: M=3.03, SD=1.91; confident: M=3.72,3 SD=1.64; relieved: M=2.64, SD=1.93). The effect sizes were small.

The results for each of the individual characteristics examined in detail below and summarised in Table 15.

Hazard literacy

Hazard literacy captured the difference between what people reported they knew and what they felt they should know about bushfires.

The sample was split on the mean (M=-23, SD=26.4), into two categories: high perceived hazard literacy (N= 1575; 49.4%) and low perceived hazard literacy (N= 1615; 50.6%).

When examining risk perceptions, an independent samples T-Test revealed a statistically significant impact of hazard literacy on risk perceptions (t(3190) = 5.78, p < 0.001, d = 0.21, 95% CI of the mean difference [0.14, 0.28]), such that those with low perceived hazard literacy reported higher perceptions of risk (M=5.90, SD=1.00) than those with high perceived hazard literacy (M=5.69, SD=1.11). The effect size was small.

When examining perceptions of communicated uncertainty, an independent samples T-Test revealed a statistically significant impact of hazard literacy on perceptions of communicated uncertainty for the 24-hour time interval (t(3178) = 2.58, p = 0.01, d = -0.07, 95% CI of the mean difference [-0.14, -0.00]). Those with low perceived hazard literacy were more likely to perceive that the fire spread would occur as modelled for the 24-hour time interval (M=68.87, SD=33.40) than those with high perceived hazard literacy (M=65.94, SD=30.87). The effect size was small.

A Pearson's chi-square test of contingencies (with $\alpha = 0.05$) was used to evaluate whether hazard literacy was related to intention to undertake a specific protective action. The chi-square test was statistically significant for protective actions:

- seeking further information (χ^2 (1, N = 3190) = 81.41, $p < 0.001$). While the association was small, $\phi = 0.16$, the pairwise z-test did find statistically significant differences between hazard literacy and intentions to seek further information, such that those with low literacy were more likely to seek further information.
- check the emergency App for more information (χ^2 (1, N = 3190) = 76.19, $p < 0.001$). While the association was small, $\phi = 0.16$, the pairwise z-test did find statistically significant differences between hazard literacy and intentions to check the emergency App for more information, such that those with low literacy were more likely to check the emergency App.
- seek direction from emergency services (χ^2 (1, N = 3190) = 55.89, $p < 0.001$). While the association was small, $\phi = 0.13$, the pairwise z-test did find statistically significant differences between hazard literacy and intentions to seek direction from emergency services, such that those with low literacy were more likely to seek direction.
- stay away from shaded area on the map (χ^2 (1, N = 3190) = 51.89, $p < 0.001$). While the association was small, $\phi = 0.13$, the pairwise z-test did find statistically significant differences between hazard literacy and intentions to stay away from shaded area on the map, such that those with low literacy were more likely to stay away.
- evacuate to an evacuation centre (χ^2 (1, N = 3190) = 45.76, $p < 0.001$). While the association was small, $\phi = 0.12$, the pairwise z-test did find statistically significant differences between hazard literacy and intentions to evacuate to an evacuation centre, such that those with low perceived hazard literacy were more likely to evacuate to an evacuation centre.
- evacuate to another location in a safer area (χ^2 (1, N = 3190) = 41.05, $p < 0.001$). While the association was small, $\phi = 0.11$, the pairwise z-test did find statistically significant differences between hazard literacy and intentions to evacuate to another location in a safer area, such that those with low perceived hazard literacy were more likely to evacuate to another safe location.

And non-protective actions:

- do nothing (χ^2 (1, N = 3190) = 20.79, $p < 0.001$). While the association was small, $\phi = -0.08$, the pairwise z-test did find statistically significant differences between hazard literacy and intentions to do nothing such that those with high hazard literacy were more likely to do nothing.
- stay without a bushfire plan (χ^2 (1, N = 3190) = 17.21, $p < 0.001$). While the association was small, $\phi = -0.07$, the pairwise z-test did find statistically significant differences between hazard literacy and intentions to stay without a bushfire plan, such that those with high perceived hazard literacy were more likely to stay without a bushfire plan.

The non-protective action responses could be a consequence of optimism bias or overconfidence in their knowledge about bushfire behaviour.

When examining emotions, an independent samples T-Test revealed a statistically significant impact on emotions, specifically:

- calm, $t(3188) = -6.13$, $p < 0.001$, $d = -0.22$, 95% CI of the mean difference [-0.28, -0.15]
- relieved, $t(3188) = -6.51$, $p < 0.001$ $d = -0.23$, 95% CI of the mean difference [-0.30, -0.16]
- confident, $t(3188) = -7.18$, $p < 0.001$, $d = -0.26$, 95% CI of the mean difference [-0.32, -0.18]

Those with high perceived hazard literacy were more likely to report feeling calm (M=3.59, SD=1.95), relieved (M=3.23, SD=2.00) and confident (M=4.14, SD=1.69) than those with low perceived hazard literacy (calm: M=3.16, SD=1.96; relieved: M=2.77, SD=2.00; confident: M=3.72, SD=1.66). The effect sizes were small.

Further, an independent samples T-Test revealed additional statistically significant impact on emotions, where hazard literacy had an opposite effect to the previously listed emotions. Specifically:

- interested ($t(3188) = 2.20$, $p < 0.05$, $d = 0.08$, 95% CI of the mean difference [0.01, 0.15])
- negative emotions (worried, afraid, anxious) ($t(3150) = 5.90$, $p < 0.001$ d = 0.0.22, 95% CI of the mean difference [0.14, 0.28])

Those with low perceived hazard literacy were more likely to report feeling 'interested' (M=5.26, SD=1.59) and negative emotions (worried, afraid, anxious) (M=4.93, SD=1.49) than those with high perceived hazard literacy (interested: M=5.13, SD=1.61; negative emotions: M=4.60, SD=1.62). The effect sizes were small.

When examining trust, an independent samples T-Test revealed a statistically significant impact of hazard literacy on trust judgement ($t(3120) = 3.74$, $p < 0.001$, $d = 0.13$, 95% CI of the mean difference 0.63, 0.21]), such that those with low perceived hazard literacy reported higher perceptions of trust (M=5.72, SD=0.88] than those with high perceived hazard literacy (M=5.60, SD=1.01). The effect size was small.

The results for each of the individual characteristics examined in detail below and summarised in Table 15.

Map literacy

Map literacy examined whether respondents perceived it was easy for them to locate themselves on a map, to find important places on a map, to help decide where to go and reading and interpreting a map was no problem for them, generally, not specific to bushfire maps. The sample was split on the mean into two categories: high perceived map literacy and low perceived map literacy. The sample composition is outlined in Table 14 above.

When examining risk perceptions, an independent samples T-Test revealed a statistically significant impact of map literacy on risk perceptions ($t(2607) = -12.95$, $p < 0.001$, $d = -0.51$, 95% CI of the mean difference [-0.58, -0.43]), such that respondents with high perceived map literacy reported higher perceptions of risk (M=6.02, SD=0.96) than those with low perceived map literacy (M=5.50, SD=1.11). The effect size was moderate.

When examining perceptions of communicated uncertainty, an independent samples T-Test revealed a statistically significant impact of map literacy on perceptions of communicated uncertainty for the 6-hour time interval ($t(2658) = -6.17$, $p < 0.001$, $d = -0.24$, 95% CI of the mean difference [-0.31, -0.16]), the 12-hour time interval ($t(2631) = -8.42$, $p < 0.001$, $d = -0.33$, 95% CI of the mean difference [-0.40, -0.25]) and the 24-hour time interval ($t(2611) = -8.36$, $p < 0.001$, $d = -0.32$, 95% CI of the mean difference [-0.40, -0.25]). In each case, those with high perceived map literacy were more likely to perceive that the fire spread would occur as modelled (6-hour: M=61.91, SD=30.46; 12-hour: M=66.76, SD=27.66; 24-hour: M=71.94, SD=29.52) than those with low perceived map literacy (6-hour: M=54.39, SD=32.34; 12-hour: M=57.04, SD=31.79; 24-hour: M=61.57, SD=34.38). The effect sizes were small.

A Pearson's chi-square test of contingencies (with $\alpha = 0.05$) was used to evaluate whether map literacy was related to intention to undertake a specific protective action. The chi-square test was statistically significant for:

- checking the emergency App for more information, ($\chi^2(1, N = 2660) = 5.79$, $p < 0.001$). While the association was small, $\phi = -0.05$, the pairwise z-test did find statistically significant differences between map literacy and intentions to check an emergency App, whereby those with high perceived map literacy were more likely check the App.
- seeking direction from emergency services ($\chi^2(1, N = 2660) = 10.32$, $p = 0.001$). While the association was small, $\phi = -0.06$, the pairwise z-test did find statistically significant differences between map literacy and intentions to seek direction from emergency services, whereby those with high perceived map literacy were more likely to seek direction.
- staying away from the shaded area ($\chi^2(1, N = 2660) = 20.19$, $p < 0.001$). While the association was small, $\phi = -0.09$, the pairwise z-test did find statistically significant differences between map literacy and intentions to

stay away from the shaded area, whereby those with high perceived map literacy were more likely to stay away.

- staying and enact their bushfire plan (χ^2 (1, N = 2660) = 13.37, p < 0.01). While the association was small, ϕ = -0.07, the pairwise z-test did find statistically significant differences between map literacy and intentions to stay and enact their bushfire plan, whereby those with high perceived map literacy were more likely to stay an enact their bushfire plan.
- evacuate to an evacuation centre (χ^2 (1, N = 2660) = 24.97, p < 0.001). While the association was small, ϕ = -0.10, the pairwise z-test did find statistically significant differences between map literacy and intentions to Evacuate to an evacuation centre, whereby those with high perceived map literacy were more likely to evacuate to an evacuation centre.
- evacuate to another safe location (χ^2 (1, N = 2660) = 10.41, p < 0.001). While the association was small, ϕ = -0.06, the pairwise z-test did find statistically significant differences between map literacy and intentions to evacuate to another safe location, whereby those with high perceived map literacy were more likely to evacuate to another safe location.

When examining map effectiveness, an independent samples T-Test revealed a statistically significant impact of map literacy on how effective the map was perceived to be (t(2652) = -17.91, p < 0.001, d = -0.70, 95% CI of the mean difference [-0.77, -0.62]), such that those with high perceived map literacy were more likely to perceive the map to be effective (M=5.63, SD=0.94) than those with low perceived map literacy (M=4.96, SD=0.99). The effect size was moderate.

When examining emotions, an independent samples T-Test revealed a statistically significant impact on emotions, specifically:

- calm (t(2631) = -2.42, p < 0.05, d = -0.09, 95% CI of the mean difference [-0.17, -0.18])
- alert (t(2658) = -8.86, p < 0.001, d = -0.34, 95% CI of the mean difference [-0.42, -0.27])
- interested (t(2658) = -7.34, p < 0.001, d = -0.29, 95% CI of the mean difference [-0.36, -0.21])
- confident (t(2629) = -8.42, p < 0.001, d = -0.34, 95% CI of the mean difference [-0.40, -0.25])
- worried (t(2658) = -2.55, p < 0.05, d = -0.10, 95% CI of the mean difference [-0.17, -0.02])

Those respondents with high perceived map literacy were more likely to report feeling calm (M=3.43, SD=2.03), alert (M=5.71, SD=1.34), interested (M=5.37, SD=1.61), confident (M=4.13, SD=1.71) and worried (M=5.04, SD=1.71) than those with low perceived map literacy (calm: M=3.25, SD=1.84; alert: M=5.25, SD=1.34; interested: M=4.92, SD=1.55; confident: M=3.60, SD=1.55; worried: M=4.87, SD=1.63). The effect sizes were small.

When examining trust, an independent samples T-Test revealed a statistically significant impact of map literacy on trust judgement (t(2545) = -16.96, p < 0.001, d = -0.66, 95% CI of the mean difference [-0.74, -0.59]), such that those with high perceived map literacy reported higher perceptions of trust (M=5.91, SD=0.82) than those with low perceived map literacy (M=5.31, SD=1.01). The effect size was moderate.

The results for each of the individual characteristics examined are summarised in Table 15.

	Experience (yes/no)	**Hazard Literacy (high/low)**	**Map Literacy (high/low)**
Risk perceptions	NS	Significant	Significant
Communicated Uncertainty			
6 hours	Significant	NS	Significant
12 hours	Significant	NS	Significant
24 hours	Significant	Significant	Significant
Protective Action Intention			

	Experience (yes/no)	Hazard Literacy (high/low)	Map Literacy (high/low)
Do nothing	NS	Significant	NS
Seek further information	NS	Significant	NS
Check the Emergency App for more information	NS	Significant	Significant
Seek direction from emergency services	Significant	Significant	Significant
Stay away from the shaded area	Significant	Significant	Significant
Stay and enact your bushfire plan	NS	NS	Significant
Stay without a plan	NS	Significant	NS
Evacuate to the evacuation centre	NS	Significant	Significant
Evacuate to another location in a safer area	Significant	Significant	Significant
Map effectiveness	Significant	NS	Significant
Emotions	Significant	Significant	Significant
Trust judgement	NS	Significant	Significant

TABLE 15 IMPACT OF EXPERIENCE, HAZARD LITERACY AND MAP LITERACY ON PERCEPTIONS AND INTENDED ACTIONS

Feedback

For those respondents who chose to provide feedback on the incident warning maps (Map 1-4), the feedback was both positive and constructive. Positive feedback was either general (e.g., "no it was perfect") or specific (e.g., "no, I think it's very clear where the threats are and the link with more information would probably cover most queries I have") and represented 44% of the feedback responses for the incident maps. The constructive feedback covered areas such as level of information provided, providing a clear key or legend for information processing, choices of colour and functionality such as the ability to interact with the map using zoom capabilities.

For those respondents who chose to provide feedback on the fire spread prediction maps (Map 5-44), the feedback was both positive and constructive. The positive comments were either general (e.g., "*these maps are extremely valuable*") or specific (e.g., "*I think this map is comprehensive and understandable as to where the fire has come from and tracking approx when and where it is heading. As a form of basic relevant information it is a good map showing where evacuation centre is and timelines for event changes.*") and represented 51% of the feedback responses for the fire spread prediction maps. The constructive feedback covered areas such as level of information provided, choices of colour, accessibility in terms of successful comprehension or understanding of visual or written information provided, explicit clarification on requirement to prepare or evacuate and concerns over frequency of map / information updates. The grey map conditions (Maps 13-20) had marginally higher frequencies of constructive feedback driven by a concentration of constructive feedback related to the choice of colour, as exemplified in the selected excerpt below (Map 18).

Focusing specifically on the fire spread prediction maps, the top four categories of feedback were related to:

Information sufficiency: Respondent comments on having too much or too little information.

"I would provide more information on the event as well as using different colours other than black, grey and white to highlight the danger zones." – Map 17 Respondent

Colour: Any comments about the appropriate and inappropriate use of colour.

"The colours are too close for me - I can't see which grey is which. Because so many things can change like wind or helicopters sending fires in other directions this map needs to be updated in real time. It is great as a part of a toolkit of things you can access to enable you to make informed decisions. I would use it but only in conjunction to the radio and other SES report." – Map 18 Respondent

"Blue is probably not the best colour for evacuation route at first it looked like water, but it's probably better for colour blind people, maybe make them bolder or striped, I had to double check what they were." – Map 37 Respondent

"Map was not clear and hard to decipher. There are so many things that should be edited to improve clarity and live wind direction and speed is essential and should include wind forecasts because it is the wind that is deadly, not the fire alone. A small & not clear compass. A mainly green map with not very clear main roads or names, white area that I'd 'assume' was residential and a big blob of grey that looks like an airport joined to a thin shaded area with 3 shades of orange. None of the 3 shades of orange would cause me to be alerted and the lightest shade is so hard to actually to see that I'd disregard it. A map key warning of predicted fire movement but the key colours are not instantly obvious without the key and time consuming to decipher too. The map key colour for the burnt area is not instantly noticeable as it is not within the map key section. The light pastel map colours are not visually clear." – Map 43 Respondent

Accessibility: Any comments relating to the ability to understand the information provided.

"Would recommend potentially using some colour indication for the bushfire predictions rather than all grey as the difference in grey tones may be difficult for some people to determine." – Map 20 Respondent

"I wish it included both 24hour and 12 hr times (am and pm) I find 24-hour times harder to read." – Map 17 Respondent

Evacuation: Any comment involving information on evacuation or preparatory action.

"I wish it would be clearer about exactly where you may be affected. For example, the black star was just out of the light grey area, does that mean there is no impact? If it clearly said which places to evacuate, which to remain vigilant etc. it would be more helpful." – Map 14 Respondent

Discussion

The purpose of this study was to examine the extent to which individuals perceive risk and uncertainty in fire spread prediction maps.

The key insights to take away from this research work package are:

1) The design concepts tested in the fire spread prediction map including colour, texture and border style, had small effects on emotions, trust and intentions to take protective actions. Due to the discrepant significant findings across the different design elements and the small effect sizes, there was no 'one' map design that was deemed better than another, they each performed similarly. Future research is examining in more detail which map design concepts people are relying on more than others, through forthcoming eye-tracking experiments. A design concept that did have an impact was the inclusion of evacuation information on the map to encourage evacuation to a specific centre marked on the map.

2) Respondents' individual characteristics (e.g., bushfire experience, hazard literacy and map literacy) and circumstances (where they were located on the map) had a larger impact on risk, uncertainty, emotions, trust and intentions to take protective action than the design concepts did. This suggests individuals' contexts have a significant effect on their comprehension and use of maps. Future research will explore this insight further to explore how these maps can be communicated to the public in a way that is meaningful to their background and existing knowledge of bushfires and how to read maps.

3) Respondents appear to hold similar expectations and understandings of incident and fire spread prediction maps in terms of their currency, purpose and whether they would actively seek out such products during a bushfire event. This research offers support for coordinating the design and use of incident and fire spread prediction maps.

Overall, given our findings regarding the relative importance of individual characteristics and circumstances over design elements for impacting on perceptions and actions, there is a significant opportunity and need to explore how these maps are communicated to the public. It is possible that targeted communication strategies might reduce differences in how people perceive the risks presented in these maps so that people who 'underperform' in terms of developing perceptions and intentions to act, related to the actual risk, get the same message.

Research is not without limitations. The unfamiliarity of the Western Australian scenario with two thirds of the sample (who were not living in Western Australia) could have dampened the effects of risk perceptions. However, knowing community members might be using these maps while travelling or when living in a new area, it is reasonable to assume a portion of the community will be unfamiliar with the area they are in when receiving a fire spread prediction map in a real-life event. Another potential limitation of the study was in splitting the map literacy by the mean result. The map literacy of the sample was skewed to the right (high perceived map literacy). Future analysis could consider a median split. Another challenge was the survey length which could have had an impact on the quality of responses. Future studies should delineate between the descriptive information (source preferences, demand for a fire spread prediction map) and the experimental conditions (design elements that influenced risk, uncertainty and protective action intentions).

Acknowledging these limitations, the research findings offer practical contributions to the field of emergency management. First, the research offers an empirical foundation to sense-check the proposed principles for map design and dissemination (Work Package 2) and empirical evidence for the map concepts that operationalised those principles (Work Package 7). Second, the results offer validation of findings from community interviews about map comprehension, perceptions and subsequent protective actions (Work Package 4; Morrison et al., 2024). Third, the maps tested provide a foundation for the development, design and further testing of specific map concepts in upcoming focus groups (Work Package 8) and eye-tracking experiments (Work Package 10).

Cumulatively, the research offers evidence to support the future design of bushfire-related maps, including prediction maps, for jurisdictions across Australia, under the Australian Warning System. The results, to an extent, support the limited guidance in the AIDR Public Information and Warnings Handbook (AIDR, 2021) on map use and design and offer additional empirical insights to extend the national doctrine for map design, communication and dissemination.

This research report should be read in conjunction with outputs from the rest of the *Predictions in Public* research program to attain a whole-of-phenomenon understanding of the design, communication, dissemination and use of maps, including prediction maps, for bushfires in Australia.

Next steps

This research provides critical insight into existing map design across all jurisdictions in Australia. The public continues to rely on maps, alongside text-based warnings, to inform their perceptions of risk and support their protective action decision-making. The results from this study combine with the other work packages in the *Predictions in Public* research program to cumulatively underpin the future design of maps for use in the public information and warnings milieu in Australia under the Australian Warning System.

At the time of submitting this report, the Steering Committee was providing their input into the Decision Paper to guide the design for the remaining work packages for Phase Two. In Phase Three, the research program will explore how the results of Phases One and Two can be translated into agency policy and practice.

References

ABS. (2024). Australian Standard Classification of Cultural and Ethnic Groups (ASCCEG). Retrieved https://www.abs.gov.au/statistics/classifications/australian-standard-classification-cultural-and-ethnic-groups-ascceg/latest-release

AIDR (Australian Institute for Disaster Resilience). (2018). Warning Message Construction: Choosing Your Words Guidelines. Available at: https://knowledge.aidr.org.au/media/5978/guideline-warning-message-construction.pdf

AIDR (Australian Institute for Disaster Resilience). (2021). Public Information and Warnings Handbook. Available at: https://knowledge.aidr.org.au/resources/public-information-and-warnings-handbook/

Brashers, D. E. (2001). Communication and uncertainty management. Journal of Communication, 51(3), 477-497.

Cao, Yinghui, Boruff, Bryan J., & Ilona M. McNeill (2017). The smoke is rising but where is the fire? Exploring effective online map design for wildfire warnings. Natural Hazards, 88(3), 1473-1501.

Cao, Yinghui, Boruff, Bryan. J., & Ilona M. McNeill. (2016). Is a picture worth a thousand words? Evaluating the effectiveness of maps for delivering wildfire warning information. International Journal of Disaster Risk Reduction, 19, 179-196.

Cheong, Lisa, Bleisch, Susanne, Kealy, Allison, Tolhurst, Kevin, Wilkening, Tom & Matt Duckham. (2016). Evaluating the impact on visualization of wildfire hazard upon decision making under uncertainty, International Journal of Geographical Information Science, 30(7), 1377-1404.

Clive, M. A. T., Doyle, E. E., Potter, S. H., Noble, C., & Johnston, D. M. (2023). How Visual Design of Severe Weather Outlooks Can Affect Communication and Decision-Making. Weather, Climate, and Society, 15(4), 979-997.

Cova, T. J. (1999). GIS in emergency management. *Geographical information systems*, *2*(12), 845-858.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *psychometrika*, *16*(3), 297-334.

Dillard, J. P., Shen, L., & Vail, R. G. (2007). Does perceived message effectiveness cause persuasion or vice versa? 17 consistent answers. *Human Communication Research*, *33*(4), 467-488.

Dootson, Paula, Greer, Dominique, Tippett, Vivien & Sofie Miller. (2019), Conflicting cues with emergency warnings impacts protective action, Hazard Note 59, Bushfire and Natural Hazards CRC. Available at www.bnhcrc. Com.au/hazardnotes/59.

Dootson, Paula, Thomson, T. J., Angus, Daniel, Miller, Sophie, Hurcombe, Edward, & Adam Smith. (2021). Managing problematic visual media in natural hazard emergencies. International Journal of Disaster Risk Reduction, 59, 102249.

Dwyer, G. (2022). Enacting safety: Firefighter sensemaking of entrapment in an Australian bushfire context. *International Journal of Disaster Risk Reduction*, 68, 102697.

Fiedrich, F., & Zlatanova, S. (2013). Emergency mapping. In *Encyclopedia of Natural Hazards* (pp. 272-276). Springer.

Lindell, M. K. (2020). Improving hazard map comprehension for protective action decision making. *Frontiers in Computer Science*, *2*, 27.

Lindell, M. K., and R. W. Perry. (2012). The Protective Action Decision Model: Theoretical Modifications and Additional Evidence. *Risk Analysis* 32 (4): 616–632.

MacPherson-Krutsky, C. C., Brand, B. D., & Lindell, M. K. (2020). Does updating natural hazard maps to reflect best practices increase viewer comprehension of risk? *International journal of disaster risk reduction*, 46, 101487.

MacPherson-Krutsky, C., Lindell, M. K., & D. Brand, B. (2023). Residents' information seeking behavior and protective action for earthquake hazards in the Portland Oregon Metropolitan Area. Risk analysis, 43(2), 372-390.

Miller, G., Neale, T., Griffin, A. L., Dootson, P., Begg, C., & Gardner, A. (2025). Putting predictions in public: professional perspectives on the risks and benefits of changing wildfire warning systems. *Environmental Hazards*, 1-22.

Morss, R. E., Cuite, C. L., Demuth, J. L., Hallman, W. K., & Shwom, R. L. (2018). Is storm surge scary? The influence of hazard, impact, and fear-based messages and individual differences on responses to hurricane risks in the USA. *International Journal of Disaster Risk Reduction*, *30*, 44-58.

Mortensen, T. M., Hull, K., & Boling, K. S. (2017). Really social disaster: An examination of photo sharing on twitter during the# SCFlood. *Visual Communication Quarterly*, *24*(4), 219-229.

Morrison, R., Kuligowski, E., Dootson, P., Griffin, A. L., Perry, P., Pupedis, G., ... & Gardner, A. (2024). Understanding the challenges in bushfire map use and effective decision-making amongst the Australian public. *International Journal of Wildland Fire*, *33*(10).

Ratcliff, C. L., Wicke, R., & Harvill, B. (2022). Communicating uncertainty to the public during the COVID-19 pandemic: A scoping review of the literature. Annals of the International Communication Association, 46(4), 260-289.

Royal Commission. (2020). *Royal Commission into National Natural Disaster Arrangements.* Available at: https://naturaldisaster.royalcommission.gov.au/system/files/2020-11/Royal%20Commission%20into%20National%20Natural%20Disaster%20Arrangements%20-%20Report%20%20%5Baccessible%5D.pdf

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: the PANAS scales. Journal of personality and social psychology, 54(6), 1063.

Whittaker, Joshua, Taylor, Mel, & Christopher Bearman. (2020). Why don't bushfire warnings work as intended? Responses to official warnings during bushfires in New South Wales, Australia. International journal of disaster risk reduction, 45, 101476.

Yang, Z.J. (2012). Too scared or too capable? Why do college students stay away from the H1N1 vaccine?. *Risk Analysis, 32(*10), pp.1703-1716.

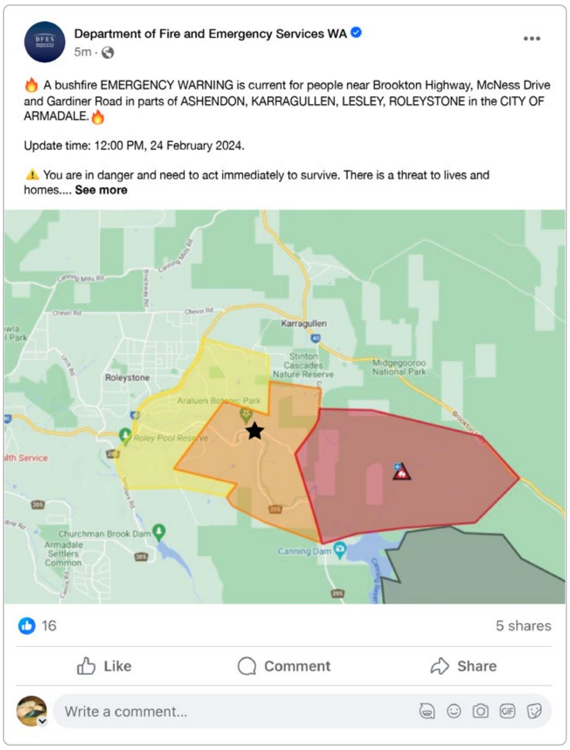
Zhao, X., Zhan, M., & Liu, B. F. (2018). Disentangling social media influence in crises: Testing a four-factor model of social media influence with large data. *Public Relations Review, 44*(4), 549-561.

Appendix A Maps

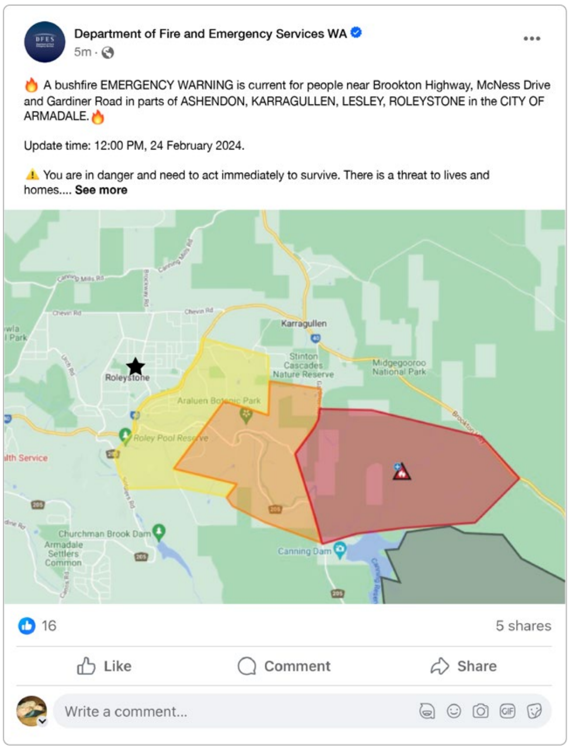
This is the collation of the 44 maps tested in this national survey. Each map was presented with the following scenario:

Read the scenario below and look at the map provided before answering some more survey questions. A bushfire has been burning near Jarrahdale State Forest, south of Brookton Highway, in Ashendon for four days. Today is a hot, windy summer day and the fire activity is expected to increase. The Incident Controller has called Public Information to issue an Emergency Warning for parts of Karragullen. The bushfire is heading in a northerly direction however a wind change will move the fire in a north westerly direction towards Roleystone. The fire may impact Brookton Highway within 24 hours, cutting off a major thoroughfare and route out of the Perth Hills. If the fire continues in this direction it will start impacting people in Roleystone. Imagine you are located where the black star is on the map below.

Map 1



Map 2



Almost 95% of the sample indicated that they would click 'see more' when they saw a post like this (Map 1 and 2).

Map 3

Department of Fire and Emergency Services WA
5m ·

🔥 A bushfire EMERGENCY WARNING is current for people near Brookton Highway, McNess Drive and Gardiner Road in parts of ASHENDON, KARRAGULLEN, LESLEY, ROLEYSTONE in the CITY OF ARMADALE. 🔥

Update time: 12:00 PM, 24 February 2024.

⚠️ You are in danger and need to act immediately to survive. There is a threat to lives and homes.
⚠️ The fire started in ASHENDON.

❗ WHAT TO DO: ❗
- If the way is clear, leave now for a safer place.
- Do not wait and see, leaving at the last minute is deadly.
- Close all doors and windows and turn off evaporative coolers, but keep water running through the system if possible.
- If you cannot leave, you need to get ready to shelter in your home.
- Go to a room in your home away from the fire front and make sure you can easily escape.
- Choose a room with two exits and water such as a kitchen or laundry.
- If you are not at home, it is too dangerous to return.

--- AND ---

🔥 A bushfire WATCH AND ACT is in place for people south of Covine Road to Gardiner Road, McNess Drive to the south and Heritage Drive to the west in parts of ROLEYSTONE in the CITY OF ARMADALE. 🔥

⚠️ There is a possible threat to lives and homes as a fire is approaching in this area and conditions are changing.

❗ WHAT TO DO: ❗
- If you are not prepared or you plan to leave, leave now if the way is clear.
- If you are well prepared and plan to actively defend your home, make final preparations now.
- If you plan to stay and actively defend, do not rely on mains water pressure as it may be affected. You need to have access to an independent water supply, and start patrolling your property to put out spot fires.
- Keep doors and windows closed and turn off evaporative coolers, but keep water running through the system if possible.
- If you are not at home, do not try to return as conditions in the area could be very dangerous.

--- AND ---

🔥 A bushfire ADVICE is in place for people east of Brookton Highway, west of Heritage Drive, and south of Irymple Road in parts of KARRAGULLEN, ROLEYSTONE in the CITY OF ARMADALE 🔥

⚠️ There is no threat to lives or homes.
⚠️ There is a lot of smoke in the area.
⚠️ Although there is no immediate danger you need to be aware and keep up to date in case the situation changes.

❗ WHAT TO DO: ❗
- Stay alert and monitor your surroundings.
- Watch for signs of a bushfire, especially smoke and flames.
- Close all doors and windows, and turn off evaporative air conditioners but keep water running through the system if possible.
- Read through your bushfire survival plan.
- If you do not have a plan, decide what you will do if the situation gets worse. You can make a plan by visiting My Bushfire Plan.

- If driving:
- Be extremely careful when driving through the area.
- Turn your headlights on and drive slowly.
- Watch for emergency services personnel and follow their directions.
- If you cannot see clearly, pull over, keep your headlights and hazard lights on, and wait until the smoke clears.
- If you have a respiratory condition and you have been affected by smoke you should contact your local doctor or call Health Direct on 1800 022 222.

🔥 BUSHFIRE BEHAVIOUR: 🔥
- The bushfire is moving fast in a northwesterly direction.
- It is out of control and unpredictable.
- Burning embers are likely to be blown around your home.

🏠 SAFER PLACE: 🏠
- An evacuation centre is open at Challis Primary School, Braemar Street in Seville Grove.
- Please take any essential items such as medications and identification to the evacuation centre.
- Pets (except recognised assistance animals) are not allowed inside evacuation centres for health and safety reasons, so you should make alternative arrangements for them. If this is not possible, please still proceed to the evacuation centre with your pets and await further advice.

🚧 ROAD CLOSURES AND CONDITIONS: 🚧
Avoid the area and be aware of fire and emergency services personnel working on site.

A number of roads have been closed, including:
- Gardiner Road
- Croyden Road
- McNess Drive
- Brookton Road
- Holden Road

Motorists are asked to avoid the area, reduce speed and drive carefully due to smoke.
Road information may also be available from Main Roads WA by visiting the Main Roads Travel Map, calling 138 138 or by contacting your Local Government Authority.

🐴 ANIMAL WELFARE: 🐮
Owners or carers of livestock, pets and companion animals should activate their own animal welfare plan. During a bushfire take advice from Local Government Authorities to protect the lives of your animals while keeping yourself safe.

For more information on actions to take for each bushfire warning level, please see the Department of Primary Industries and Regional Development website.

🚒 WHAT FIREFIGHTERS ARE DOING: 🚒
- Firefighters are on the scene, actively fighting the fire.
- Aerial support has been sent to protect crews and homes.

😷 COVID-19 😷
If you are told to leave in an emergency, don't stay at home even if you have COVID-19 or COVID-like symptoms.

You may stay at a friend or relative's house, an evacuation centre or other suitable accommodation.

If you have COVID-19 or symptoms of COVID-19, take these steps to prevent spreading the illness if you can:
- Wear a mask around other people.
- Wash your hands regularly.
- Stay and sleep in a separate room.
- Maintain physical distancing.

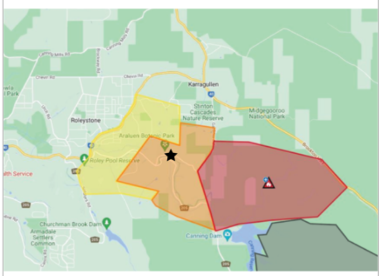
EXTRA INFORMATION:
- The fire was reported at 11:00 AM on 21 February 2024.
- DFES is managing the fire.

ℹ️ KEEP UP TO DATE:
Visit Emergency WA, call 13 DFES, follow DFES on Facebook, listen to ABC Local Radio, 6PR, or news bulletins.

During a power outage, your home phone, computer or other electronic devices connected to the NBN will not work. Include a battery powered radio in your emergency kit.

Updates will be issued every hour unless the situation changes.

END
Media Contact: DFES Media and Corporate Communications on 9395 9543



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Map 4

Department of Fire and Emergency Services WA
5m ·

🔥 A bushfire EMERGENCY WARNING is current for people near Brookton Highway, McNess Drive and Gardiner Road in parts of ASHENDON, KARRAGULLEN, LESLEY, ROLEYSTONE in the CITY OF ARMADALE.🔥

Update time: 12:00 PM, 24 February 2024.

⚠️ You are in danger and need to act immediately to survive. There is a threat to lives and homes.
⚠️ The fire started in ASHENDON.

❗ WHAT TO DO: ❗
- If the way is clear, leave now for a safer place.
- Do not wait and see, leaving at the last minute is deadly.
- Close all doors and windows and turn off evaporative coolers, but keep water running through the system if possible.
- If you cannot leave, you need to get ready to shelter in your home.
- Go to a room in your home away from the fire front and make sure you can easily escape.
- Choose a room with two exits and water such as a kitchen or laundry.
- If you are not at home, it is too dangerous to return.

--- AND ---

🔥 A bushfire WATCH AND ACT is in place for people south of Covine Road to Gardiner Road, McNess Drive to the south and Heritage Drive to the west in parts of ROLEYSTONE in the CITY OF ARMADALE. 🔥

⚠️ There is a possible threat to lives and homes as a fire is approaching in this area and conditions are changing.

❗ WHAT TO DO: ❗
- If you are not prepared or you plan to leave, leave now if the way is clear.
- If you are well prepared and plan to actively defend your home, make final preparations now.
- If you plan to stay and actively defend, do not rely on mains water pressure as it may be affected. You need to have access to an independent water supply, and start patrolling your property to put out spot fires.
- Keep doors and windows closed and turn off evaporative coolers, but keep water running through the system if possible.
- If you are not at home, do not try to return as conditions in the area could be very dangerous.

--- AND ---

🔥 A bushfire ADVICE is in place for people east of Brookton Highway, west of Heritage Drive, and south of Irymple Road in parts of KARRAGULLEN, ROLEYSTONE in the CITY OF ARMADALE 🔥

⚠️ There is no threat to lives or homes.
⚠️ There is a lot of smoke in the area.
⚠️ Although there is no immediate danger you need to be aware and keep up to date in case the situation changes.

❗ WHAT TO DO: ❗
- Stay alert and monitor your surroundings.
- Watch for signs of a bushfire, especially smoke and flames.
- Close all doors and windows, and turn off evaporative air conditioners but keep water running through the system if possible.
- Read through your bushfire survival plan.
- If you do not have a plan, decide what you will do if the situation gets worse. You can make a plan by visiting My Bushfire Plan.

- If driving:
- Be extremely careful when driving through the area.
- Turn your headlights on and drive slowly.
- Watch for emergency services personnel and follow their directions.
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🚧 ROAD CLOSURES AND CONDITIONS: 🚧
Avoid the area and be aware of fire and emergency services personnel working on site.

A number of roads have been closed, including:
- Gardiner Road
- Croyden Road
- McNess Drive
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- Holden Road

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- Wash your hands regularly.
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- Maintain physical distancing.

EXTRA INFORMATION:
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- DFES is managing the fire.

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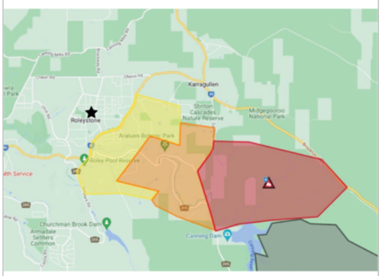

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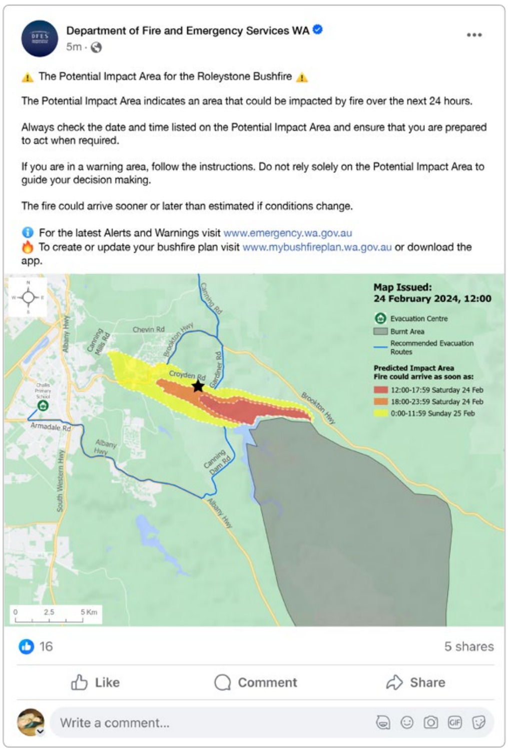
Map 5



Department of Fire and Emergency Services WA
5m ·
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0:00-11:59 Sunday 25 Feb
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Chevin Rd
Canning Mills Rd
Albany Hwy
Brookton Hwy
Croyden Rd
Gardiner Rd
Brookton Hwy
Armadale Rd
Albany Hwy
Canning Dam Rd
South Western Hwy
Albany Hwy
0
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5 Km
16
5 shares
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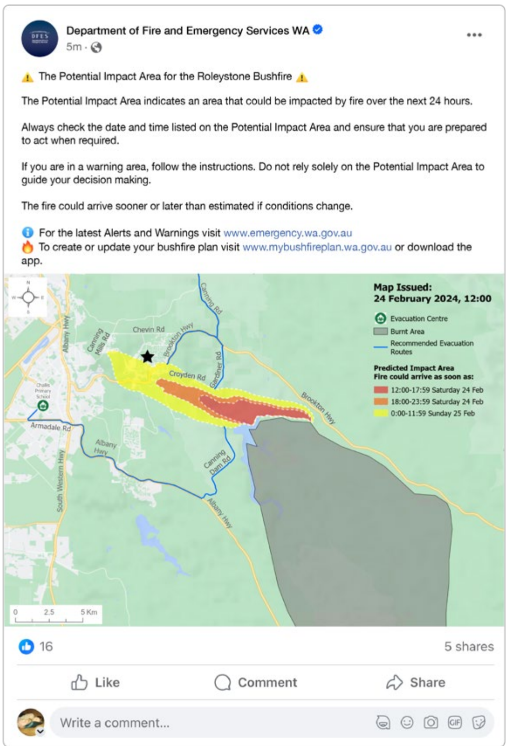
Map 6



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Albany Hwy
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16
5 shares
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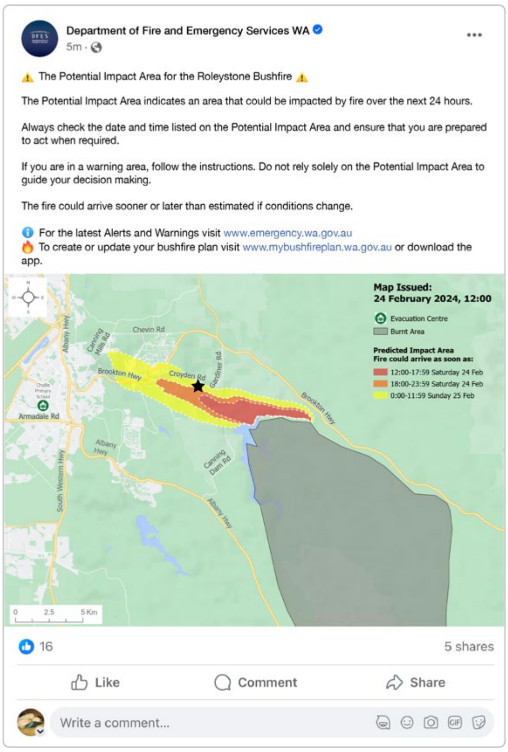
Map 7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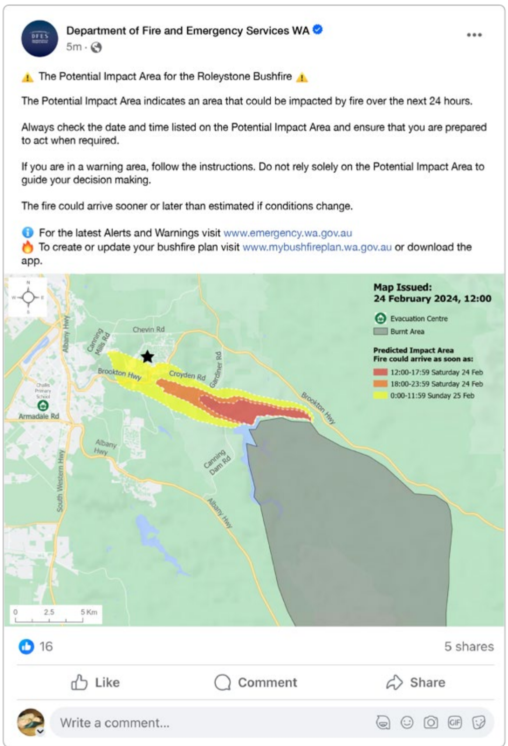
Map 8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5 shares
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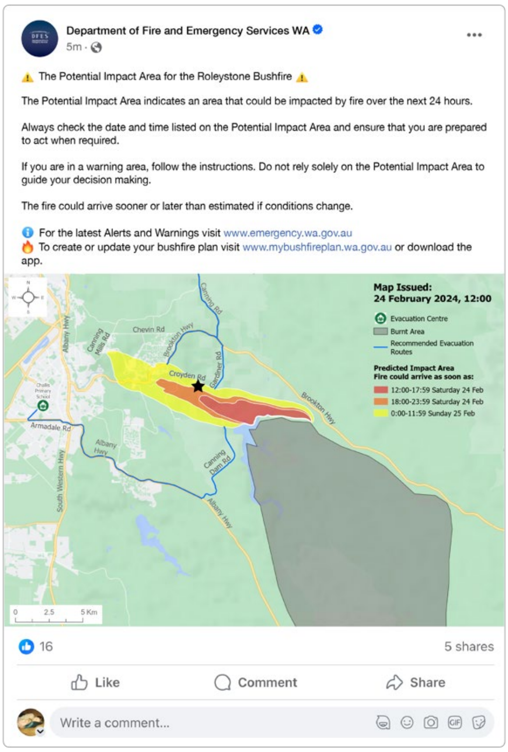
Map 9



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Armadale Rd
Albany Hwy
South Western Hwy
0 2.5 5 Km
16
5 shares
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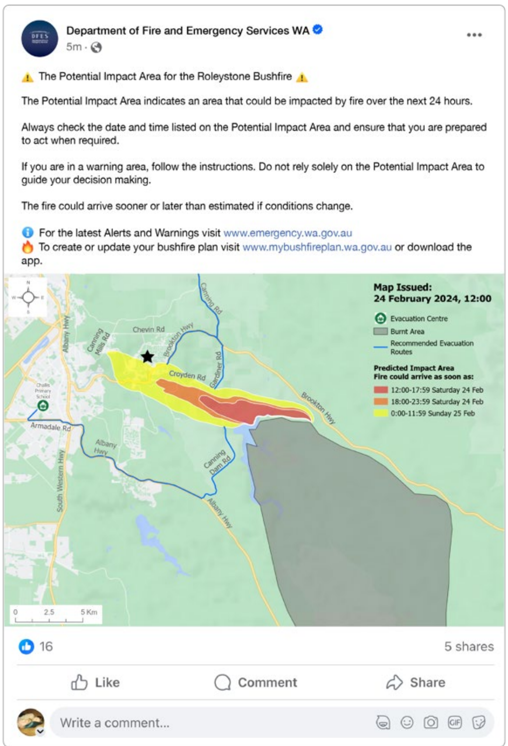
Map 10



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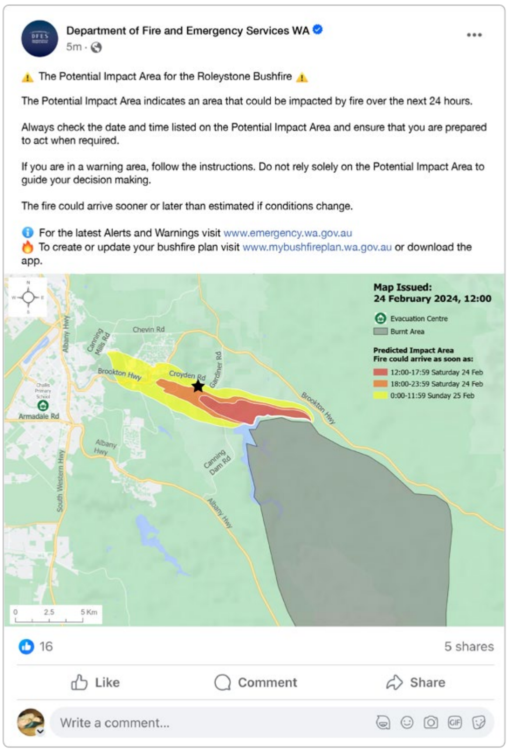
Map 11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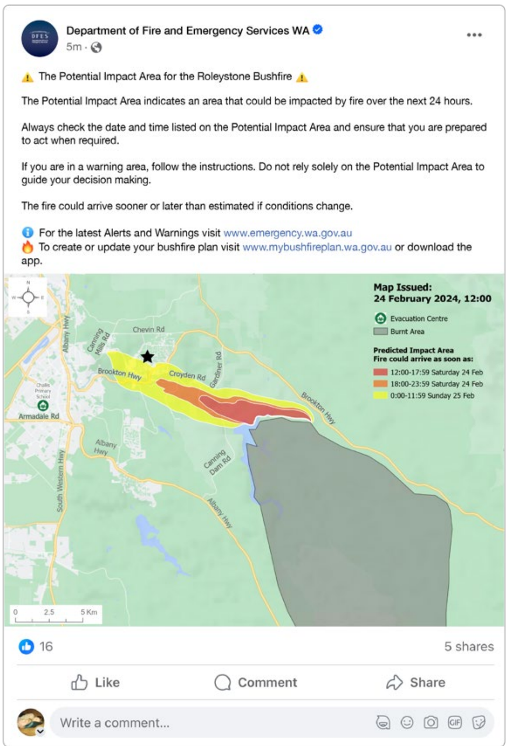
Map 12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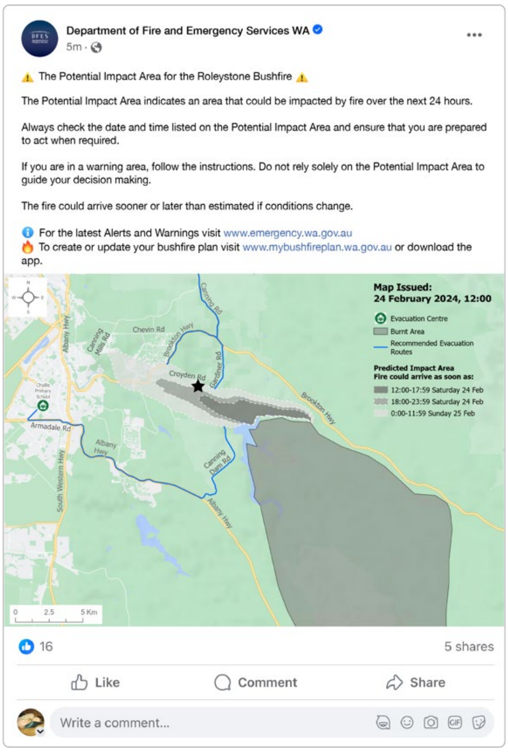
Map 13



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5 shares
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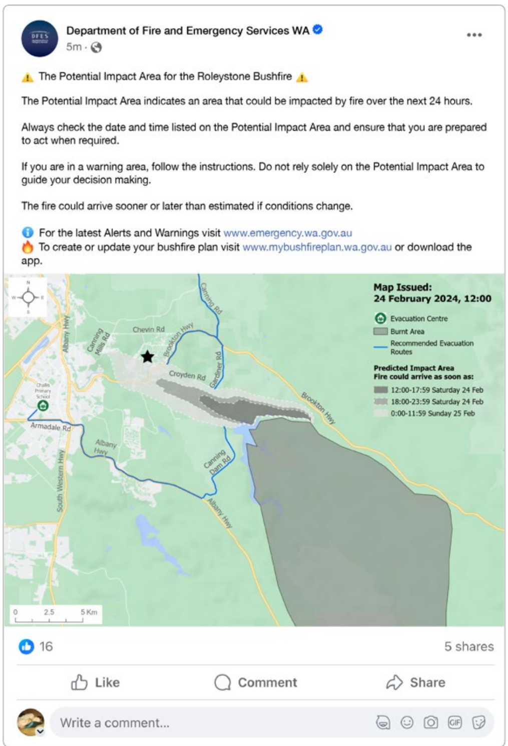
Map 14



Department of Fire and Emergency Services WA
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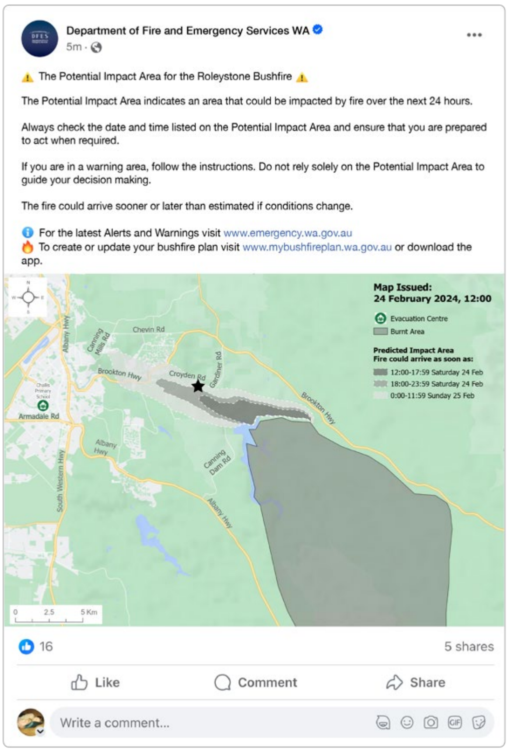
Map 15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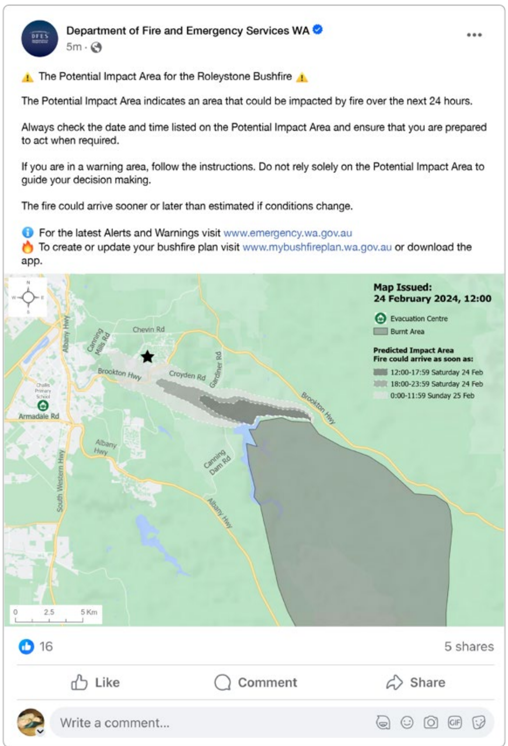
Map 16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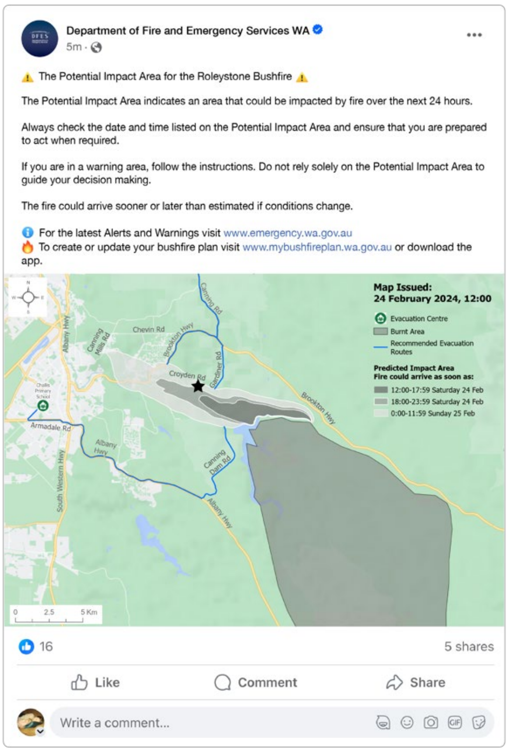
Map 17



Department of Fire and Emergency Services WA
5m ·

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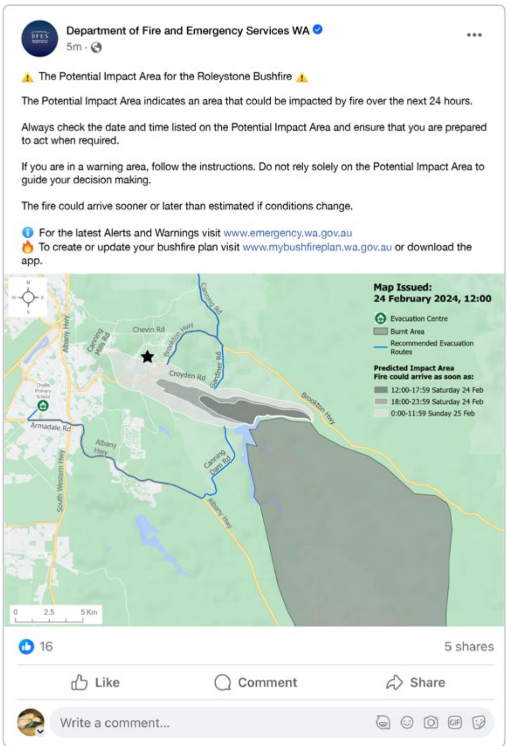
16
5 shares
Like
Comment
Share
Write a comment...

Map 18



Department of Fire and Emergency Services WA
5m ·

⚠️ The Potential Impact Area for the Roleystone Bushfire ⚠️

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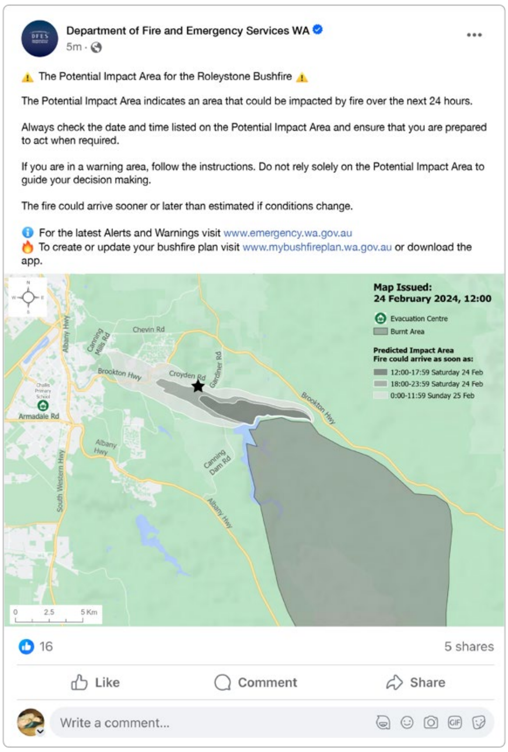
Map 19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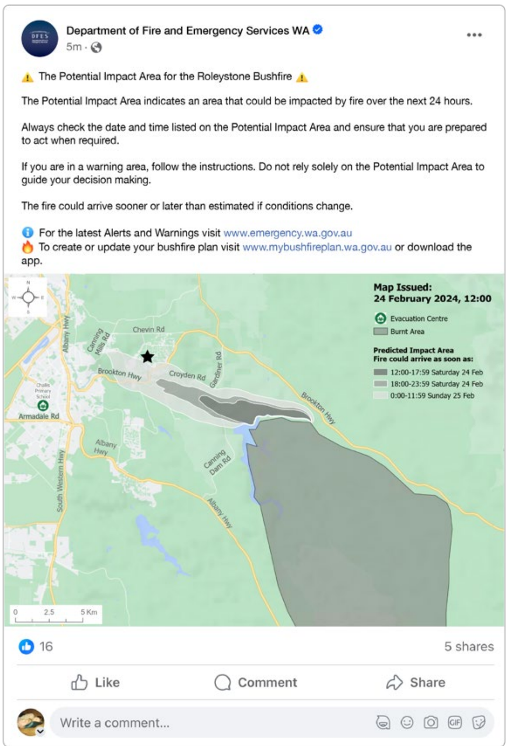
Brookton Hwy
Croyden Rd
Armadale Rd
Albany Hwy
South Western Hwy
0
2.5
5 Km
16
5 shares
Like
Comment
Share
Write a comment...

Map 20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2.5
5 Km
16
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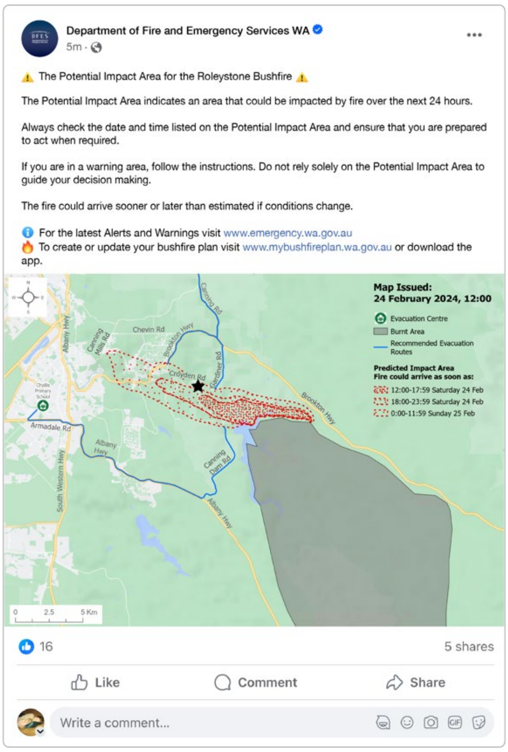
Map 21



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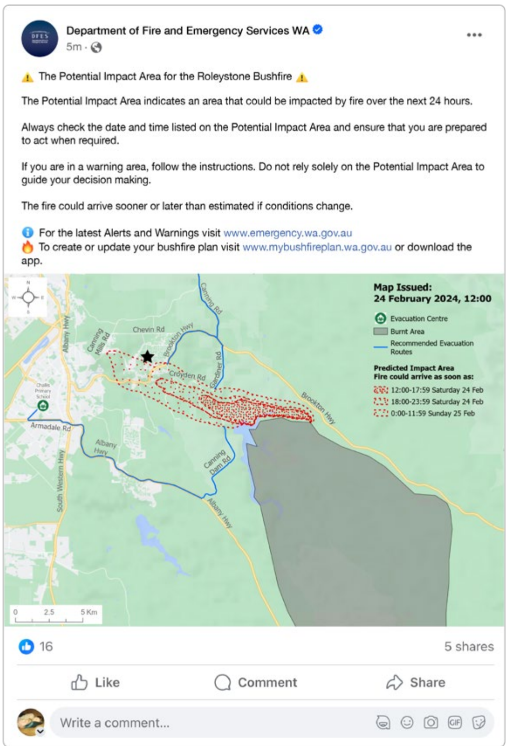
Albany Hwy
Canning Dam Rd
South Western Hwy
Albany Hwy
Brookton Hwy
0 2.5 5 Km
16
5 shares
Like
Comment
Share
Write a comment...

Map 22



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Albany Hwy
Canning Dam Rd
South Western Hwy
Albany Hwy
Brookton Hwy
0 2.5 5 Km
16
5 shares
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Share
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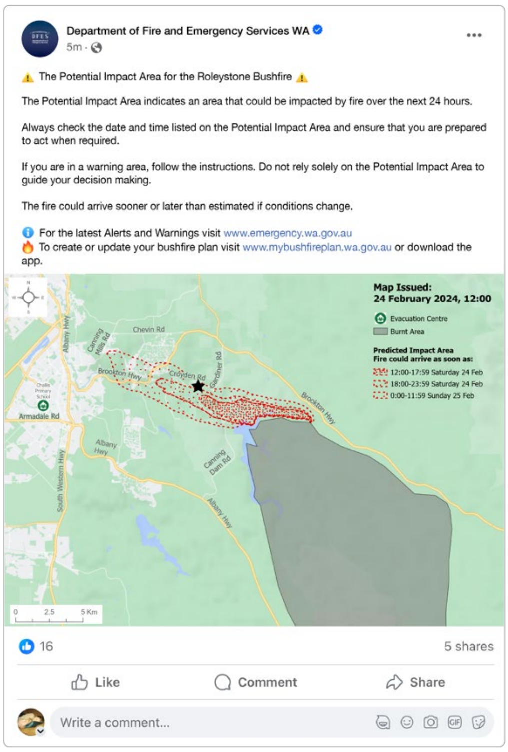
Map 23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Armadale Rd
Albany Hwy
South Western Hwy
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16
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Share
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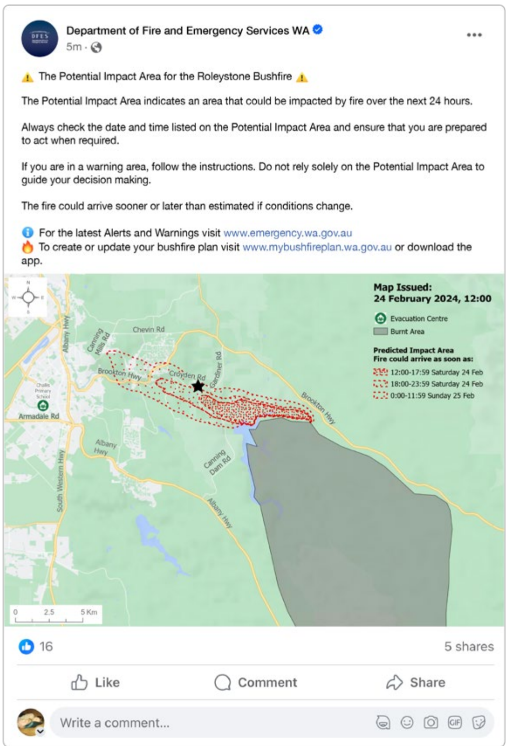
Map 24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16
5 shares
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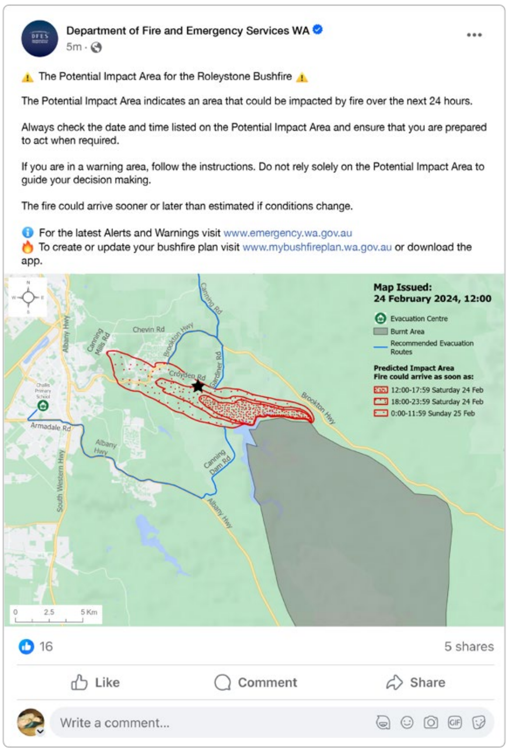
Map 25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2.5
5 Km
16
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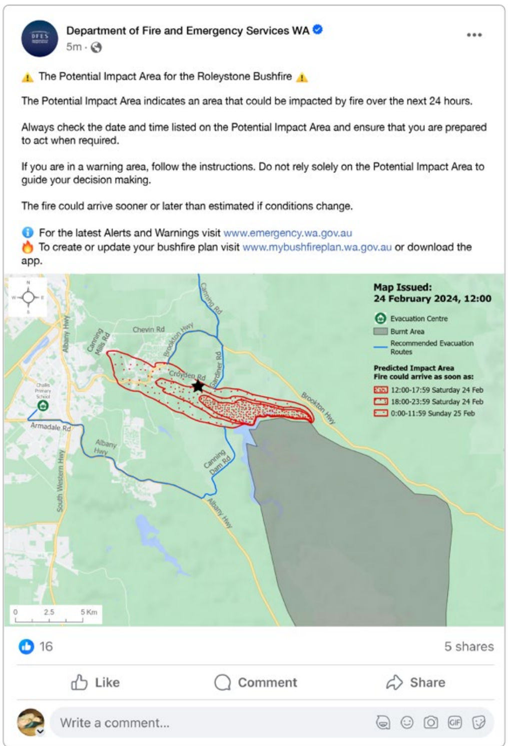
Map 26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2.5
5 Km
16
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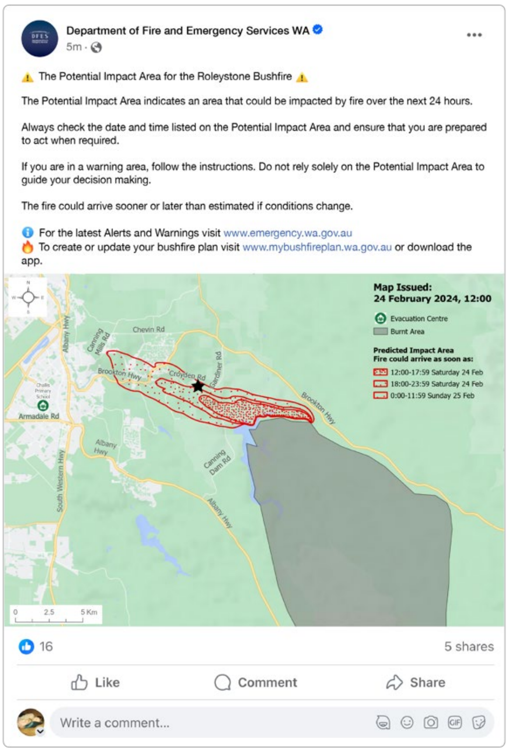
Map 27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Albany Hwy
Canning Dam Rd
South Western Hwy
0 2.5 5 Km
16
5 shares
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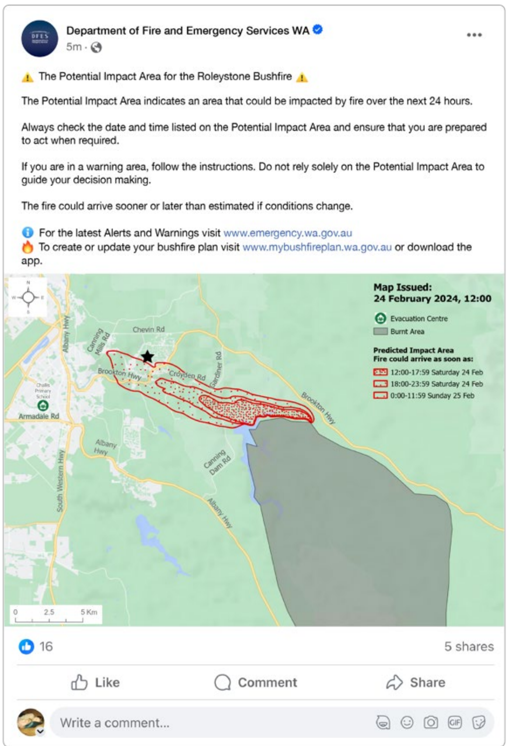
Share
Write a comment...

Map 28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Share
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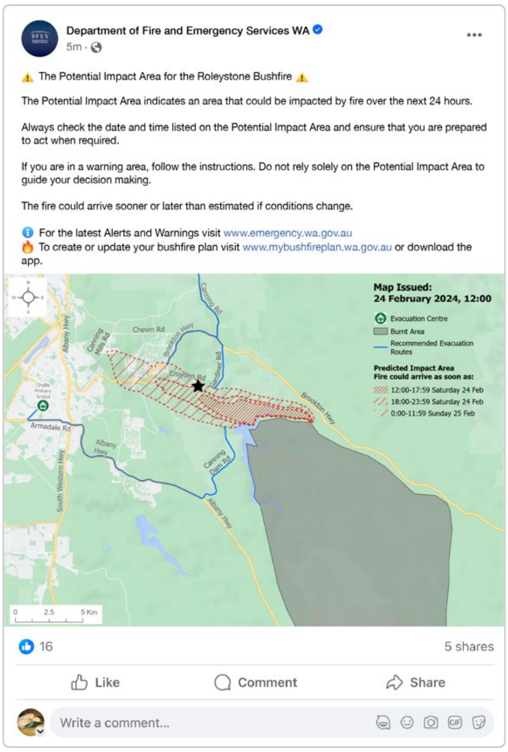
Map 29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16
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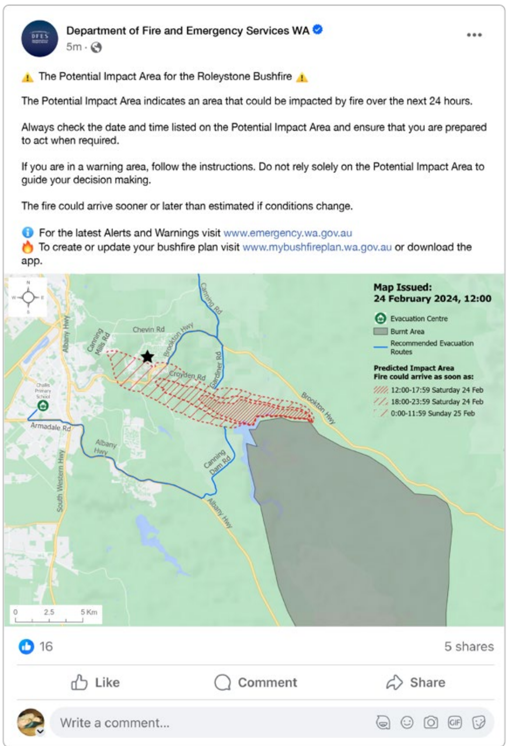
Map 30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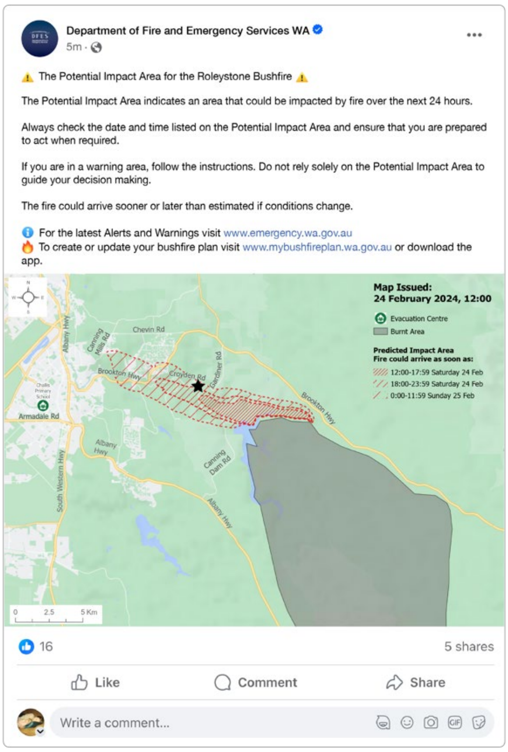
Map 31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2.5
5 Km
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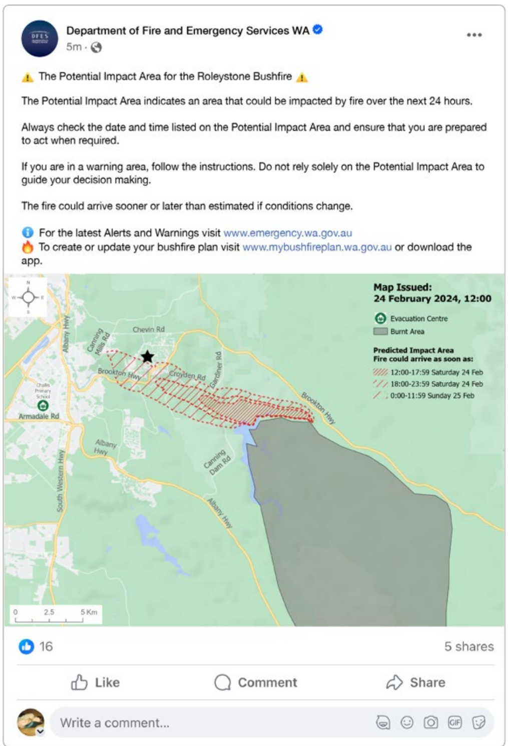
Map 32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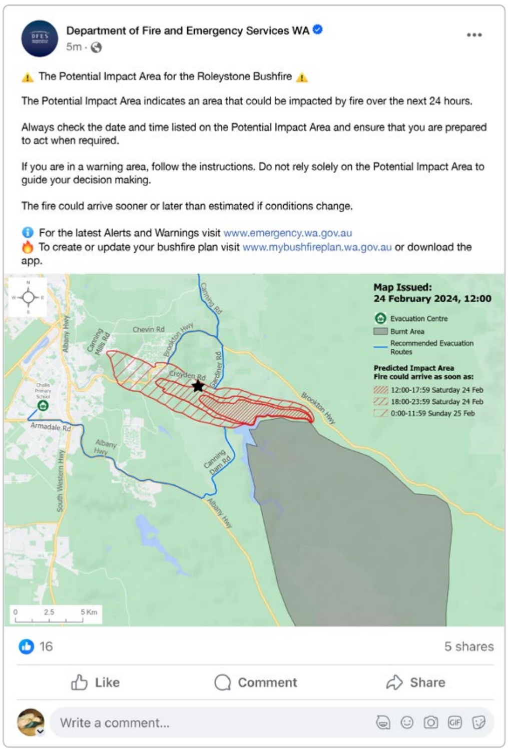
Map 33



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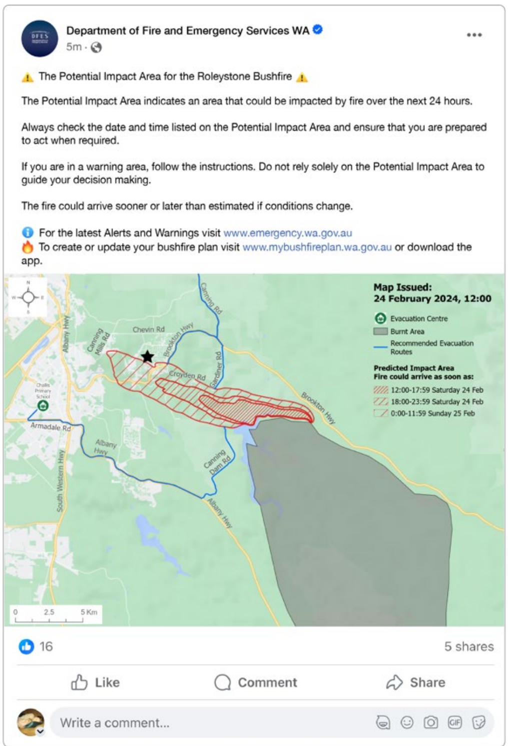
Map 34



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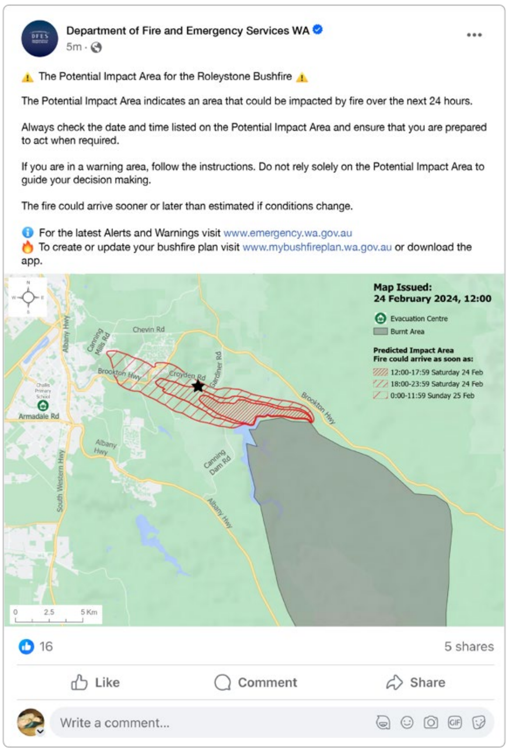
Map 35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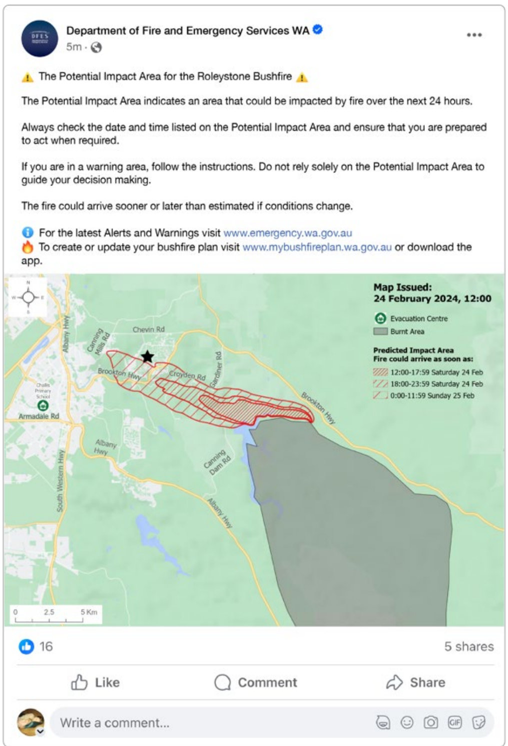
Map 36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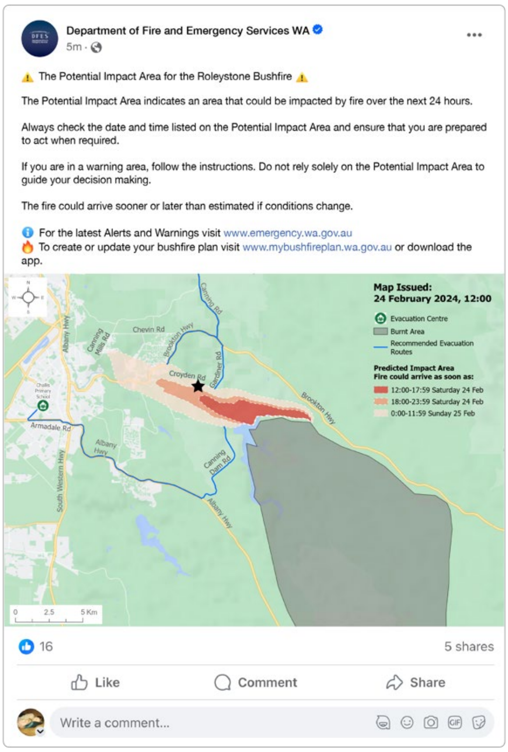
To create or update your bushfire plan visit www.mybushfireplan.wa.gov.au or download the app.
Map Issued:
24 February 2024, 12:00
Evacuation Centre
Burnt Area
Predicted Impact Area
Fire could arrive as soon as:
12:00-17:59 Saturday 24 Feb
18:00-23:59 Saturday 24 Feb
0:00-11:59 Sunday 25 Feb
Chevin Rd
Brookton Hwy
Croydon Rd
Armadale Rd
Albany Hwy
Canning Dam Rd
South Western Hwy
0 2.5 5 Km
16
5 shares
Like
Comment
Share
Write a comment...

Map 37


Department of Fire and Emergency Services WA
5m ·
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Map Issued:
24 February 2024, 12:00
Evacuation Centre
Burnt Area
Recommended Evacuation Routes
Predicted Impact Area
Fire could arrive as soon as:
12:00-17:59 Saturday 24 Feb
18:00-23:59 Saturday 24 Feb
0:00-11:59 Sunday 25 Feb
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Croyden Rd
Brookton Hwy
Albany Hwy
Armadale Rd
South Western Hwy
Canning Dam Rd
0
2.5
5 Km
16
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Share
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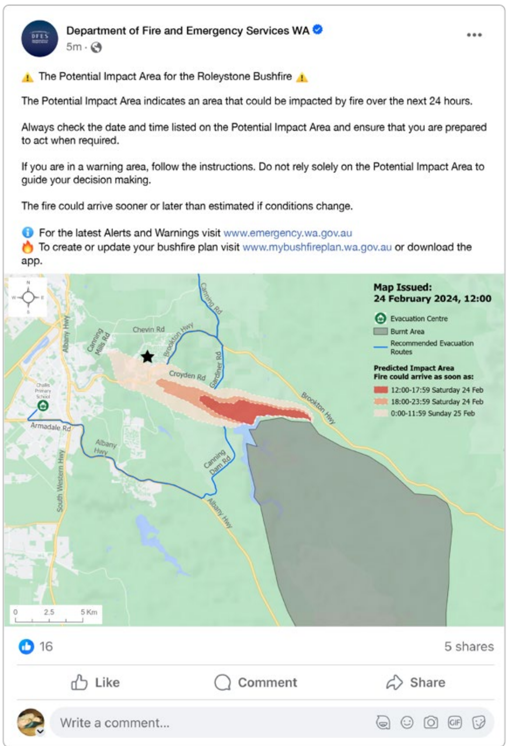
Map 38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Armadale Rd
South Western Hwy
Canning Dam Rd
0
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5 Km
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Like
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Share
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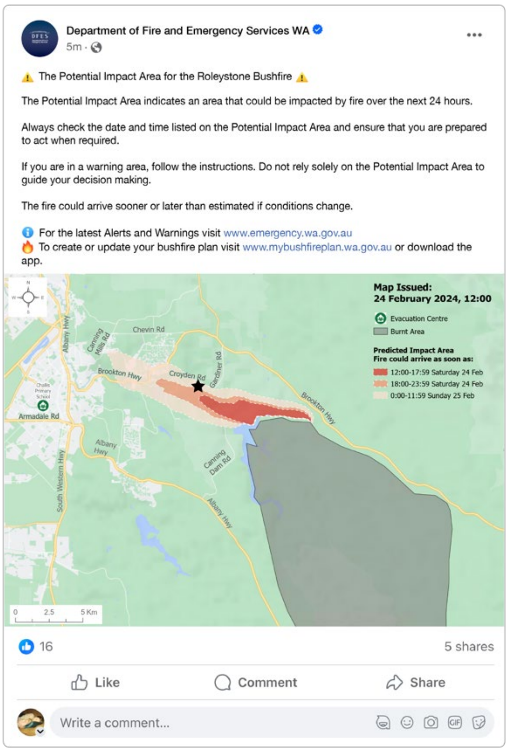
Map 39



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Gardiner Rd
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Canning Dam Rd
South Western Hwy
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2.5
5 Km
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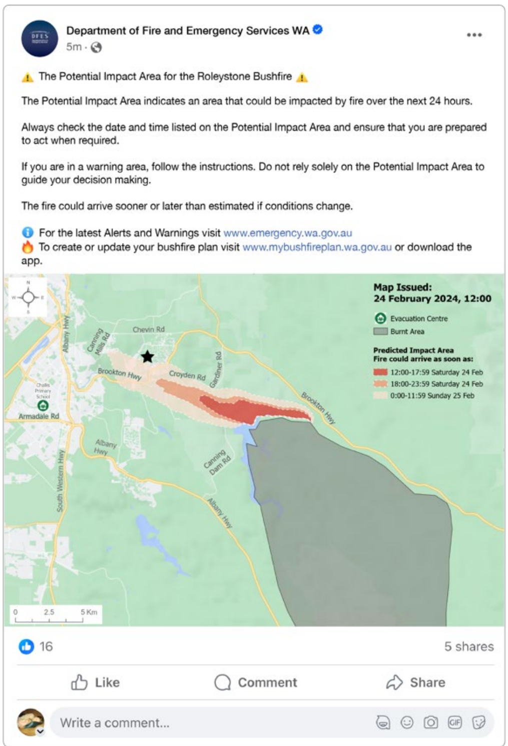
Like
Comment
Share
Write a comment...

Map 40



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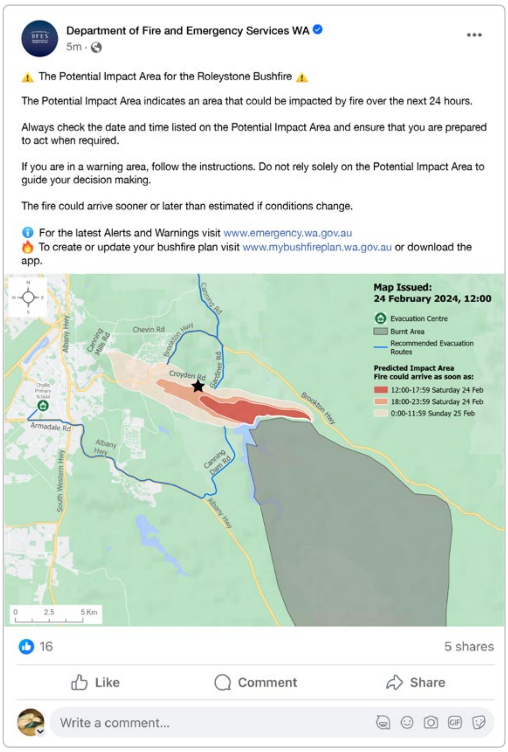
Map 41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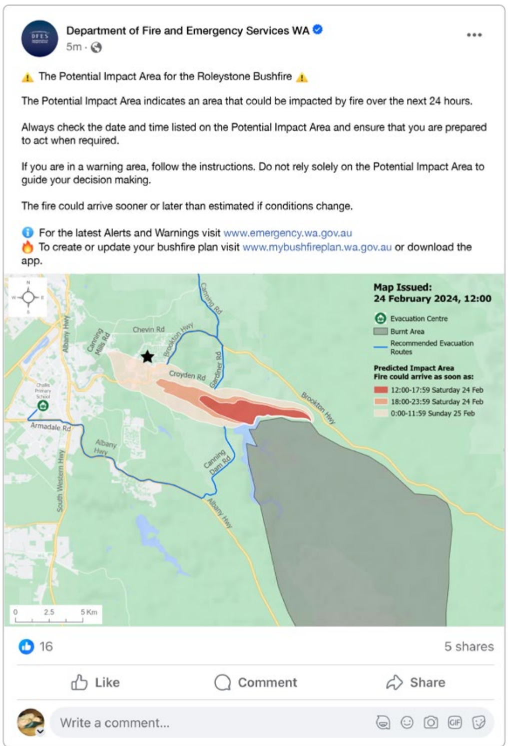
Map 42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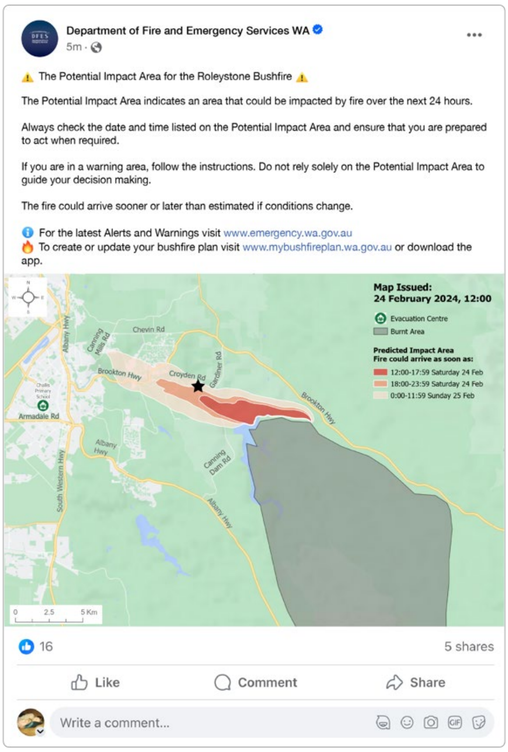
Map 43


Department of Fire and Emergency Services WA
5m ·

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16 5 shares

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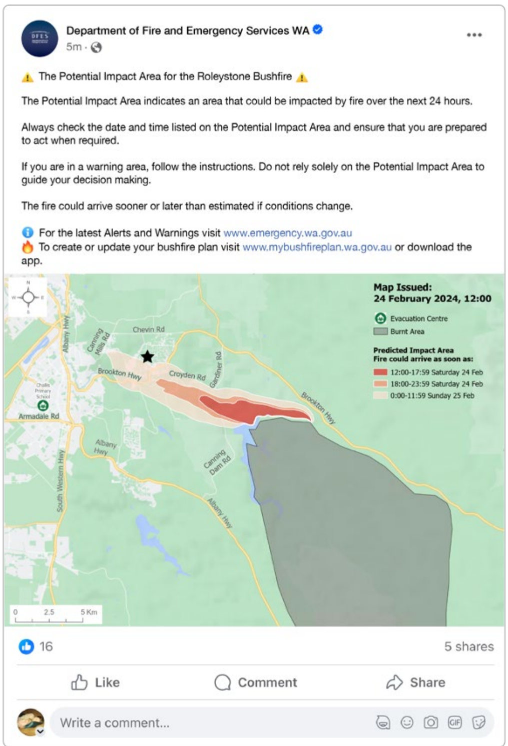
Map 44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