

# CONNECTING COMMUNITIES AND RESILIENCE: A MULTI-HAZARD STUDY OF PREPAREDNESS, RESPONSE AND RECOVERY COMMUNICATIONS

Annual project report 2014-2015

Vivienne Tippet, Dominique Greer, Amisha Mehta, Sharon Christensen, Bill Duncan,  
Amanda Stickley and Paula Dootson

Queensland University of Technology  
Bushfire and Natural Hazards CRC



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Cover: Flash flooding in Morayfield, Queensland, as a result of Tropical Cyclone Marcia in February 2015.

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## EXECUTIVE SUMMARY

Recent natural hazard events in Australia and around the world provide constant reminders of why people should prepare and how people should behave. Yet, industry experiences and research shows that community members still fail to comply with instructions issued by government agencies [1]. Particularly in the response and recovery phases of a natural disaster, individuals ignore official emergency instructions in favour of community-generated warnings. While non-compliant behaviour is often not in the best interest of the individual or community, non-compliance is not necessarily malicious or even intentional. However, individuals who fail to comply with instructions issued during natural hazards significantly impede the emergency response because they (a) divert resources to compliance enforcement, (b) risk the lives of emergency service workers who may later be required to assist them, and (c) confuse the core safety message or instruction. Moreover, there is a limited understanding of the legal ramifications of non-compliance from perspectives of individuals, agencies, or corporations.

This year the Project team have undertaken two work packages: (1) social media pilot and (2) community focus groups on message comprehension. The social media pilot sought to examine decision-making, risk communication, and in particular the existing approach for official messages during response and recovery of natural disaster, via Twitter. The work package involved analysing around 50,000 Tweets exchanged about Tropical Cyclone Marcia, from 18 to 21 February inclusive. Results show that emergency messages include instructions and updates that may lack precision and assume community knowledge. In addition, community members demonstrate affect, overconfidence, and familiarity biases, and demonstrate limited appetite for irresponsibility displayed by journalists or other community members. The findings of this study suggest the following opportunities exist for emergency services organisations: (1) add precision to updates and instructions, (2) filter out noise and introduce #official as a hashtag to signal and draw attention to important messages, (3) integrate stories that personalise risk and enhance self-efficacy to reflect trends in community tweets, (4) take advantages of affect and engage in preparation messages during the recovery phase, and (5) ground-truth to share knowledge about event and impact to add accuracy and overcome familiarity bias for the next disaster. The community focus groups, while still ongoing, were conducted to examine community comprehension of emergency warning messages. This qualitative work builds on research conducted by end-user organisations and addresses issues raised by the National Review of Warnings And Information, which was endorsed in May 2015. As at June 30, 2015, five focus groups had been conducted in Brisbane and Hervey Bay in Queensland, and the Dandenongs in Victoria. In July 2015, three focus groups will be conducted in Melbourne, Victoria, and Kempsey, New South Wales. Findings will be reported in the next quarterly reporting period.

Other activities completed during this reporting period include a workshop run through the Queensland University of Technology's Centre for Emergency and Disaster Management on local government and disaster management. The Project team has also engaged in expert discussions with end-users and other key emergency management personnel around data collected and to inform the development of valuable project outputs for end-users to utilise.

In April the Project team attended the BNHCRC Research Advisory Forum, where the team was able to present an update on the project and run two workshops with the end-users in attendance. The forum was valuable in gaining end-user input into the project. End-user engagement has been on-going throughout the year through one-on-one contact, teleconferences, bulletins, cluster bulletins, and face-to-face meetings where possible.



The Project team has also attended a number of conferences including the AFAC 2014 conference in Wellington, New Zealand; the World Congress on Disaster and Emergency Medicine in Cape Town, South Africa; the Emergency Media and Public Affairs conference in Sydney; the International Communication Association conference in Brisbane; and the Australia New Zealand Emergency Management and Disaster Conference on the Gold Coast. The conferences involved presenting work and/or meeting with end-users and staying ahead of trends in the emergency management sector.

As the Project team move forward, the next year will see the development of emergency warning messages to test which message framing best achieves compliance. As major natural disasters have a significant economic impact on society, even small changes in protective behaviours can be valuable [2]. Informed emergency messaging can subsequently reduce the costs associated with disasters, which are largely attributed to the public response to the disaster [3], and could potentially save lives.



## END USER STATEMENT

### **Andrew Richards, Manager Community Engagement, SES, NSW**

The primary goal of this project is to identify more effective ways for agencies to engage in two-way communication with community members during the preparedness, response and recovery phases of a disaster. The aim being to increase the level of positive behaviour that contributes to enhanced community safety for individuals and the community as a whole. To date the project is tackling some of the issues associated with mass communication ie. agency warnings and social media, and exploring the messaging and accompanying community behaviours that result. A number of one-on-one meetings with agency stakeholders have been held to better understand the agency perspective. A series of focus groups in Queensland, New South Wales and Victoria have also been scheduled in the 2015 to assist the project team to better understand the community perspective.

I am pleased with the quantity of end-user engagements by the researchers over the past year of the project.

These include:

- End-user focussed interviews
- Presentations to stakeholder groups at meetings, forums and conferences
- Regular project updates
- Teleconferences with project leaders and end-users,
- Regular cluster teleconferences to explore issues and develop solutions

The way the project will be utilised by emergency services and Australian communities has been described by the project team best practice guides for communicating during the response and early recovery phases of a natural disaster via a number of channels, emergency warning templates modified to reflect experimental results on message framing and increasing individual-level compliance, and webinars addressing key issues in communication.



## INTRODUCTION

Australia is exposed to a range of natural disasters including severe storm, fire, cyclone, flood, and to a lesser extent, earthquake and tsunami. These disasters have an estimated cost of \$1.2 billion a year [4], alongside the more difficult to measure social impact on society and individuals' wellbeing. Governments, authorities, and organisations dedicate significant resources to encourage communities to prepare for and respond to natural hazards such as cyclones, earthquakes, floods, and bushfires. However, recent events, media attention, and ongoing academic research continue to highlight cases of non-compliance. Non-compliance can include an individual's refusal to evacuate when a voluntary, recommended, or mandatory evacuation message is given, evacuating when advised not to, and travelling through hazardous areas when advised not to, to name a few. The consequences of non-compliance during a natural hazard can include personal injury or loss of life, and damage to, or loss of property. Individuals who fail to comply with instructions issued during natural hazards significantly impede the emergency response because they divert resources to compliance-enforcement, and risk the lives of emergency service workers who may be required to assist them. The consequences of non-compliance drive the need to understand how to influence individual-level compliance in a natural hazard, through more effective communication.

This project adopts a multi-hazards approach to examine the effectiveness of response and recovery communication in communities (comprising individuals, groups, and businesses) affected by natural hazards. The core project objectives are two-fold:

1. Develop methods to maximise the effectiveness of response and recovery messaging to the community during a range of natural hazard events.
2. Promote both community and disaster agency understanding of the legal motivators for maximising engagement with emergency messages and instructions.

Achieving these objectives will enable the project to deliver evidence-based message content to guide operational and communication strategy, and improve community understanding, decision-making, and compliance during the emergency response and recovery phase of natural disasters.



## PROJECT BACKGROUND

The projects adopt a highly collaborative, multi-disciplinary, multi-phase and multi-hazards approach to maximise both the engagement of end-users and impact on community behaviours and decision-making. Specifically, the Project team draw on demonstrated expertise in communication, consumer psychology and marketing, disaster and emergency management, and law. The collaborative research activities encompassed by this project focus on developing strategies that maximise the effectiveness of response and recovery messaging in the community. This research program will adopt a multi-hazards approach to:

- examine the content and delivery strategies of official emergency messages;
- develop evidence-based advice to guide trigger communications during hazards;
- analyse the effectiveness and efficiency of official emergency messages in the response and recovery phases;
- promote both community and end-user understanding of the psychological and legal motivators for maximising engagement with response plans and emergency instructions; and
- examine opportunities for application of new technology and communication systems (e.g. emerging digital and social media platforms) to maximise the comprehension and compliance of communities at risk.

Governments, authorities, and organisations dedicate significant resources to educate and encourage disaster preparedness using instructional messages. Instructional messages are the lynchpin of risk and warning communication because they persuade Australians to respond to natural hazards with specific and immediate behaviours [5]. These instructions, which vary from simple messages warning citizens not to drive through floodwater to complex messages about safe ways to evacuate from a hazard-affected district, are designed to protect community health, welfare, and safety.

An investigation of risk and warning communication research suggests three implicit assumptions influence natural hazard research and practice: (1) that community members will comply with instructions issued by governments and agencies that represent the most authoritative voice, (2) that communication campaigns are shaped by intuition rather than evidence-based approaches [6], and (3) that hazards occur as stand-alone rather than linked events [7]. These assumptions have influenced the style of existing risk and warning communication, including instructional messages. In response to these assumptions, this project proposes collaborative research that integrates industry and cross-disciplinary perspectives to provide evidence-based approaches for risk and warning communication across the response and recovery phases of a natural disaster.

Recent natural hazard events in Australia and around the world provide constant reminders of why people should prepare and how people should behave. Yet, industry experiences and research shows that community members still fail to comply with instructions issued by government agencies [1]. In some cases, individuals ignore official emergency instructions in favour of community-generated warnings, which are often driven through digital platforms. While non-compliant behaviour is often not in the best interest of the individual or community, non-compliance is not necessarily malicious or even intentional. Individuals who fail to comply with instructions issued during natural hazards significantly impede the emergency response because they (a) divert resources to compliance enforcement, (b) risk the lives of emergency service workers who may later be required to assist them, and (c) confuse the core safety message or instruction. Further,



the Project team do not yet have a nuanced understanding of the legal ramifications of non-compliance from perspectives of individuals, agencies, or corporations.

Consequently, this project uses several motivation theories and frameworks to explore key factors that may impede compliance with instructional messages. For example, Protection Motivation Theory [8] examines how individuals protect themselves when coping with a hazardous event. This theory suggests that an individual will appraise both the severity and probability of the threat they face, as well as the efficacy of the instructed action and their self-efficacy in performing that action, before being persuaded to act in the instructed manner. Similarly, the Motive-Opportunity-Ability framework examines an individual's motivation, opportunity, and ability to perform a desired behaviour. The framework first seeks to identify individuals' intrinsic and extrinsic motives to enact (non-) compliant behaviour. For example, individuals may be less motivated to obey an evacuation order if they perceive (rightly or wrongly) that their personal exposure to risk is low, or that the instructions have not been issued from a credible source. The framework also identifies the opportunities that individuals have to perform a compliant behaviour. For example, individuals who intend to obey an evacuation order may be inhibited by environmental mechanisms such as a means of transport or knowledge of a shelter location. Finally, the framework seeks to understand the abilities (i.e. skills and proficiencies) individuals must possess to comply with instructions. For example, individuals who do not understand instructional messages are unlikely to comply. Finally, drawing on compliance-gaining research from communication and psychological literatures [e.g. 9, 10, 11, 12], the Project team propose that there are a number of ways in which a message can be framed to increase the likelihood of compliant behaviour. By using these theories and frameworks, the Project team take a comprehensive psychological approach to explore the individual drivers of non-compliant behaviour in order to improve risk and warning communication effectiveness. As the Project team develop an understanding of the drivers of non-compliance to instructional messages, the Project team can examine the implications of this behaviour within an Australian legal framework. More specifically, the Project team seek to investigate the legal vulnerabilities or liabilities of the various stakeholders, such as governments and first responders, within the current legal framework across the PPRR spectrum to determine if the legal framework creates barriers or enablers to effective communication.

Following an analysis of the peer reviewed literature, policy documents, legislation, inquiry and industry reports, the researchers will draw on multiple and mixed methods including in-depth interviews with key informants from emergency services, focus groups with the community, and experiments to evaluate the effectiveness of risk and warning communication. This project will explore emergency message content, timing, mode of delivery, and the interplay of 'unofficial' information with concurrent 'official' messaging to promote better understanding of the psychological and legal motivators for maximising compliant community response in the face of a natural hazard.

The results will inform the development of best practice principles for risk and warning communication and recommended changes to the regulatory framework. Specifically, this project seeks to recommend a suite of messages for use during the response and recovery phases of a disaster that individuals are most likely to comply with. This suite of messages may also include messages tailored to specific groups within the community based on their past experience with disasters. The messages recommended would take into consideration the legal issues emergency agencies may face when communicating with the community. As major natural disasters have a significant economic impact on society, even small changes in protective behaviours can be valuable [2]. Informed emergency messaging can subsequently reduce the costs associated with disasters, which are largely attributed to the public response to the disaster [3], and could potentially save lives.

## WHAT THE PROJECT HAS BEEN UP TO

This section will review the project activities for the July 2014-June 2015 year.

### DATA COLLECTION AND OUTPUTS

#### Social media pilot

The first work package for this reporting period was the social media pilot, executed from March to May 2015. The Project team collected, analysed, and reported on emergency services agencies, media, business, and community use of social media during Tropical Cyclone Marcia. The final report was delivered to BNHCRC on 30 April 2015. Social media are used to detect and track disasters, as a platform for risk communication and decision-making during disasters, and as a means to reconnect communities during recovery [13]. To examine decision-making, risk communication, and in particular the existing approach for official messages during response and recovery, the work package involved analysing around 50,000 Tweets exchanged about Tropical Cyclone Marcia, which crossed the Queensland coast on Friday 20 February 2015 as a category five event. Four days of Tweets from 18 to 21 February inclusive were collected. Tweets were categorised by source and analysed to consider elements related to community decision-making including the preciseness of official messages and knowledge, attitudes, and behavioural biases reflected in community messages.

Results show that emergency messages include instructions and updates that may lack precision and assume community knowledge. In addition, community members demonstrate affect, overconfidence, and familiarity biases, and demonstrate limited appetite for irresponsibility displayed by journalists or other community members. The findings of this study suggest the following opportunities exist for emergency services organisations:

1. Add precision to updates and instructions,
2. Filter out noise and introduce #official as a hashtag to signal and draw attention to important messages,
3. Integrate stories that personalise risk and enhance self-efficacy to reflect trends in community tweets,
4. Take advantages of affect and engage in preparation messages in the recovery phase, and
5. Ground-truth to share knowledge about event and impact to add accuracy and overcome familiarity bias for the next disaster.

To build on the social media pilot, the Project team will be working with Axel Bruns, from the Queensland University of Technology Creative Industries Faculty, to conduct a network analysis of social media usage during natural disasters.

#### Message comprehension - focus groups

The second work package for the reporting period was a qualitative research study on emergency warning message comprehension. In April 2015 the Project team applied for and, in June 2015 received, ethics approval for community focus groups to be conducted. The goal of this research is to examine how existing strategies for providing emergency messages during natural hazards are perceived by members of the community, and how/if this information is interpreted and translated



into an action or intended action by recipients. This qualitative work builds on research conducted by end-user organisations including:

- New South Wales State Emergency Service (SES) Review of Flood Warnings (2013)
- Bureau of Meteorology (BOM) Review of Tsunami Warnings (2008)
- Country Fire Authority Victoria (CFA) Review of Fire Warnings (2009)
- Fire Services Commissioner Victoria Review of Fire Warnings (2013)
- National Review of Emergency Alert (2014)

The focus group findings will address issues raised by the [National Review of Warnings And Information](#), which was endorsed in May 2015.

The sample for the focus groups were recruited using Q&A Market Research, a Brisbane based market research company, and included an equal mix of genders, and were aged 18 years old and over. Participants were invited to participate in a 90-minute focus group. In the focus group, the participants were first asked to complete a short survey containing a series of demographic and hazard experience questions. Next, participants were shown one of the stimuli and asked whether they understood the message, what they think the message is asking them to do, and what they would do with the information. After discussion of the first stimuli, participants were shown a second stimulus and asked the same questions. The stimuli – emergency warning messages – used in the focus groups were either provided by end-users for testing, or were messages used in a recent natural hazard event. The hazards tested in each focus group included a familiar and unfamiliar hazard for the location (see Table 1).

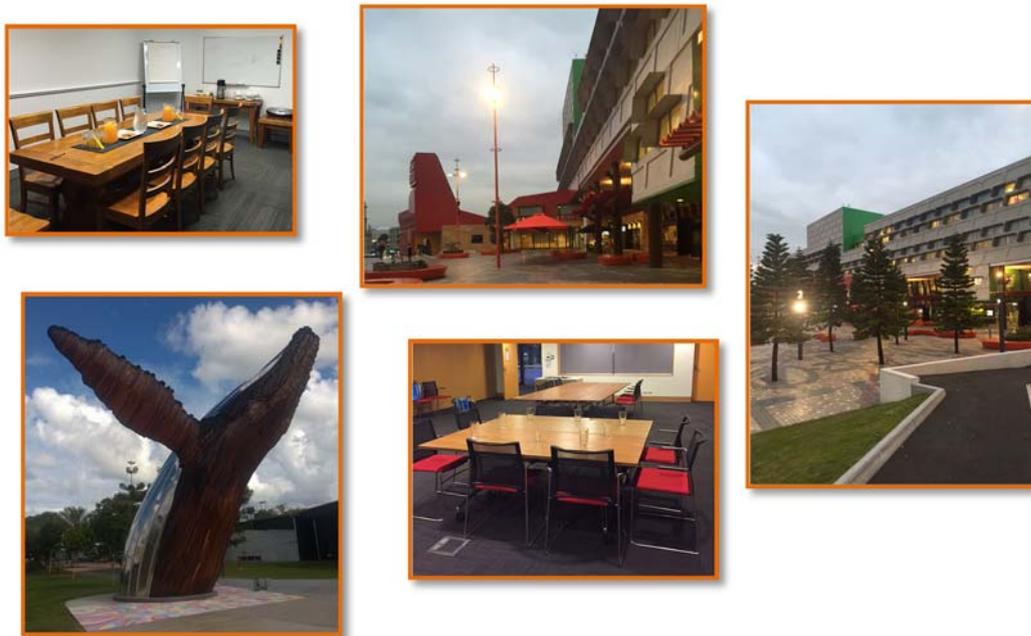
The focus groups that were completed as at June 30 2015 were two in Brisbane [22 June 2015; 25 June 2015], two in Hervey Bay at request of the Inspector General's Office of Emergency Management [25-26 June 2015], and one in Victoria – Dandenong Ranges at request of Emergency Management Victoria [30 June 2015] (see Figure 1). The Project team are completing an additional three focus groups in July 2015 in Melbourne, Victoria at the request of Victoria State Emergency Services [1 July 2015], and Kempsey, New South Wales at the request of, New South Wales State Emergency Services, pending the approval of an ethics variation application [22-25 July 2015]. Ethics variation for Kempsey focus group has been submitted and is currently under review [30 June 2015]. The Project team are currently exploring the resourcing available to conduct two focus groups in Western Australia at the request of the Department of Fire and Emergency Services, Western Australia.



Table 1. Familiar and unfamiliar hazard tested in focus groups, with source of message

		Focus Group 1	Focus Group 2
<b>QUEENSLAND</b>			
Brisbane	<i>Familiar</i>	Storm (BOM)	Storm (BOM)
	<i>Unfamiliar</i>	Fire (QFES)	Fire (QFES)
Hervey Bay	<i>Familiar</i>	Cyclone (BOM)	Cyclone (BOM)
	<i>Unfamiliar</i>	Tsunami (BOM)	Tsunami (BOM)
<b>VICTORIA</b>			
Dandenongs	<i>Familiar</i>	Fire (VIC CFA)	
	<i>Unfamiliar</i>	Flood (VICSES)	
Melbourne	<i>Familiar</i>		Fire (VIC CFA)
	<i>Unfamiliar</i>		Flood (VICSES)
<b>NEW SOUTH WALES</b>			
Kempsey	<i>(pending ethics approval)</i>		
<b>WESTERN AUSTRALIA</b>	<i>(pending resourcing and ethics approval)</i>		

Figure 1. Photos from in the field



Source: photos taken by researchers in the field for focus groups, (left top) Q&A Market Research Brisbane, (middle top, right, middle bottom) Dandenong City Council building, (left bottom) Whale statue outside Hervey Bay Regional Gallery and Hervey Bay Community Centre.

The findings from the focus groups will be used to inform the development of new emergency warning templates for experimental testing in the next reporting period.

### Message repetition and fatigue

Dr Paula Dootson met with Postdoctoral Research Fellow Dr Nicole Aimers from Swinburne University, in Melbourne [30 June 2015] to review experiments on repetition in risk warnings based on [Dr Aimers' presentation \(p. 2\)](#) at the Australia and New Zealand Disaster Management Conference on the Gold Coast in May 2015. Dr Aimers presented research results on the mere exposure effect on cigarette packaging, finding the packaging became more ineffective overtime at deterring smoking because of the repeated exposure. As the Project team will be developing experiments to test emergency warning effectiveness at achieving compliance, collaborating with Dr Aimers would provide an opportunity for the Project team to expand the scope of their project, while still delivering meaningful outputs for end-users. Dr Aimers could help the team test altered emergency messages to find out the effect of repeated exposure and how to rotate messaging to better achieve compliance. This continues the work of Brenda Mackie on warning fatigue, from the Bushfire CRC. This is an emergent collaboration that will continue over the next reporting period.

### WORKSHOPS

As members of the Queensland University of Technology's Centre for Emergency and Disaster Management (CEDM), the Project team developed and ran a forum titled *"Looking back and moving forward: local government disaster management"* with panellists: Ms Amanda Stickley, QUT Law and member of the BNHCRC Project team, Iain MacKenzie, Inspector General Emergency Management, Queensland Government, and Greg Swain, Corporate Communication Manager,

Brisbane City Council. Prof Vivienne Tippett, of the Project team, chaired the session. The session was held on 17 September 2014 at the Queensland University of Technology's Gardens Point Campus. The panellists discussed the reasonable legal implications for predictive technology in disaster management; standards for disaster management planning for local government, and best practice communication with communities during disaster response and recovery. More information, including a recording of the event, can be found at the [CEDM website](#).

Figure 2. CEDM Workshop



During this period, the Project team have also been invited to participate in workshops as experts in the field. In December 2014, Dr Dominique Greer was invited as a marketing expert to present at the annual South Australian Fire and Emergency Services Commission Zone Emergency Management Symposium to discuss market research. The session addressed how to communicate all hazard risks to the public, exploring how marketing theory and strategy could inform risk communication. More information can be found at the [BNHCRC website](#). In April 2015, Dr Amisha Mehta was invited to present research findings from the BNHCRC project to the Community Safety Group in Melbourne, Australia with BNHCRC end-users. The presentation was titled '*Building resilient communities: Effective communication during response and recovery phases of natural hazards*'.

## RESEARCH ADVISORY FORUM

As part of the BNHCRC project, the Project team attended the 2015 Research Advisory Forum (RAF), in Sydney, Australia [8-9 April 2015] at the Royal Fire Service Headquarters. In attendance at the RAF were Professor Vivienne Tippett, Dr Dominique Greer, and Dr Paula Dootson. During the RAF the Project team were able to run two workshops with end-users to discuss the project deliverables and upcoming work. The RAF was an excellent opportunity to engage with end-users and seek input to tailor future research outputs to their needs, within the scope of the existing project plan. To ensure the RAF was valuable for the researchers and end-users, the Project team sent out preparatory materials [20<sup>th</sup> March] and held a teleconference with end users [27<sup>th</sup> March] prior to the forum. Following the RAF the Project team incorporated end-user comments into upcoming work, and engaged one-on-one with end-users to follow up on reports or emergency warning templates discussed at the RAF.

## EXPERT DISCUSSIONS

Beyond the workshops and RAF, the Project team have also engaged in expert discussions with end-users and other emergency management practitioners to gauge the value and validity of the hypotheses and research findings.



Prior to conducting the social media pilot, Dr Paula Dootson, Dr Dominique Greer, and Dr Amisha Mehta met with Nicola Moore (IGEM), Peter O'Halloran (Dept. Community Safety, QLD), Phil Nickerson (PBSA), and Troy Davies (QFES) to workshop desired deliverables of the project around the use of social media in emergency management [2 March 2015].

To gauge the effectiveness of the emergency communication and response during the Supercell storm that hit Brisbane on November 27<sup>th</sup> 2014, Dr Paula Dootson, Dr Dominique Greer, and Prof Vivienne Tippett met with Patrick Byrne (QFES) and Troy Davies (QFES) at the Queensland Emergency Operations Centre [10 February 2015]. This discussion provided unique insight into the activation and response of a sudden onset hazard. This information is important for the Project teams development of valuable tools for end-users.

Following a severe storm that caused flash flooding in Queensland in May 2015, the *"If it's flooded, forget it"* campaign was put under review. After meeting Steve Zeppa from Queensland Police Service (QPS) media at the Australia New Zealand Disaster Management Conference, the Project team – Dr Paula Dootson, Dr Dominique Greer and Dr Amisha Mehta – met with Steve to review the *'if it's flooded, forget it'* campaign [22 May 2015]. This is an ongoing engagement with QPS as the Project team shares data collected from the focus groups on campaign meaning and recognition.

Following discussions at the RAF between lead end-user Andrew Richards, NSW SES, and Mandy Moore, Ministry for Police and Emergency Services (MPES), Dr Paula Dootson was invited to attend a Behaviour Insights Masterclass with the Behavioural Insights Group from NSW Premier and Cabinet division –MPES. The Masterclass provided insight into the application of behavioural economics theory, with which Dr Dootson is familiar, to the communication of emergency warnings. The knowledge gathered from the Masterclass will inform the development of emergency warning experiments, the next work package for the project in the next reporting period.

## CONFERENCES

We have presented at a number of conferences across health, communications, and emergency management fields. The presentations, locations, and presenters are listed below:

### *Domestic*

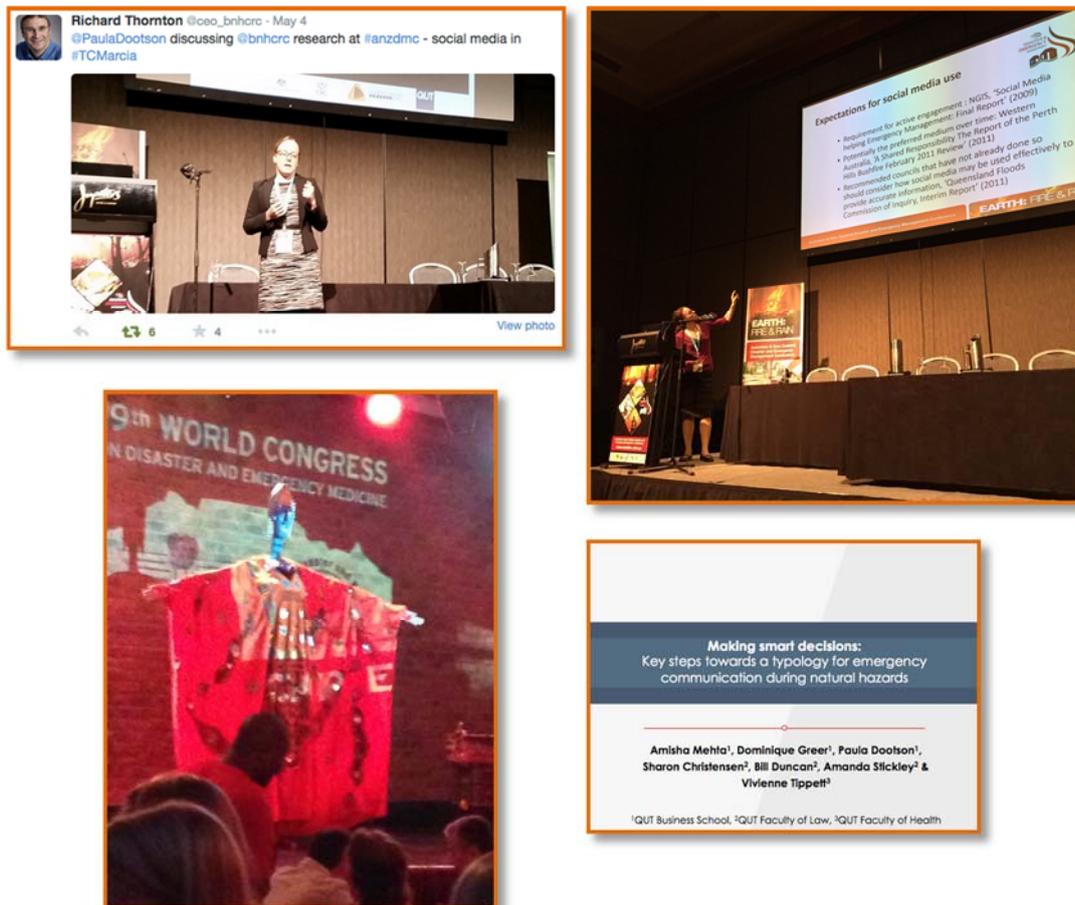
- [\*Effective communication during disasters: What effects community decision making & action?\*](#) – Presented at the Australia New Zealand Emergency Management and Disaster Conference (ANZDMC), 4 May 2015, Gold Coast, Australia. [presenter: Dr Paula Dootson]
- [\*Making smart decisions: Key steps towards a typology for emergency communication during natural hazards.\*](#) – Presented at the International Communication Association conference, (ICA), 1-3 October, 2014, Brisbane, Australia [presenter: Dr Amisha Mehta]

### *International*

- [\*Effective communication during disasters: What effects community decision making & action\*](#) – Presented at the World Congress on Disaster and Emergency Medicine, 21-24 April 2015, Cape Town, South Africa. [presenter: Prof Vivienne Tippett]
- [\*Legal mechanisms for maximising community engagement with formal evacuation messaging: How well are these understood?\*](#) – Presented at the World Congress on Disaster and Emergency Medicine, 21-24 April 2015, Cape Town, South Africa. [presenter: Prof Vivienne Tippett]

- [Effective emergency messaging during natural disasters – an application of message compliance theories](#) – Presented at the World Congress on Disaster and Emergency Medicine, 21-24 April 2015, Cape Town, South Africa. [presenter: Prof Vivienne Tippett]

Figure 3. Conference presentations



Source: (top) Twitter post by BNHCRC CEO Richard Thornton of Paula Dootson at ANZDMC 2015, (left bottom) taken by V. Tippett at WCDEM 2015, (right top) taken by P. Dootson of Melanie Baker-Jones at ANZDMC 2015, (right bottom) ICA conference presentation by Amisha Mehta

The Project team has also had the following abstract accepted, for presentation in the next reporting period:

- Ms Amanda Stickley, Prof Sharon Christenson, and Prof Bill Duncan submitted an abstract: *“Natural hazards and land use planning: how resilient must a landowner be?”* for the 9<sup>th</sup> annual [RICS Legal Research Symposium](#) that is in Sydney 8-10 July 2015. It was accepted [22 March 2015].

One or more Project team members have also attended, but not presented at the following conferences as a means of knowledge gathering and networking with end-users:



- Dr Paula Dootson and Ms Melanie Baker-Jones (QUT Law PhD student) attended the AFAC & BNHCRC conference, Wellington, New Zealand, on behalf of the Project team [1-5<sup>th</sup> September]. The [Project team](#) and [Ms Baker-Jones](#) both provided a poster for the conference. The Project team poster can be found on the [BNHCRC website](#).
- Dr Amisha Mehta attended the Emergency Media and Public Affairs (EMPA) conference in Sydney [1-2 June 2015]. The EMPA conference brings together leading researchers in the emergency management field from around the world and connects them with emergency management practitioners to enable knowledge sharing and the identification of best practice in all aspects of emergency media and public affairs.
- Attended [webinars](#): 'Living on the edge' [11 August 2014], 'Thinking under fire' [21 October 2014].

## ENGAGEMENT

To ensure the Project team is up to date, a number of meetings were held during this reporting period.

- full research team meetings [16 July 2014; 25 September 2014; 13 October 2014; 22 January 2015; 12 March 2015; 2 June 2015].
- Ongoing sub Project team (Business School and Health Faculty researchers) meetings [29 August 2014; 25 September 2014; 2 October 2014; 15 October 2014; 21 October 2014; 11 November 2014; 13 November 2014; 4 December 2014; 11 December 2014; 16 December 2014; 22 January 2015; 30 January 2015; 2, 9, 16, 23 February 2015; 9, 16, 23, 30 March 2015; 20, 22, 27, 30 April 2015; 7, 11, 18, 25 May 2015; 1, 8, 15, 22, 29 June 2015].
- meeting for Faculty of Law team members to determine the scope of deliverable for December 2014 [26 August 2014].
- Meeting with Dr Paula Dootson and Ms Melanie Baker-Jones regarding law deliverable – legal triggers and enablers of non-compliance [10 October 2014].
- Meeting with Dr Paula Dootson and Ms Melanie Baker-Jones regarding Australian Journal of Emergency Management papers [12 January 2015].
- Meeting with Dr Paula Dootson, Ms Melanie Baker-Jones, and Ms Jacinta Buchbach regarding Australian Journal of Emergency Management papers [10 October 2014].

The Project team also engages with members of the other projects in the cluster and members of the BNHCRC

- Teleconferences with Dr Illy McNeill from C7 project regarding her role as an expert at a forum in Sydney for the National Review of Warnings and Information. A debrief about the forum was also held via teleconference [15 September 2014; 22 September 2014].
- Meeting with Michael Rumsewicz, Prof Vivienne Tippet, Dr Dominique Greer, and Dr Paula Dootson regarding the project [16 September 2014].
- Teleconference with Lyndsey Wright from BNHCRC to discuss access to existing research from the Bushfire CRC to facilitate data collection [26 September 2014]
- Teleconference with Michael Rumsewicz, Dr Paula Dootson, Prof Vivienne Tippet about annual report and deliverables [7 October 2014].



To keep the end-users up to date on progress in the project the Project team use teleconferences, bulletins, and one-on-one communication via email and phone. The activities in this reporting period include:

- Contributed to cluster end-user bulletin [8 December 2014]
- Participated in regular monthly Communications and Warnings Cluster teleconferences [7 July 2014; 4 August 2014; 15 September 2014; 13 October 2014; 1 December 2014; 19 January 2015; 31 March 2015; 11 May 2015; 1 June 2015]
- Teleconference meetings with Project team and end-users [10 September 2014; 27 March 2015]
- Sent end-user bulletin for updates on project work in 2014 [17 October 2014; 20 March 2015], (see Figure 4)
- Engagement with lead end-user Andrew Richards, NSW SES: phone meeting with Andrew Richards and Amisha Mehta [17 February 2015]; in-person meeting with Andrew Richards and Dr Paula Dootson [19 February 2015]; phone meeting with Dr Dominique Greer, and Dr Paula Dootson [27 April 2015].
- Sent social media summary to IGEM – Nicola Moore, Phil Nickerson, Rowena Richardson [6 May 2015]
- Recruited new end-users Shannon Panchuk from BOM [9 April 2015], Mark Unsworth from Emergency Management Victoria [9 April 2015], and Laura Keating from DFES, WA [26 June 2015].
- Liaised with Steven Lawrence from NSW SES Kempsey to arrange emergency warnings for testing during the community focus groups [June 2015].
- Ongoing communication with Postdoctoral Research Fellow Dr Paula Dootson regarding existing research and campaigns relevant to the project to avoid duplication and ensure the outputs are tailored to end-user needs.

Figure 4. End-user bulletins



## RECRUITMENT

During this period the Project team hired two research assistants. Ms Melanie Baker-Jones was appointed as casual research assistant from August 2014 to December 2014. Ms Katie MacDonald was appointed as a casual research assistant for May 2015.

## SUPERCCELL PROJECT

In December 2014 the BNHCRC sent out a request for expressions of interest to participate in an extension project, investigating the Supercell Storm that hit Brisbane on November 27, 2014. While the project did not proceed, the Project team were involved in a number of activities during the period worth noting.

- Submitted Stormcell Project Expression of Interest (EOI) [3 December 2014].

- Supercell forum led by Michael Rumsewicz, attended by Prof Vivienne Tippett. Key end users included Morton Bay Regional Council, Brisbane City Council, Bureau of Meteorology, Inspector General Emergency Management [21 January 2015]
- Meeting with Michael Rumsewicz, Richard Thornton, Dr Paula Dootson, Prof Vivienne Tippett, Dr Dominique Greer about Brisbane Supercell project [21 January 2015].
- Dr Paula Dootson, Dr Dominique Greer, and Prof Vivienne Tippett met with Patrick Byrne (QFES) and Troy Davies (QFES) to reflect on Supercell communications and operations [10 February 2015].
- Supercell workshop led by Michael Rumsewicz- Dr Paula Dootson, Dr Dominique Greer, Dr Amisha Mehta, and Prof Vivienne Tippett engaged with were Bruce Gunn (BOM), Shaun Allen (Brisbane City Council), Jason Cameron (Brisbane City Council), and Rowena Richardson (IGEM) [18 February 2015]
- Submitted revised project outline [April 2015]
- Supercell project activity ceased by CRC [22 May 2015].

Figure 5. The Brisbane Supercell Panel session at ANZDMC 2015



Source: Taken by Project team member of panel at ANZDMC 2015



## PUBLICATIONS LIST

In this reporting period the Project team have completed a number of conference abstracts.

- Tippett V, Mehta A, Greer DA, Dootson P, Duncan W, Christensen S, Stickley A, Baker-Jones M. (2015). [Effective communication during disasters: What effects community decision-making & action?](#) World Congress on Disaster and Emergency Medicine, 21-24 April 2015, Cape Town, South Africa.
- Baker-Jones M, Duncan W, Christensen S, Stickley A, Tippett V, Mehta A, Dootson P, Greer DA. (2015). [Legal mechanisms for maximising community engagement with formal evacuation messaging: How well are these understood?](#) World Congress on Disaster and Emergency Medicine, 21-24 April 2015, Cape Town, South Africa.
- Dootson P, Mehta A, Greer DA, Tippett V, Duncan W, Christensen S, Stickley A, Baker-Jones M. (2015). [Effective emergency messaging during natural disasters – an application of message compliance theories.](#) World Congress on Disaster and Emergency Medicine, 21-24 April 2015, Cape Town, South Africa.
- Tippett V, Mehta A, Greer DA, Dootson P, Duncan W, Christensen S, Stickley A, Baker-Jones M. (2015). [Effective communication during disasters: What effects community decision making & action?](#) Australia New Zealand Emergency Management and Disaster Conference (ANZDMC), 4 May 2015, Gold Coast, Australia.

To date, the Project team have two academic journal articles in progress. First, in December 2014 the Project team submitted a report examining the types of emergency warnings used by emergency services agencies. Using this data in combination with other data collected on emergency warnings used during the South Australian bushfire (January 2015), the Brisbane Supercell storm (November 2014), and for international comparison the New York Snowstorm (January 2015), the Project team is writing an academic paper on the types of message framing available to use to increase individual-level compliance to the warning. This publication is in progress, led by Dr Dominique Greer. Second, in March 2015 the Project team collected data for the social media work package, seeking to understand the community and emergency services agencies use of social media. From that data collection a report was written and submitted to the BNHCRC. The team is currently writing an academic paper from this data, led by Dr Amisha Mehta.

Finally, In June the Project team began qualitative data collection on emergency warning message comprehension, via a series of focus groups across Australia. While the data collection is still ongoing, the next reporting period will see a publication in progress from that data.

## CURRENT TEAM MEMBERS

### RESEARCHERS

- Professor Vivienne Tippett (QUT Health)
- Professor Sharon Christensen (QUT Law)
- Professor Bill Duncan (QUT Law)
- Associate Professor Amanda Stickley (QUT Law)
- Dr Dominique Greer (QUT Business School)
- Dr Amisha Mehta (QUT Business School)
- Dr Paula Dootson (QUT Business School)

### STUDENTS AND RESEARCH ASSISTANTS

- Melanie Baker-Jones (PhD student – law) attained “Associate Student” status of the BNHCRC and top-up scholarship from BNHCRC [February 2015].

### END USERS

Lead:

- Andrew Richards, Community Engagement Manager, State Emergency Services, NSW

New official and unofficial:

- Shannon Panchuk, Bureau of Meteorology, ACT
- Mark Unsworth, Emergency Management Victoria, VIC
- Nicola Moore, Office of the Inspector General Emergency Management, QLD
- Laura Keating, Department of Fire and Emergency Services, WA

Ongoing:

- Amanda Leck, Australasian Fire and Emergency Service Authorities Council
- Gwynne Brennan, Country Fire Authority, VIC
- Anthony Clark, NSW Rural Fire Service, NSW
- Trent Curtain, Metropolitan Fire Brigade, VIC
- Fiona Dunstan, SA Country Fire Service, SA
- Reegan Key, Emergency Management Victoria, VIC
- Ben McFadgen, Victorian State Emergency Service, VIC
- Rowena Richardson, Office of the Inspector General Emergency Management, QLD
- Samantha Chard, Attorney-General's Department, ACT
- Suellen Flint, Department of Fire and Emergency Services, WA
- Sandra Barber, Tasmania Fire Service, TAS
- Wendy Kelly, Attorney-General's Department, ACT

## REFERENCES

1. Dash, N., & Morrow, B. H. (2000). Return Delays and Evacuation Order Compliance: The Case of Hurricane Georges and the Florida Keys. *Environmental Hazards*, 2(3), 119-128.
2. Lindell, M. K., & Perry, R. W. (2012). The Protective Action Decision Model: Theoretical Modifications and Additional Evidence. *Risk Analysis*, 32(4), 616-632.
3. Burns, W. J., & Slovic, P. (2012). Risk Perception and Behaviors: Anticipating and Responding to Crises, *Risk Analysis*, 32(4), 579-582.
4. ICA. (2013). White paper: The cost of natural disasters. Retrieved May 20, 2015 from <http://australianbusinessroundtable.com.au/assets/documents/White%20Paper%20Sections/4.%20The%20cost%20of%20natural%20disasters.pdf>
5. Sturges, D. L. (1994). Communicating through Crisis A Strategy for Organizational Survival. *Management Communication Quarterly*, 7(3), 297-316.
6. Wood, M. M., Mileti, D. S., Kano, M., Kelley, M. M., Regan, R., & Bourque, L. B. (2012). Communicating Actionable Risk for Terrorism and Other Hazards. *Risk Analysis*, 32(4), 601-615.
7. Ren, C. H. (2000). Understanding and managing the dynamics of linked crisis events. *Disaster Prevention and Management: An International Journal*, 9(1), 12-17.
8. Rogers, R. R. (1975). A Protection Motivation Theory of Fear Appeals and Attitude Change. *The Journal of Psychology: Interdisciplinary and Applied*, 91(1), 93-114.
9. Cialdini, R. B., & Goldstein, N. (2004). Social influence: Compliance and Conformity. *Annual Review of Psychology*, 55, 591-621.
10. Fitch, K. L. (1994). A cross-cultural study of directive sequences and some implications for compliance-gaining research. *Communication Monographs*, 61(3), 185-209.
11. O'Keefe, D. J., & Jensen, J. D. (2007). The Relative Persuasiveness of Gain-Framed Loss-Framed Messages for Encouraging Disease Prevention Behaviors: A Meta-Analytic Review. *Journal of Health Communication: International Perspectives*, 12(7), 623-644.
12. Witte, K. (1992). Putting the fear back into fear appeals: The extended parallel process model. *Communication Monographs*, 59, 329-349.
13. Houston, J. B., Hawthorne, J., Perreault, M. F., Park, E. H., Goldstein Hode, M., Halliwell, M. R., Turner McGowen, S. E., Davis, R., Vaid, S., Mcelderry, J. A. & Griffith, S. A. (2015). Social media and disasters: a functional framework for social media use in disaster planning, response, and research. *Disasters*, 39, 1-22.