

## RAISING THE BAR ON RISK REDUCTION POLICY AND PLANNING

### ABOUT THESE PROJECTS

This is an overview of the *Governance and institutional knowledge* cluster of Bushfire and Natural Hazards CRC research projects. This cluster has two linked studies:

- 1. Scientific diversity, scientific uncertainty and risk mitigation policy and planning** – Dr Jessica Weir, Dr Timothy Neale, Western Sydney University, Dr Christine Hansen, University of Gothenburg, Associate Professor Michael Eburn, Professor Stephen Dovers, The Australian National University, Associate Professor Tara McGee, University of Alberta and Professor John Handmer, RMIT University. For more information contact [j.weir@westernsydney.edu.au](mailto:j.weir@westernsydney.edu.au)
- 2. Policies, institutions and governance of natural hazards** – Associate Professor Michael Eburn, Associate Professor Karen Hussey, Dr James Pittock, Professor Stephen Dovers and Dr Anna Lukasiewicz, The Australian National University. For more information contact [michael.eburn@anu.edu.au](mailto:michael.eburn@anu.edu.au)

### CONTEXT

Learning from the past and predicting the future is difficult, especially when it comes to managing risk. Major disasters occur infrequently, with inherent uncertainty, while the science around them can be complex. These projects aim to provide a foundation for ensuring that responsibility for risk can be understood and shared transparently amongst all stakeholders.

## SCIENTIFIC DIVERSITY, SCIENTIFIC UNCERTAINTY, AND RISK MITIGATION POLICY AND PLANNING

### BACKGROUND

The increasing demand for evidence-based public policy places a premium on the need to translate scientific knowledge into policy, practice and common understanding. This translation is rendered even more challenging by the inherent uncertainty and diverse disciplines of the science behind the evidence. How should risk mitigation practitioners manage these scientific uncertainties and diversities in their strategic decision-making? This is a key question driving this project, which aims to help risk management practitioners to explain, justify and discuss mitigation practices to others, including mitigation professionals, the public, the media, and in court and inquiry processes.

The project uses qualitative social science methods, including scenario exercises, theoretical tools and case studies. It analyses how diverse knowledge is ordered and judged as salient, credible and authoritative, and its pragmatic meaning for emergency management across the prevention, preparedness, response and recovery spectrum.

### RESEARCH ACTIVITY

The project has completed project development, literature reviews, fieldwork, publication development and end-user engagement. Three case studies have been scoped on bushfire and flood risk mitigation. Their various stages of development are outlined below.

#### 1. Bushfire risk mitigation in the Barwon-Otway area, Victoria.

Over the past several years, the Barwon-Otway area in south west Victoria (including the Wye River and Separation Creek areas recently affected by bushfire) has been a pilot site for a new approach to bushfire risk calculation and mitigation led by Victoria's Department of Environment, Land, Water and Planning.



▲ **Above:** GAMBA GRASS IS INCREASING THE FIRE RISK AROUND THE URBAN FRINGE OF DARWIN. A CASE STUDY IS INVESTIGATING THE CHANGING LEVELS OF RISK. PHOTO: NATHAN MADDOCK, BUSHFIRE AND NATURAL HAZARDS CRC.

This approach uses new scientific tools to plan mitigation activities, quantify mitigation effects and inform community stakeholders. For this case study the researchers have recruited a participant group, completed two rounds of in-depth interviews and convened a scenario exercise. The case study is now being developed for publication.

#### 2. Bushfire risk mitigation in the Greater Darwin area, Northern Territory.

Though a significant portion of its grassland is burnt each year, the Greater Darwin area is not historically a high-risk bushfire area. However, the recent spread of highly flammable gamba grass (*Andropogon gayanus*) and the continuing subdivision of flood-prone and marginal lands in Darwin's urban/rural interface are both changing the level of risk and the need for mitigation solutions. A participant group has been recruited for this case study and the first round of in-depth interviews were held in mid-2015.

#### 3. Flood risk mitigation in the Hawkesbury-Nepean Valley, NSW.

Historical and predictive evidence suggested that the Hawkesbury-Nepean Valley is at risk of low-probability flood events with very high consequences. The issue of mitigating this risk is the objective of the Hawkesbury-Nepean Valley Flood Management Taskforce. A participant

group is being recruited for fieldwork that is scheduled to start in early 2016.

## RESEARCH OUTCOMES

The project team has completed two literature reviews, with the findings informing the development of the case studies. Specifically, 250 sources on scenario exercises, methodology, analysis and design were reviewed. There are two dominant approaches, and while they can bring together diverse

expert knowledges to better understand complex systems, the focus is often on the product and not the process. Scenarios are also vulnerable to being influenced by the interests of dominant participants.

Key scientific uncertainties encountered, managed and utilised by practitioners and decision-makers involved in bushfire and flood risk mitigation have been surveyed. They can be categorised as historicist, instrumental and interventionist uncertainties.

- Historicist uncertainties are those uncertainties which emerge from the reliance of scientific knowledge on archives of historical data.
- Instrumental uncertainties are those uncertainties which emerge from the limitations of a given apparatus, heuristic or theory.
- Interventionist uncertainties are those uncertainties which emerge from a given mitigation intervention.

# POLICIES, INSTITUTIONS AND GOVERNANCE OF NATURAL HAZARDS

## BACKGROUND

Community resilience depends on more than just engineering and preparation. Government policies, institutions and governance arrangements also shape community resilience. These fundamentally influence how individuals and communities prepare for, respond to and recover from natural hazards. Both governments and communities need to understand the nature of this influence in order to fully comprehend and manage natural hazards.

This research project will shed invaluable light on current policy, institutional and governance arrangements with the aim of developing new approaches to shared responsibility that will increase community resilience to all natural hazards.

## RESEARCH ACTIVITY

The project is working on three themes:

1. Delivering evidenced-based suggestions to help communities to share responsibility for emergency risk management.
2. Identifying perverse incentives and hidden barriers in disaster insurance.
3. Providing recommendations for a revised, post-event inquiry process to better identify lessons.

A research paper has been completed on disaster insurance policy, identifying some reasons why insurers are reluctant to more actively communicate and price risk, particularly with respect to bushfire. The paper also suggests some policy initiatives



▲ **Above:** CURRENT POLICIES AND GOVERNANCE ARRANGEMENTS ARE BEING INVESTIGATED WITH THE AIM OF DEVELOPING NEW APPROACHES TO SHARING RESPONSIBILITY FOR EMERGENCY MANAGEMENT. PHOTO: DEPARTMENT OF ENVIRONMENT, LAND, WATER AND PLANNING, VICTORIA. PHOTO: DAVID BRUCE

that might be adopted to encourage home-owners and insurers to identify and mitigate risk.

Dr Eburn has travelled to the United States to gather information about improved post-event learning. He visited Sacramento, California to attend the Facilitate Learning course offered by the National Advanced Fire and Resource Institute and the US Forest Service. He later visited the US Wildland Fire Lessons Learned Centre in Tucson, Arizona.

Work on delivering evidence-based suggestions to help communities to share responsibility for risk management will be undertaken in 2016.

## END USER STATEMENT

These projects are tackling some of the most challenging policy, governance and communication issues confronting emergency management. We all have a stake in resolving the public policy dilemmas of shared responsibility, resilience and accountability. Developing a common language between risk professionals, policy makers and the broader community, including politicians, lawyers and the media, is essential for managing differing opinions and uncertainties in relation to natural hazards. The combined efforts of this research cluster could lead to cultural change in how we approach and respond to a broad range of natural hazards – this is an exciting prospect.

– John Schauble, Strategic Advisor, Emergency Management Victoria

## RESEARCH OUTCOMES

Two literature reviews have been completed. While Australia has a high level of capacity and experience in managing climate-related risks, our complex systems are vulnerable to shocks. Increased attention needs to be paid to the resilience of critical infrastructure. In reviewing bushfire inquiries in Australia between 1939 and 2013, there are many reoccurring themes that may show a lessons management problem. Inquiries may be identifying issues that cannot be solved, making recommendations that cannot be implemented or making sound recommendations that are ignored or not diligently applied. Many inquiries have made recommendations inconsistent with previous inquiries, which causes problems for emergency services implementing findings.

**The Bushfire and Natural Hazards CRC is a national research centre funded by the Australian Government Cooperative Research Centre Program. It was formed in 2013 for an eight-year program to undertake end-user focused research for Australia and New Zealand.**

*Hazard Notes* are prepared from available research at the time of publication to encourage discussion and debate. The contents of *Hazard Notes* do not necessarily represent the views, policies, practices or positions of any of the individual agencies or organisations who are stakeholders of the Bushfire and Natural Hazards CRC.

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