Research

## ABSTRACT

There is growing recognition within the Australian emergency management sector of the need to engage communities as core partners, where they are considered equals in risk-related decision-making processes that affect them (Attorney-General's Department 2013). There is, however, little guidance available to practitioners about how best to involve communities in risk reduction processes and little evidence on which to build approaches. To address these gaps, the New South Wales State Emergency Service (NSW SES) instigated a pilot program to investigate and evaluate methods to involve communities in flood emergency planning within three NSW communities. This paper outlines the pilot process, the design of programs and evaluation results.

# Community participation in emergency planning: NSW State Emergency Service case study

David Webber[1], Andrew Gissing[2], Neil Dufty[3] and Dr Deanne Bird[2]

1.  NSW State Emergency Service, Sydney, New South Wales.
2.  Risk Frontiers, Macquarie University, Wollongong, New South Wales.
3.  Molino Stewart Pty Ltd, Sydney, New South Wales.

## Introduction

Emergency planning in Australia has traditionally been inwardly focused on the roles, responsibilities and strategies of emergency management agencies (Gissing 2016). In recent years, however, there has been greater recognition of the need to involve the community in emergency planning (Comrie 2011, Paton & McClure 2013, Pearce 2003), where community members are considered equal partners in decision-making relating to mitigation, preparation, response and recovery.

Traditional emergency management approaches have recognised citizens as spectators rather than active participants in decision-making (Wehn *et al.* 2015). This is reflected in the practice of many emergency service community engagement approaches that have employed multiple one-way communication tools to inform and educate the public about the risks they face (Attorney-General's Department 2010).

Many top-down or one-way approaches to communication assume the community to be a uniform group of individuals with the same values and needs (O'Neill & Wales 2004). This view is simplistic and the process of effectively informing the public is far more complex (Arnstein 1969). It is critical that the design and implementation of programs for communities be based on a good knowledge of the community (Phillips *et al.* 2011). Without such knowledge, programs may fail to take into account the public's experience, knowledge, interests, concerns, fears, values, priorities and preferences, and ultimately fail (Bier 2001, Bird *et al.* 2009, Bird *et al.* 2010, Haynes *et al.* 2007, Haynes *et al.* 2008). When communities are not involved, they may also question decisions that have been made during response operations (Pearce 2003).

In order to gain a greater understanding of the community, various participatory-based methodologies may be applied including scenario planning, citizen science (Goodchild 2007), future search, citizen's juries (Brown 2006), crowdsourcing (Bird *et al.* 2012), focus groups, drills (Wood & Gilk 2013) and participatory mapping. However, while there is a growing number of case studies using participatory approaches in emergency management, community participation in planning and decision-making has not been well evaluated. There are often difficulties in successfully evaluating the effectiveness of engagement programs due to the length of time it takes for behaviour change to occur and that true preparedness benefits cannot

be measured until an emergency or disaster occurs. When evaluated, however, positive benefits have been identified (Benson *et al.* 2016, Daellenbach *et al.* 2015, Risk Frontiers 2016, Redshaw *et al.* 2016, Jamshidi *et al.* 2016, Cottrell 2005). Benefits include stronger local relationships, enhanced social capital and improved understanding of risks (Haynes & Tanner 2015, Daellenbach *et al.* 2015). Positive benefits of participatory-based approaches have also been identified in the evaluation of public health and environmental management programs (Bath & Wakerman 2015, Reed 2008, Curtis & Lockwood 2000, Charnley & Engelbert 2005, Luyet *et al.* 2012). Nevertheless, it must be acknowledged that public participation is not without risk. Processes can be time consuming and expensive and they can generate stakeholder frustration, identify new conflicts or fail to empower a broad cross section of the community (Luyet *et al.* 2012).

The *National Strategy for Disaster Resilience Community Engagement Framework* places strong emphasis on the need to work with communities, stating that engagement means:

> '*working in partnership with the community, building on existing networks, resources and strengths, identifying and supporting the development of community leaders and empowering the community to exercise choice and take responsibility*' (Attorney-General's Department 2013, p. 3).

The framework acknowledges that community engagement must be central to the business of the emergency management sector, being fully embedded within its culture, vision, policies, procedures and practice (Attorney-General's Department 2013).

Positively, there is a growing policy shift both within Australia and abroad to move towards participatory-based approaches. For example, the 100 Resilient Cities Challenge identifies shared ownership of decision-making as an integral attribute of a city that can withstand, respond to and adapt more readily to shocks and stresses (100 Resilient Cities 2016). This same sentiment lies behind the realisation by the U.S. Federal Emergency Management Agency (FEMA) of the need for a community-centric approach (FEMA 2015). The *Sendai Framework for Disaster Risk Reduction 2015–2030* also advocates a 'shared responsibility' model (UNISDR 2015, p. 6), where sharing refers to community involvement in disaster risk reduction.

There are numerous examples in Australia, including those led by the NSW SES, of the application of community participatory-based approaches. Some of these include NSW SES involvement in townships of Eugowra (Gissing *et al.* 2007), Uranquinty (Leckie & Richards 2015) and Uki community-based planning projects including the Blue Mountains Heads Up For Fire Project (Redshaw *et al.* 2016), Emergency Management Victoria's community emergency management model (Emergency Management Victoria 2016), ACT and NSW Fire and Rescue Community Fire Units (Risk Frontiers 2016, Lowe *et al.* 2008), initiatives by local governments

such as Melton and Wyndham councils' Emergency Ready Communities programs (Mason *et al.* 2016) and faith-based communities developing plans such as the Jewish Emergency Management Plan in Victoria (JEMPvic Community Support 2016).

Reed (2008) emphasises the need to abandon a toolkit approach in favour of placing emphasis on participation as a process, which is underpinned by an appropriate philosophy and considers on a case-by-case basis how best to engage relevant stakeholders. Irvin and Stansbury (2004) showed that if community members are misled into thinking their decisions will be implemented but in practice they are ignored then resentment may result. This paper outlines the development and results of a pilot program led by NSW SES to pilot and evaluate methods to enhance the involvement of communities in emergency planning.

## Methodology

Two consulting groups, Risk Frontiers and Molino Stewart Pty Ltd, were engaged to assist NSW SES to undertake the project. The objective of the project was to design and test an evidence-based framework for the application of engagement processes that enable community participation in emergency planning. A range of localised strategies to engage communities in NSW SES-led emergency planning are defined.

A review of the international literature and a series of interviews with subject matter experts were undertaken to develop a series of evidenced-based principles to base the design of engagement programs upon. Based on the design principles, consultation with local community stakeholders, social analysis and an understanding of local flood risks, a series of engagement activities were designed for piloting across three different communities – Narrabri (northwest NSW), Burringbar/Mooball (north coast NSW) and Chipping Norton (southwest Sydney) (see Figure 1). These locations were chosen by NSW SES based upon their flood-prone nature, buy-in by local volunteers and to involve a variety of coastal, regional and metropolitan communities.

Key characteristics of these communities are:

- Narrabri has a population of 6000 people and has significant riverine flood risk affecting large parts of the town. The most recent major floods occurred in 1998 and 2000.
- Burringbar and Mooball are small adjacent towns with a combined population of approximately 1000 people. Flash flooding can affect properties within the towns and can result in the communities becoming isolated with less than six hours lead time.
- Chipping Norton is located in the Georges River catchment near Liverpool, Sydney. Flooding from the Georges River can affect large parts of the area. The most recent severe floods prior to the pilot were in 1986 and 1988 (Bewsher Consulting 2004). Minor flooding within the Chipping Norton area has also occurred since the pilot in June 2016.
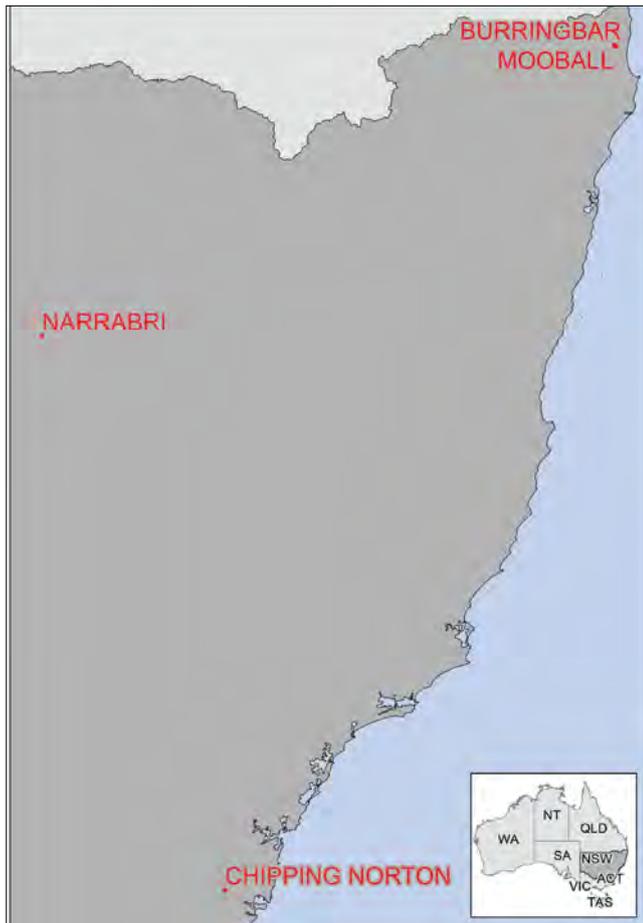
Figure 1: Location of pilot communities in NSW.

Reference groups consisting of community members, NSW SES members, local councils and other emergency services were established across the three pilot communities to assist in understanding the community and gaining local perspectives of the best methods for engagement. Due to time constraints members were recruited by direct invitation from the NSW SES after initial consultations with individual community members and a high-level social network analysis. Community members recruited were generally regarded as community leaders representing specific community networks. The groups were established with community participation in Narrabri and Burringbar/Mooball. Despite attempts no community representatives (i.e. non-NSW SES members) were recruited in the Chipping Norton area. Reference group meetings lasted for around two hours and were led by an independent facilitator. One meeting was held in each pilot community with follow-up conversations occurring with specific members on an as-needed basis.

Specific objectives were set for each pilot community. These included, among others, improving evacuation plans (Narrabri), developing flood plans (Burringbar/Mooball) and improving flood awareness and acknowledgement of the need for planning (Narrabri, Chipping Norton, Burringbar/Mooball).

Pilot engagement activities of workshops and online exercises (Narrabri and Chipping Norton only), were conducted across the three pilot areas from 27 April 2016 to 8 May 2016. The workshops were attended by

community members and supported by NSW SES members. The workshop activities, tailored to each community, included small group discussions to consider warning systems and evacuation planning, social network mapping exercises, presentation of previous community-led initiatives, participatory mapping and group discussion of previous flood experiences.

Online engagement using Facebook and the NSW SES Have Your Say website was largely focused on motivating discussion by posing a series of questions related to emergency planning including:

- How can people and local communities better prepare?
- What is the best way to receive flood warnings?
- If you were told to evacuate where would you go and how would you get there?
- How can you and the community get back to normal after a flood?

Community attendance registered in the workshops were:

- Narrabri – 15 people
- Burringbar/Mooball – 16 people
- Chipping Norton – 5 people.

Across the groups, the age of participants varied from under 20 years old to older than 70 with representation across all adult age groups. Some 59 per cent of participants were male and 36 per cent female. Most described themselves as either a resident of a flood-prone community or a community or service group member. In total, 85 per cent of participants had previously experienced a flood.

In addition to these activities, a series of interviews was undertaken with a variety of NSW SES community engagement staff and managers to assess the capacity and culture of NSW SES to support community participation in emergency planning.

The evaluation of the project was summative in nature. It focused on the process involved and the outcomes of the project, and was undertaken in a structured manner. Primarily, success indicators were measured based on perceived achievement of the objectives stated in the design of each of the pilots.

Specific methods undertaken to evaluate the pilot project included:

- Qualitative structured interviews with key stakeholders involved in the project. This included NSW SES, local government representatives and an independent facilitator. Interviews explored the key successes and challenges of the pilot, identified future opportunities and evaluated the achievements of the activities against the program objectives.
- Surveys to collect quantitative data to ascertain possible changes as a result of pilot activities. Participants completed a short survey either online or via hardcopy survey forms before and after the engagement activities in each of the pilot areas.
- Analysis of social media posts and associated analytics to ascertain levels of community engagement with questions posed by NSW SES.

## Pilot results

The pilots were well supported by the NSW SES members involved. Although the number of community members directly engaged through the process may be viewed as small, the process engaged with leaders who have influence within their communities. It was identified via the post-activity survey that these participants already had (57 per cent), or intended to, (83 per cent) spread the word within their communities.

Significant benefits were identified within the Narrabri and Mooball/Burringbar pilots including:

- improved relationships between NSW SES and the community
- a wider appreciation by the community of flood risks and emergency management problems
- improved awareness of NSW SES roles and of the NSW SES local Flood Plan
- improved awareness by community members of their roles
- improved engagement capacity of NSW SES volunteers and staff, having gained awareness and experience of implementing methods involving community participation.

In the regional pilots there appeared to be enough momentum generated to see relationships continue to develop and for local community initiatives to be built. NSW SES have continued to build on these relationships after the completion of the pilots.

Though not as successful due to issues relating to the limited time available and the inability to gain traction with the local community, the Chipping Norton pilot still provided benefits:

- Improved knowledge of NSW SES volunteers and staff about local flood risks and community engagement techniques.
- Confirmation of the challenges involved with engaging with metropolitan communities, where community networks are diffuse, and not necessarily defined by a geographical area.

Engagement through workshops in Narrabri appeared to be more successful than online engagement. In Chipping Norton both the opportunity to engage face-to-face and online did not generate significant community interest.

Community reference groups consisting of community leaders to assist in the design of engagement approaches were found to be beneficial, though it is important that members of these groups understand their roles and the purpose of the group.

Community members were mostly positive about their involvement with all suggesting they would encourage others to take part in emergency planning activities. Participants identified advantages of the process as an opportunity to share their experiences and to engage with authorities about flood issues. The disadvantages identified related to the lack of time to explore issues in full and the opportunity cost of their attendance.

Key challenges that were identified through the pilot process:

- The need to allocate time based on consultation with the community, and to not dictate timelines to the community. Time was a critical limitation across the three pilot areas, resulting in insufficient time to engage with communities to the extent desired.
- The need for an existing awareness of flood risks. This was illustrated in the community of Burringbar where community leaders did not believe there was a flood risk and subsequently did not engage in the pilot. This points to the need for participatory-based approaches to be supported by engagement methods focused on raising the critical flood awareness of communities.
- A skilled and independent facilitator is highly valuable as existing conflicts or issues can make it difficult to initially engage with communities.
- Engagement with other agencies is important to gain support for initiatives. This can take time and a range of engagement methods to achieve support.

Results of interviews to assess the capacity of the NSW SES to support participatory approaches underlined the importance of the organisation's culture in the approach. Actions identified to build a supportive culture include:

- achieving buy-in from senior leaders
- having a clear strategy and an evidence base to support engagement method
- continued evaluations to measure success and identify learnings
- building organisational community engagement capacity.

## Discussion

Based on a review of the international literature, interviews with subject-matter experts and the results of the pilots, the following principles were developed to inform the design of future participatory-based programs.

**Understand the community** – the implementation of community-based planning should be based on a thorough understanding of the full diversity of the at-risk population in terms of needs, vulnerabilities and resiliencies (Daellenbach *et al.* 2015, Phillips *et al.* 2011). Stakeholders include the community, local government and non-government organisations, businesses and other emergency services need to be well understood and represented within engagement processes.

**Engage early and often** - community involvement should be considered from the beginning and throughout the engagement process (Reed 2008, Luyet *et al.* 2012).

**Allow sufficient time** – timeframes should be identified with the community and not dictated to them (Luyet *et al.* 2012).

**Be flexible and tailor approaches** – participation methods should be tailored to the context (Paton & McClure 2013, Reed 2008). There will not be one single approach that

works across all contexts or every time, the process needs to be flexible (Daellenbach *et al.* 2015). A flexible approach is required to account for the complexities and the various commitments of community members, including time (Young 1998).

**Agree on objectives from the outset** – objectives need to be agreed among participants, especially the community from the beginning (Reed 2008).

**Acknowledge the community as equals** – community members must be empowered to participate and be acknowledged as equal partners where their input is recognised as an important and equal contribution to decision-making. Equality must also exist between participating community members (Reed 2008).

**Engage in two-way dialogue** – community participation should be based on mutual respect and trust and involve two-way deliberative dialogue dealing with the public value of propositions. This results in decision-making that is negotiated between all relevant stakeholders in a transparent manner. Community expectations need to be managed. Where community members will not be able to influence a decision then participation is not appropriate and communities should be made aware of why (Reed 2008).

**Use skilled facilitation expertise** – facilitation perceived as independent, open to differing views, approachable and across technical details is essential to achieving an effective outcome (Reed 2008, Attorney-General's Department 2010, Luyet *et al.* 2012).

**Use expert and local knowledge** – institutional, scientific and local hazard risk knowledge, including that provided by emergency service members and local communities, must be used. Two-way learning between participants should be encouraged (Reed 2008, Young 1998). There may be a need to raise critical hazard awareness prior to implementing participatory-based approaches.

**Use and build social capital** – strong social capital including local relationships and local capacity is as a critical enabler. Community involvement in planning should be designed to build and support social capital (Dufty 2010).

**Evaluate programs** – a process of frequently evaluating and learning is essential to ensure the improvement of future programs (Australian Government 2010, Charnley & Engelbert 2005, Dufty 2010). Communities should be involved in the evaluation process and evaluation design should be considered from the outset. Learnings should be incorporated into future practice (Charnley & Engelbert 2005).

**Foster a culture of community participation** – an organisation's culture and leadership must champion the involvement of community members in decision-making throughout the disaster management cycle (Reed 2008, Attorney-General's Department 2013).

## Conclusion

The evidence obtained from the pilots and associated research shows there are significant benefits to adopting participatory-based approaches to emergency planning and in building community resilience. Though only small numbers of people were involved in the pilots, engagement occurred with community leaders, and there is evidence that these people have, or intend to have, discussions about the activities within their networks.

The adoption of participatory-based approaches to engage with communities is encouraged throughout all phases of the disaster management cycle. However, the approach should not be seen as a silver bullet for generating behaviour change or building resilience. To be successful approaches need to be combined with other methods of community engagement and have the capacity to experiment within individual communities to ascertain the most effective approach. There is not a standard one-size-fits-all approach to involving the community, however, a series of evidence-based principles have been provided to guide the development, implementation and evaluation of participatory-based approaches to emergency planning. Fixed organisational-based objectives should also be avoided, as ultimately, these should be negotiated with communities so as to reflect their concerns and values.

To be successful the culture of emergency management agencies must be considered. Without a supportive culture a successful uptake of participatory-based approaches is likely to be unsuccessful. The emergency management sector must continue to build on its rhetoric regarding embracing communities and adopt a true community-centric approach to emergency management, recognising community engagement as equal to emergency response functions, and that the community is an equal and active participant in emergency management. Not only will the emergency management sector's approach need to change before events, its engagement with the community will need to become more open and foster community trust across all other elements of the disaster management cycle.

Further work is required to test the effectiveness of the design principles in metropolitan communities, possibly using a social, faith-based, cultural or business network engagement approach rather than one defined by a geographical area.

# References

100 Resilient Cities 2016, *Defining Urban Resilience. At:* **www.100resilientcities.org** *[14 September 2016].*

Arnstein SR 1969, *A Ladder Of Citizen Participation. Journal of the American Institute of Planners, vol. 35, pp. 216–224.*

Attorney-General's Department 2013, *National Strategy for Disaster Resilience: Community Engagement Framework. At: www.ag.gov.au/EmergencyManagement/Documents/ NationalStrategyforDisasterResilience.PDF.*

Attorney-General's Department 2010, *Guidelines for the Development of Community Education, Awareness and Engagement Programs. At: www.aidr.org.au/media/1475/manual-45-guidelines- for-the-development-of-communication-education-awareness- and-engagement-programs.pdf.*

Bath J & Wakerman J 2015, *Impact of community participation in primary health care: what is the evidence? Australian Journal of Primary Health, vol. 21, pp. 2–8.*

Benson D, Lorenzoni I & Cook H 2016, *Evaluating social learning in England flood risk management: An 'individual-community interaction'perspective. Environmental Science and Policy, vol. 55, pp. 326–334.*

Bewsher Consulting 2004, *Georges River Floodplain Risk Management Study and Plan. Liverpool.*

Bier VM 2001, *On the state of the art: risk communication to the public. Reliability engineering & system safety, vol. 71, pp. 39–150.*

Bird D, Ling M & Haynes K 2012, *Flooding Facebook-the use of social media during the Queensland and Victorian floods. Australian Journal of Emergency Management, vol. 27, no. 2, pp. 27–33. At: https://ajem.infoservices.com.au/items/AJEM-27-01-09.*

Bird DK, Gísladottir G & Dominey-Howes D 2010, *Volcanic risk and tourism in southern Iceland: Implications for hazard, risk and emergency response education and training. Journal of Volcanology and Geothermal Research, vol. 189, pp. 33–48.*

Bird DK, Gísladóttir G & Dominey-Howes D 2009, *Resident perception of volcanic hazards and evacuation procedures. Natural Hazards and Earth System Science, vol. 9, pp. 251–266.*

Brown MB 2006, *Survey article: citizen panels and the concept of representation. Journal of Political Philosophy, vol. 14, pp. 203–225.*

Charnley S & Engelbert B 2005, *Evaluating public participation in environmental decision-making: EPA's superfund community involvement program. Journal of Environmental Management, vol. 77, pp. 165–182.*

Comrie N 2011, *Review of the 2010–11 Flood Warnings and Response. In: State Government Victoria (ed.). Melbourne.*

Cottrell A 2005, *Sometimes it is a big ask, but sometimes it's a big outcome: community participation in flood mitigation. Australian Journal of Emergency Management, vol. 20, no. 3, pp. 27–32. At: https://ajem.infoservices.com.au/items/AJEM-20-03-06.*

Curtis A, Lockwood, M 2000, *Landcare and catchment management in Australia: lessons for state-sponsored community participation. Society and Natural Resources, vol. 13, pp. 61–73.*

Daellenbach K, Waugh DW & Smith K 2015, *Community Response Planning. Victoria University of Wellington. At: www.massey. ac.nz/massey/fms/Colleges/College%20of%20Humanities%20 and%20Social%20Sciences/Psychology/Disasters/ICoE- CR/Publications/CRP_Final_Report_to_WREMO_July_2015. pdf?FFD5B325C49D7468145D63750F3486F0.*

Dufty N 2010, *A new approach to Community Flood Education. At: www.academia.edu/14315357/A_New_Approach_to_Community_ Flood_Education [1 March 2016].*

Emergency Management Victoria 2016, *Community Based Emergency Management – Overview. At: www.emv.vic.gov.au/our- work/current-projects/community-based-emergency-management/ [5 September 2016].*

FEMA 2015, *Whole Community 2015. At: www.fema.gov/whole- community [22 October 2015].*

Gissing A 2016, *Planning for Catastrophic Disaster in Australia. Asia Pacific Fire Magazine, April 2016.*

Gissing A, Morgan M & Ronan C 2007, *Planning for the inevitable – emergency planning for floods in NSW. Floodplain Management Authorities Conference. Gunnedah.*

Goodchild MF 2007, *Citizens as sensors: the world of volunteered geography. GeoJournal, vol. 69, pp. 211–221.*

Haynes K, Barclay J & Pidgeon N 2007, *Volcanic hazard communication using maps: an evaluation of their effectiveness. Bulletin of Volcanology, vol. 70, pp. 123-138.*

Haynes K, Barclay J & Pidgeon N 2008, *Whose reality counts? Factors affecting the perception of volcanic risk. Journal of Volcanology and Geothermal Research, vol. 172, pp. 259-272.*

Haynes K & Tanner TM 2015, *Empowering young people and strengthening resilience: Youth-centred participatory video as a tool for climate change adaptation and disaster risk reduction. Children's Geographies, vol. 13, pp. 357-371.*

Irvin RA & Stansbury J 2004, *Citizen participation in decision making: Is it worth the effort? Public Administration Review, vol. 64, pp. 55-65.*

Jamshidi E, Majdzadeh R, Namin MS, Ardalan A, Majdzadeh B & Seydali E 2016, *Effectiveness of community participation in earthquake preparedness: a community-based participatory intervention study of Tehran. Disaster Medicine and Public Health Preparedness, vol. 10, pp. 211-218.*

JEMPvic Community Support 2016, *Jewish Emergency Management Plan. At: jemp.org.au [1 March 2016].*

Leckie I & Richards A 2015, *Working from within: Uranquinty's community-led and disaster simulation. Australian Journal of Emergency Management, vol. 30, no. 3, pp. 69-70. At: https://ajem.infoservices.com.au/items/AJEM-30-03-19.*

Lowe T, Haynes K & Byrne G 2008, *Resilience at the urban interface. Community Bushfire Safety. Collingwood, Victoria: CSIRO, pp. 21-34.*

Luyet V, Schlaepfer R, Parlange MB & Buttler A 2012, *A framework to implement Stakeholder participation in environmental projects. Journal of Environmental Management, vol. 111, pp. 213-219.*

Mason A, Crofts E, Steenkamp M & Ramsey I 2016, *Developing 'Emergency Ready Communities': a tale of two Victorian councils, Australian Journal of Emergency Management, vol. 31, no. 3, pp. 27-32. At: https://ajem.infoservices.com.au/items/AJEM-31-03-13.*

O'Neill P & Wales NS 2004, *Developing a risk communication model to encourage community safety from natural hazards, Citeseer.*

Paton D & McClure J 2013, *Preparing for Disaster: Building household and community capacity, Charles C Thomas Publisher.*

Pearce L 2003, *Disaster management and community planning, and public participation: how to achieve sustainable hazard mitigation. Natural Hazards, vol. 28, pp. 211-228.*

Phillips R, Chaplin S, Fairbrother P, Mees B, Toh K & Tyler M 2011, *Defining community: Debates and Implications for Bushfire Policy. Fire Note [Online]. At: www.bushfirecrc.com/sites/default/ files/managed/resource/defining_community_-_debates_and_ implications_for_bushfire_policy.pdf [14 September 2016].*

Redshaw S, Ingham V, Harrision K & Quigley T 2016, *BSafe Blue Mountains Sustainable Approaches to Fire and Emergencies. At: http://kncinc.org.au/publications/bsafe-report/ [5 September 2016].*

Reed MS 2008, *Stakeholder participation for environmental management: a literature review. Biological conservation, vol. 141, pp. 2417-2431.*

Risk Frontiers 2016, *Evaluation of the Community Fire Unit Program in the ACT. At: www.hall.act.gov.au/get/3709.pdf [6 September 2016].*

UNISDR 2015, *Sendai Framework for Disaster Risk Reduction 2015 - 2030. Geneva: The United Nations Office for Disaster Risk Reduction.*

Wehn U, Rusca M, Evers J & Lanfranchi V 2015, *Participation in flood risk management and the potential of citizen observatories: a governance analysis. Environmental Science and Policy, vol. 48, pp. 225-236.*

Wood M & Gilk D 2013, *Engaging Californians in a Shared Vision of Resiliency: Practical Lessons Learned from the Great California Shakeout.*

Young E 1998, *Dealing with hazards and disasters: risk perception and community participation in management. Australian Journal of Emergency Management, vol. 13, no. 2, pp 14-16. At: https://ajem.infoservices.com.au/items/AJEM-13-02-05.*

## About the authors

**David Webber** is the Senior Community Engagement Officer with the NSW SES and the Project Manager for the Community Involvement in Planning Pilot Project.

**Andrew Gissing** is the Director Government Business and Enterprise Risk Management at Risk Frontiers at Macquarie University specialising in risk management solutions.

**Neil Dufty** is a Principal at Molino Stewart Pty Ltd. For this project, he was responsible for designing the community participation activities with the reference groups and was the independent facilitator.

**Dr Deanne Bird** is a research analyst with the Faculty of Life and Environmental Sciences, University of Iceland and an associate of Risk Frontiers, Macquarie University. Deanne's interests include evaluations of resilience, vulnerability and better-practice community engagement strategies.

# RESEARCH DRIVING CHANGE

## SHOWCASE 2017

bushfire&natural **HAZARDS**CRC

**A special event in the life of the Bushfire and Natural Hazards CRC at its midpoint.**

A showcase of our research achievements 2013 to 2017.

**When:** 4–5 July 2017
**Where:** National Wine Centre, Adelaide

**Register Now:**
www.bnhcrc.com.au/showcase2017

**Research Driving Change –** Showcase 2017 is an opportunity to listen, discuss and digest the learnings from across the whole research program and highlight how the findings are being put into practice.

**Research Driving Change –** Showcase 2017 is open to everyone, not just CRC partners. Come along, be informed and stay involved. We can all make a difference.