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BUILDING BEST PRACTICE IN CHILD-CENTRED DISASTER RISK REDUCTION

Annual project report 2014-2015

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Cover: Japanese firefighters show children how their cherry picker operates as part of the third UN Wold Conference on Disaster Risk Reduction in Sendai, 2015.

Credit: Tony Jarrett.

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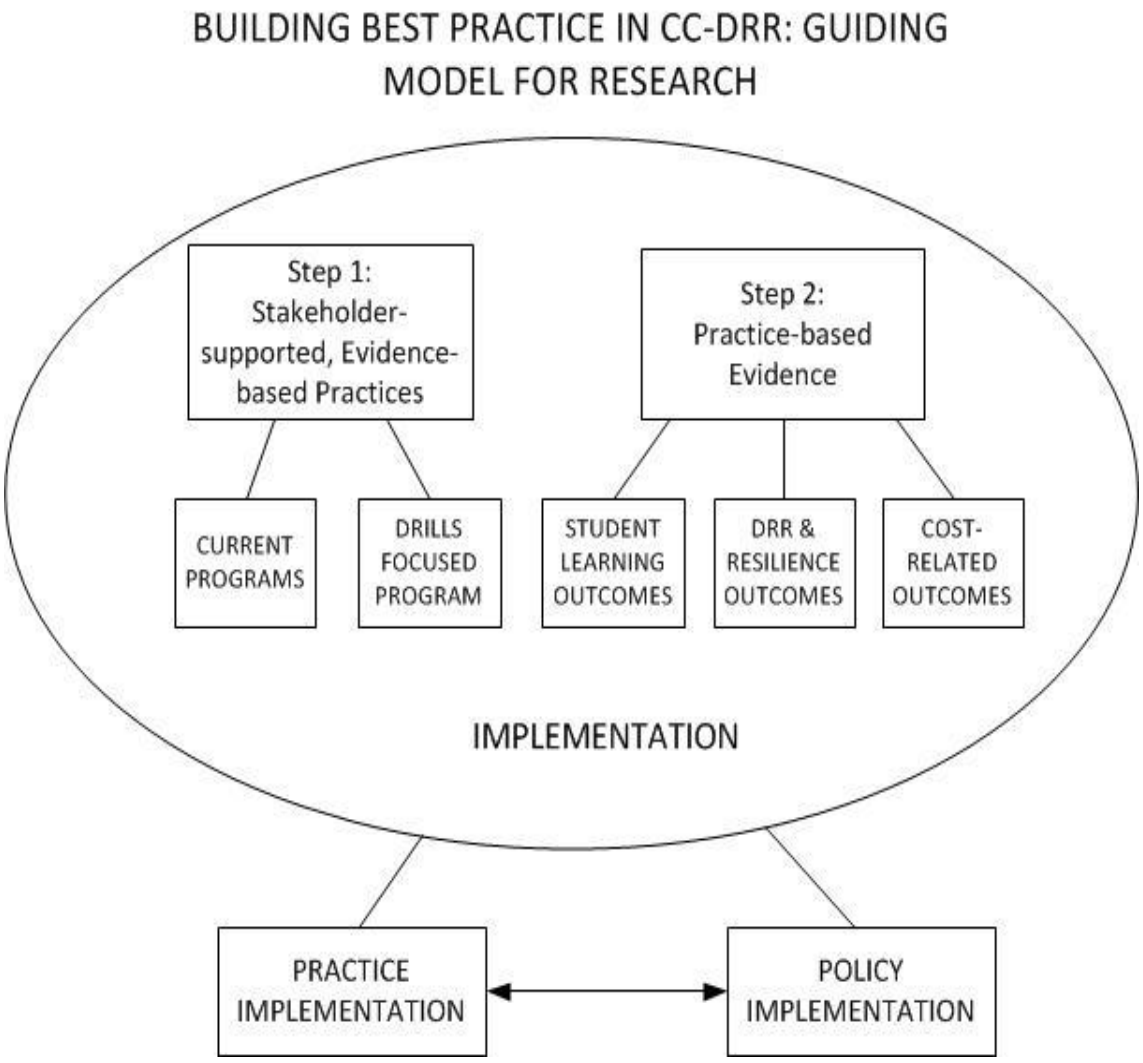
EXECUTIVE SUMMARY

This Annual Report summarises progress to date on Building Best Practice in Child-Centred Disaster Risk Reduction (CC-DRR), with a focus on 2014-2015, but also including the first half of 2014. The first 1.5 years has included both scoping and review and the initiation of both pilot and main research. A scoping exercise reviewed progress in theory development and across the CC-DRR policy-practice-research nexus. In doing so, a parsimonious research narrative emerged intended to build on progress to date but, critically, solve problems and challenges across that nexus. The narrative has two main parts to it as follows:

- Are CC-DRR programs effective?
    - Are they stakeholder supported and evidence-based?
    - Do they have practice-based evidence, including support for DRR and resilience outcomes?
    - Do they produce cost effective outcomes?
- Can CC-DRR programs be implemented effectively, including in sustainable, scaled ways?
    - In practice settings including school- and community-based?
    - In disaster- and emergency management-related policy?

Research to date has included pilot research focused on major stakeholders' views, including children and youth, households and parents/caregivers, teachers and school personnel, emergency management/DRR professionals. With an ultimate research focus squarely on reflecting End User needs, particularly those focused on utilization, many consultations and end user workshopping have been successful in defining a stepwise project and utilisation draft roadmap. A first step is to ascertain whether current CC-DRR-focused disaster resilience education (DRE) programs reflect stakeholder needs and reflect theory and promising, good and best practices through developing a CC-DRR Practice and Evaluation Framework. Through an End User/Project Team co-development process, the Framework is then planned to be used to "co-evaluate" End User agency DRE programs.

Following this "stakeholder-supported, evidence-based practice" step, then DRE programs will be examined for "practice-based evidence", including child learning outcomes, DRR and resilience outcomes and cost effectiveness outcomes. Both EBP and PBE steps are couched within an implementation framework, with project research designed to support both policy- and practice-based implementation of CC-DRR/DRE programs. The diagram on the next page provides a visual overview of this narrative. Finally, the report documents the various research and related activities that are intended to support this overall program of research.


BUILDING BEST PRACTICE IN CC-DRR: GUIDING MODEL FOR RESEARCH
Step 1: Stakeholder-supported, Evidence-based Practices
Step 2: Practice-based Evidence
CURRENT PROGRAMS
DRILLS FOCUSED PROGRAM
STUDENT LEARNING OUTCOMES
DRR & RESILIENCE OUTCOMES
COST-RELATED OUTCOMES
IMPLEMENTATION
PRACTICE IMPLEMENTATION
POLICY IMPLEMENTATION

END USER STATEMENT

Tony Jarrett, Community Engagement Unit, NSW Rural Fire Service,

The second year of the Child Centred Disaster Risk Reduction (CC-DRR) project has been characterised by the project team collaborating to shape the project to best deliver relevant and adaptable utilisation outcomes for agencies and practitioners.

A mix of regular communications from the project team has supported the development of a strong network of end users and organisation practitioners, and has promoted a clear understanding of project activity – through papers and reports, teleconferences, and visits to organisations. This process of regular communication has importantly not only provided information but has solicited feedback on the critical issue of project direction.

The capacity building workshop held in April prior to the Research Advisory Forum provided the opportunity for stakeholders to reflect and share current programs and initiatives, as well as gain a deeper understanding of the CC-DRR project in a collegiate environment.

An outcome of the workshop was that the project team amended their project roadmap to more clearly incorporate end user needs, particularly around evaluation of current programs. This is now reflected in the co-development of a CC-DRR/DRE Practice and Evaluation Framework.

Agencies have now nominated disaster resilience education programs to be evaluated for key evidence-based practice elements, such as curriculum, pedagogy, assessment, evaluation and monitoring, implementation.

The next capacity building workshop will use outcomes from this evidence-based practice step as an input to considering practice-based evidence and the challenge of scaled and sustainable implementation.

INTRODUCTION

In recent years, the role of child and youth-centred hazards and disasters education has gained increasing emphasis in the international disaster resilience literature (UNISDR, 2005; Anderson, 2005; Ronan & Johnston, 2005; Towers, 2012). The UNISDR *Hyogo Framework for Action* (UNISDR, 2005) explicitly identified disaster education for children as a key priority in the fight to reduce the impacts of hazards and disasters, and the recently published *Synthesis Report on Consultations on the Post-2015 Framework on Disaster Risk Reduction* (UNISDR, 2013) places children and youth at the very centre of successful adaptation: "*In particular children and youth have been singled out as having specific needs in terms of school safety, child-centred risk assessments and risk communication. But, more importantly, if appropriately educated and motivated on disaster risk reduction, they will lead and become the drivers of change*" (p.7). In the new international accord, the Sendai Framework for Disaster Risk Reduction 2015-2030, children are identified as being particularly vulnerable and disproportionately affected in disasters (p. 4). At the same time, the Sendai Framework also emphasizes children and youth as "agents of change" who "should be given the space and modalities to contribute to disaster risk reduction" (p. 20, 36(a) (ii)). In Australia, , the role of children's disaster education in managing disaster risk has been recognised as a major priority in the National Strategy for Disaster Resilience (Australian Government, 2011): "*Risk reduction knowledge is [should be] in relevant education and training programs, such as enterprise training programs, professional education packages, schools and institutions of higher education*" (p.7). In its final report, the 2009 Bushfires Royal Commission also emphasised the importance of educating children, explicitly stating that it "remains the most effective approach to instilling the necessary knowledge in Australian families" (Teague et al., 2010, p.55). Moreover, the Commission formally recommended that the "national curriculum incorporates the history of bushfire in Australia and that existing curriculum areas, such as geography, science and environmental studies include elements of bushfire education" (Teague et al., 2010, p.2). Of course, our project has bushfires in scope but also includes a range of other natural hazard events that are common to Australia and New Zealand (e.g., storms, floods, earthquakes, heatwave, drought).

Despite a surge in child-centred disaster research over the past decade (Ronan, Alisic, Towers, Johnson, & Johnston, 2015), the social, psychological, economic and political mechanisms that enhance children's capacities remain largely unexplored and the evidence-base for best-practice remains limited (Australian Emergency Management Institute, 2013). That said, a particularly promising approach to supporting children's active engagement in disaster risk reduction is that of Child-Centred Disaster Risk Reduction (CC-DRR) (Benson & Bugge, 2007). Emerging as a distinct approach to DRR over the last decade, the primary objective of CC-DRR is to strengthen children's skills so that they understand the disaster risk in their communities and are able to participate in activities aimed at that risk (Benson & Bugge, 2007; Towers, 2012). While CC-DRR is becoming increasingly popular amongst government and non-government agencies and organisations around the world, rigorous empirical research on the efficacy of the approach is scarce (Ronan et al., 2015; Towers, 2012). This project is intended

to chart the progress to date, identify policy-practice-research gaps and challenges and develop a program of research that both builds on the former and addresses the latter.

PROJECT BACKGROUND

A recent background chapter (Ronan, 2015) commissioned by UNESCO and UNICEF for the Sendai Framework planning process and for the UNISDR's Global Assessment Report on Disaster Risk Reduction 2015 was focused on one of the "core indicators" for the HFA's "Priority for Action 3: School curricula, education material and relevant training including disaster risk reduction and recovery concepts and practices" (PFA3/Core Indicator 2). In addition to reviewing international and national policy developments, the chapter also reviewed the child- and youth-centred education programs that are being implemented around the world. A major finding of this review was that in both Australia, New Zealand and at the broader international level, DRR education programs are rarely subjected to formal evaluation. Those that are evaluated tend to be time-limited, one-off case examples or demonstration projects that have been implemented by schools emergency management agencies. Thus, "project mentality" is pervasive in this area. Overall, there is a dearth of systematically gained knowledge about the role of DRR education programs, referred to in Australia as "disaster resilience education" (DRE), in producing increased risk reduction and resiliency outcomes in 1) the Prevention, Mitigation and Preparedness phase and (2) the Response and Recovery phases of the disaster cycle.

However, a series of systematic reviews have been undertaken by our team, including the UNESCO/UNICEF-commissioned GAR15 background chapter (Ronan, 2015); another systematic review of evaluations of disaster resilience education programs for children and youth (Johnson, Ronan, Johnston, & Peace, 2014); a critical review and summary paper invited by a high profile journal (Ronan et al., 2015); and a comprehensive review and scoping exercise and compendium (Ronan & Towers, 2015) that was completed as part of the first year of this project. Overall, 38 CC-DRR studies focusing on disaster resilience education have been published in the grey or academic literature since the mid-1990s, with 37 of those published since 2000. A review of the first 35 studies (Johnson et al., 2014) provides in-depth information about design, methods and basic findings. Overall, these studies do point to the promise of disaster resilience education (DRE). The majority of pre-post studies reported significant gains in knowledge, risk-related perceptions, preparedness and other resiliency indicators (including reduced fears of hazardous events) as a function of a DRE program. Thus, preliminary data suggest that CC-DRR/DRE programs do improve risk reduction and resiliency outcomes during the Prevention and Preparedness phases of the disaster cycle. Across studies, however, the design and methodology could be improved to provide a more in-depth understanding of 1) which program elements produce which gains and 2) getting an increase in the types of outcomes assessed (i.e., most studies rely on knowledge-based outcomes) and sources (i.e., most studies rely on children as sole sources of information). Another major problem with existing evaluations is that they have been carried out by professional evaluation teams from academic settings. Clearly, building the capacity of agencies and schools to systematically evaluate their own programs is a task that merits attention.

Further, research is also necessary to ask the critical question: do CC-DRR/DRE programs translate into effective Response and Recovery for children and their

families? Currently, no study worldwide has examined this question.[1] Pending answers to that question, another fundamental problem in this area is the problem of scale (Ronan, 2014). As noted earlier indicated earlier, CC-DRR/DRE programs are often limited in size, scope and duration. Teacher survey and focus group research (Johnson & Ronan, 2014; see also Johnson, 2014) appears to indicate a number of obstacles preventing large scale uptake of CC-DRR/DRE programs and initiatives (see next section for more detail).

[1] It might be added that there has been no study done internationally that has looked at a Prevention and Preparedness phase education/intervention program, whether for children or the public more generally, and systematically followed that same cohort into the Response and Recovery phase of a natural disaster. There is an example in relation to prevention and preparedness in relation to housefires in Canada that we document in our scoping and review compendium (Ronan & Towers, 2015).

WHAT THE PROJECT HAS BEEN UP TO

Over the past year, the project has focused on the following themes:

- Scoping and review of CC-DRR policy, practice and research;
- Close consultation with project End Users to establish a project and implementation road-map, with feedback informing a stepped logic model, linked to core research questions and End User-focused utilization needs;
- Pilot research designed to get important information from major stakeholder groups, including children, households, teachers/school personnel, emergency management/DRR professionals;
- Based on this combination of "top down" review and "bottom up" consultation/research, the main research includes core questions reflecting a "research and utilisation" narrative and roadmap linked to CC-DRR practice and policy.

The narrative is first documented followed by a section that documents progress across each of the first three bulleted themes.

RESEARCH AND UTILISATION NARRATIVE AND ROADMAP

We currently do not have evidence-driven CC-DRR education programs, or activities, that are known to save lives, property, reduce injuries and reduce psychosocial consequences. Related, the current expert- and consensus-advice (e.g., "key messages"; IFRC, 2013; those from important stakeholders[2]) has not been systematically developed or infused directly in CC-DRR/DRE programs, starting with basic messages for younger children that emphasise child protection and safety. With basic messages, there is then a foundation that can then be added to and built over time to more advanced topics in later years. Further, getting the balance right in CC-DRR/DRE promoting child protection and child participation is an area of contention in the field (Ronan, 2015). Internationally, the pendulum appears currently to be more in the child-participation/child-led direction when in fact research supports our role as adults first in child-protection-based activities in relation to key prevention and preparedness messages. Participation needs to match a child's cognitive, emotional, and behavioural tendencies. With increasing age, and guided participation that matches the child's growing developmental competencies, increasingly more sophisticated forms of child and youth participation are then warranted.

A basic problem in the development and delivery of CC-DRR/DRE programs is that they tend to be one-off, time-limited initiatives that are not systematically

[2] These include emergency management (EM) professionals, parents/households, teachers/schools and children themselves. In the case of EM professionals, they are aware of local conditions which may impact on key messaging developed by international/national experts. In the case of other stakeholder groups, it is important to see what these groups see as key messages. This would include creating DRR messaging that accounts for widely held myths as well as to amplify widely held messages that are more likely to lead to effective responding.

infused within the curriculum. Thus, developing evidence-based, expert- and stakeholder-supported curriculum materials that can be implemented on wider and larger scales that help children learn and practice important key messages through participatory learning is necessary. This includes messages that translate directly into effective Response and Recovery behaviours. This includes those that protect children, families, schools, and communities.

At the same time, research suggests that across both policy and practice, there are significant obstacles preventing the systematic uptake of evidence-supported education programs. At the practice level, New Zealand focus group and survey research with teachers (Johnson & Ronan, 2014; see also Johnson, 2014), and additional consultation with our BNHCRC end-users have identified some significant obstacles. Obstacles include a lack of training in CC-DRR curriculum development and delivery, resource and time limitations (e.g., too crowded curriculum in schools), lack of current policy support for these programs, and the perception that such programs might scare children (Johnson, 2014; Johnson & Ronan, 2014). However, systematic research thus far has not been done on what teachers and DRR/EM Professionals in the Australian context see as obstacles and facilitators.

As noted above, there is a lack of policy support for CC-DRR being directly, and systematically, infused in the school curriculum. However, there are places in the current Australian national curriculum that are identified as spaces within which CC-DRR curriculum can be directly infused (e.g., Year 5 Geography). At a more basic level, while anecdotal evidence suggests practitioners and policy-makers support the general idea of CC-DRR/DRE in the curriculum, there is a lack of research to document that support.[3] That is, if there is widespread research-based support for the "aspiration" of CC-DRR/DRE by children, households, schools, EM agencies, this can promote CC-DRR-related policy and curriculum development through bottom-up pressure. In addition, pending wider support from stakeholder groups, if CC-DRR program development can also be done with an eye to helping policy-makers and practitioners solve identified problems (e.g., crowded curriculum; lack of teacher training), that may also assist in promoting increased implementation.

Moving from aspirational policy to actual implementation also involves working with relevant government stakeholders (e.g., education and emergency management sectors) and assisting them to advance sector-wide mapping, including 'scoping and sequence' policy and planning activities. Such planning is necessary to support the development of a K-12 curriculum that (1) meets children's developmental needs, (2) inculcates evidence-based or at least consensus-driven DRR activities, (3) produces "ultimate" outcomes (saving lives, property, reducing injuries and psychosocial consequences), and (4) overcomes the various implementation obstacles outlined above. Another area for evaluation includes cost-benefit and/or cost utility/effectiveness analyses.

More evaluation is clearly necessary through research that follows a coherent, defined pathway that addresses fundamental issues linked to practice and

[3] An exception here is a mapping exercise conducted through the Australian Red Cross that documents places in the current national curriculum where CC-DRR/DRE can be infused directly or indirectly linked to other core curriculum.

policy. In particular, rigorous evaluation of the following is necessary: (1) CC-DRR/DRE program content and delivery (e.g., content analysis; fidelity assessment; stakeholder input), (2) program effectiveness in producing important outcomes (including immediate, ultimate and cost effectiveness outcomes) and, finally and critically, (3) effectiveness of implementation practices, including evaluation of national capacity-building of DRR curriculum and teacher/EM professional training implementation and effectiveness.

In terms of this overall narrative, it is the opinion of this team of researchers that for large scale implementation of programs, taught by well trained teachers and EM professionals, that are effective in promoting risk reduction and resilience requires a different mindset. We need to move from a project-based mentality to a longer-term, strategic curriculum and implementation mentality: One that starts with and is "fuelled" through the development of key relationships between key stakeholders across policy-practice-research sectors. However, that longer-term view will benefit substantially from research that evaluates the role of CC-DRR programs in producing immediate and longer-term risk reduction benefits for children, families, schools, communities and government.

PROJECT PROGRESS UNDERPINNING NARRATIVE/ROADMAP IDENTIFICATION AND RESEARCH

- Scoping and review of CC-DRR policy, practice and research;
- Close consultation with project End Users to establish an implementation road-map, with feedback informing a stepped logic model, linked to core research questions and End User-focused utilization outputs;
- Pilot research designed to get important information from major stakeholder groups, including children, households, teachers/school personnel, emergency management/DRR professionals;
- Based on this combination of "top down" review and "bottom up" consultation/research, the main research includes core questions reflecting a "research and utilisation" narrative and roadmap linked to both CC-DRR practice and policy.

Scoping and review of CC-DRR policy, practice and research

Scoping and review includes four chapters that focus on the following: (1) the national/international context, (2) theory, (3) policy, (4) practice and research in the CC-DRR area. Additionally, theory, policy, practice, research developments in DRR more generally are presented to help give context for CC-DRR developments. Initially, a five chapter Compendium was planned. However, based on consultation with End Users, one chapter, focused on CC-DRR practice, was initially consolidated with the chapter on research. Thus, the current four chapter compendium opens with an introductory chapter providing some international and national context and rationale for research, practice and policy in this area. Chapter 2 focuses on guiding theory across the policy-practice-research nexus. Chapters 3-4 focused on CC-DRR (and DRR) policy and on CC-DRR (and DRR) practice and research, respectively. The compendium was put out to review to international experts, to End Users and to project team

members. Reviews were requested by June 30 2015, with feedback then being used to make improvements. Following the finalising of the Compendium, a brief version will then be distilled for sharing with End Users and others on best practices discerned to date.

Following ongoing consultations with End Users, including at a full day capacity-building workshop held in Sydney prior to the 2015 Research Advisory Forum, a separate chapter on CC-DRR practice, practice frameworks and related is currently in "co-production" with project End Users (see later section for more detail).

Close consultation with project End Users: Co-production, co-evaluation

The research team has held several meetings and consultations with End Users since the start of the project, including over the 2014-2015 year being reviewed here. A face-to-face capacity building workshop was initially planned for the end of 2014, soon after getting word on successful BNHCRC funding. However, as we then ran that idea by End Users, there was consensus opinion that late 2014 was not good timing, primarily owing to "hazard season" concerns (e.g., bushfire risk high at end of year; floods also are not uncommon) needing their attention and availability. Thus, based on a "what's most convenient for most", the capacity building workshop was then moved to occur right prior to the BNHCRC Research Advisory Forum (RAF) in Sydney in early April 2015. Thus, following several teleconference-based meetings with End Users, including one in March 2015 and others in 2014, a full day workshop with End Users was intended to help build capacity linked to CC-DRR policy, practice and research. This workshop presented information on DRR more generally to give context and "funnel" to the CC-DRR landscape. A CC-DRR policy-practice-research nexus was established and was linked to the current project's core research and utilization narrative.

Emerging from this workshop and follow-up consultations, was an increased level of clarity about the progression of research and utilization in this project. That is, End Users at the workshop were unanimous in endorsing a progression of research that moves more from "researcher-driven" to that which is "co-created, co-produced, and co-evaluated."

While End Users endorsed the research narrative presented, another real benefit of the workshop and additional consultations was that they also expressed a preference for delaying CC-DRR/DRE outcome evaluations until they had been assessed and modified according to the existing evidence-base, through development of a CC-DRR practice framework. That is, a number experienced not wanting to move to outcome evaluation before they had their agency CC-DRR/DRE program(s) evaluated first via such a framework to ensure that these programs reflected evidence-based content and delivery. Thus, whereas I as the project leader envisaged doing outcome evaluation at the same time as doing practice framework evaluations, End Users were clear they preferred a stepped, logic model-type process. Thus, one major, current project step linked to the outcomes of this workshop is co-developing a CC-DRR/DRE Practice and Evaluation Framework. Alongside, co-evaluating agency DRE programs to ensure these programs are assessed, and modified, according to the existing evidence- and theory-base is also being done.

Thus, in following principles set out in the Sendai Framework about "co-creation" processes, it is the mutual feeling of the entire team here – Project Team and End Users – that close collaboration across each step of the research and utilization narrative and roadmap will produce enhanced benefits (e.g., increased uptake and usage). The resultant output of this Practice Framework and co-evaluation step then will be in the form of a chapter with two main parts: 1. Practice Framework agency-friendly guidelines and 2. Supplementary technical report that presents (a) published evidence and theory underpinning the guidelines and (b) outlines the process of co-production. This will also culminate in a refereed journal submission that details this co-production and co-evaluation process and will include End Users as co-authors.

Pilot and main research: Evidence-based/stakeholder-supported practice, practice-based/user-satisfaction evidence, implementation

Both pilot and main research are linked to the utilization roadmap that accompanies this Annual Report, tied to the two main questions that comprise the project research narrative:

1. Are CC-DRR/DRE programs effective?
    a. Are programs themselves evidence-based, do they have content and delivery that reflect promising, good or best practice? Do they include input from stakeholders?
    b. Do programs produce important student learning outcomes and risk reduction and resilience outcomes? Are they cost effective?
2. Can CC-DRR/DRE programs be implemented on large, sustainable scales?
    a. What are facilitators and obstacles to both local and scaled, sustainable implementation?
    b. Can programs be constructed that help surmount empirically-identified obstacles, and leverage facilitators, to implementation?
    c. Can programs be implemented on a large scale and produce effective risk reduction and resilience outcomes?
    d. Can programs be implemented in cost effective ways?

Pilot Research: Stakeholder input

The research here is being done by RHD students and is intended to get input on important aspects linked to research, practice and policy across these stakeholder groups:

- Children
- Parents/households
- Teachers/school personnel
- DRR/EM Professionals

Barb Kelly and Anto Amri are doing a combination of survey and focus group work across these groups. Data have been collected, analysed and written up

by Anto for the purposes of his Masters thesis. With that finalized, these pieces are now being converted to two manuscripts to be submitted to refereed journals in the first and second quarter of 2015-16 (linked to deliverables, 2.4.5 and 3.2.1, respectively). Barb is finalizing data collection as of this writing (July 1, 2015), with data to be analysed and written up by end of July for a Masters thesis. Following submission of the thesis, a manuscript will then be submitted to a refereed journal, in line with the two deliverables mentioned previously.

Over both of these projects, stakeholder views are intended to shed light on important issues linked to CC-DRR/DRE content, delivery, effectiveness and implementation. For example, in Anto's project, children wanted "to know more about how to stay safe from disasters" (96%). They were also seeking a more participatory role in school-based CC-DRR/DRE programs and safety initiatives (83%), and they wanted to be more involved in making their homes prepared for disasters (86%). By contrast, teachers supported child participation but also presented some mixed views that could present obstacles to children's genuine participation in CC-DRR/DRE programs in classroom settings (see accompanying report for more detail).[4] Another exemplar finding was that there was a notable discrepancy between children's perceptions of the extent to which they would be able to keep themselves safe during a hazard event and their factual knowledge about how to stay safe. That is, for the children who indicated they know how to be safe from disasters (71% of the sample), nearly all of this sub-sample (96%) were categorized as having a low-medium level of factual knowledge. In other words, only 4% of children who felt they knew how to keep safe had factual knowledge in the high range. One other exemplar finding worth noting is that teachers rated implementation obstacles and facilitators, both those derived from previous research by our team in New Zealand (Johnson, Ronan, Johnston, & Peace, 2014b) and some additional hypothesised obstacles/facilitators. Findings here replicated and extended this previous research. For example, teachers saw teacher training as the biggest facilitators and deterrents, respectively. Another important facilitator was having partnerships established between schools and local EM agencies/councils, another finding echoing New Zealand findings (Johnson et al., 2014b). The accompanying report details these and other important findings, and their implications for CC-DRR programming and implementation, in more detail. Finally, additional data gathered, and pending analyses, will establish whether CC-DRR program involvement is linked to increased benefits (e.g., increased DRR knowledge; reduced fears) and which source of CC-DRR/DRE confers increased benefits (e.g., do formal versus informal education sources produce increased benefits; do combinations of programs confer increased benefits?).

Another study, now being led by Briony Towers, is using a Delphi approach with Australian DRR/EM professionals to identify "key DRR messages" for bushfires. Currently, "key messages" tend to be top-down driven. For example, the IFRC (2013) did a Delphi-like exercise with international research experts to derive key messages for wildfires (and other hazards). In supporting bottom-up processes (i.e., privileging the views of EM professionals who work at the "coalface"), and in light of the Australian context being different than some other international

[4] Research supports experiential, interactive and participatory forms of learning versus sole reliance on didactic, text-driven, rote-based learning approaches (Ronan, 2015).

contexts (e.g., stay and defend versus early evacuation here versus evacuation-only in other countries), it is important to establish where there is agreement, and divergence, from top down-derived (i.e., research- and normative-driven) key messages. This Delphi study has ethics approval and we have recruited a sample of participants from EM agencies (including some End Users). All participants also now also have obtained approval from their managers for participation. The Delphi survey materials are currently being uploaded in on-line software for administration, with scheduled date of data collection completion being August 2015. In addition, a larger study, and follow-on from this pilot research, has been underway with Harkaway Primary School, initially through pilot work done in 2013. The main study itself has been planned implementation, and evaluation, of whole-of-school CC-DRR/DRE programming in 2016. However, with some recent changes to study personnel, we are currently consulting with the Harkaway principal about continuing with this project.

Other pilot research underway includes the following: 1. CC-DRR/DRE meta-analysis (led by K Ronan and E Alisic; analyses underway, manuscript anticipated for submission late 2015); 2. Household planning, preparedness and motivation as a function of resident children at different ages (Kevin Ronan and Briony Towers in partnership with Illy McNeill from another funded BNHCRC study based at University of Melbourne; manuscript to be submitted August 2015); 3. Household survey research in Bendigo (manuscript in preparation; survey part of a community DRR intervention initiative; led by K Ronan & B Kelly); 4. Household survey research that builds on and extends Barb and Anto research document above, with a CQU panel sample of c. 1600 nationally representative households (that K Ronan won an internal CQUniversity grant for; survey being disseminated August 2015); 5. Cyclone Marcia-related research, two surveys, one CATI (phone)[5] survey; another, on-line (led by K Ronan, in partnership with BoM, Risk Frontiers, Geoscience Australia, ABC, with funding from BoM and CQUniversity, $40K; data being collected June-August, 2015).

Main Research: Evidence-based practice, practice-based evidence, implementation

The figure at the end of this section lays out a model that reflects the project's research narrative, involving evaluation of questions linked to the following:

1. Evidence-based practices;
2. Practice-based evidence;
3. Implementation.

Evidence-based practice: Current programs. The main study here has been underway, commencing in 2014-15, first with a review of the literature around promising, good and best practices in CC-DRR/DRE programming. An initial draft Practice and Evaluation Framework was developed that has since undergone some iterations, combining evidence and theory with End User input. The initial Practice and Evaluation Framework initially had 12 components. Through consulting with End Users, the Framework now has five core dimensions (see accompanying powerpoint for those dimensions). Work is currently

[5] CATI = computer assisted telephone interviewing; similar to methodologies used by big polling firms such as Newspoll, IPSOS, Galley, others.

underway now to co-evaluate End User agency nominated CC-DRR/DRE programs while continuing to co-develop the Framework. The timeframe for this evaluation is the first quarter of 2015-2016, with some initial co-evaluations already occurring. An additional output will be in the form of a chapter with three main parts: 1. Practice and Evaluation Framework agency-friendly guidelines for use and 2. Supplementary technical report that presents (a) published evidence and theory underpinning the guidelines and (b) outlines the process of co-production. This process will culminate in a refereed journal submission that details the Framework, including the co-production and co-evaluation process, with plans to include End Users as co-authors.

Evidence-based practice: Drills-focused program. Work is underway to develop a serious gaming app, through the funding support of BNHCRC and CQUniversity, that helps kids learn and demonstrate DRR knowledge and skills that are linked to drills/simulations. The first set of drills that are being developed in the prototype app are those related to school drills in relation to fire, both structural and bushfire. A set of drills-focused learning modules are also being developed to help children inculcate important DRR knowledge and skills. Scoping research done on school drills has found that drills themselves, when done according standard operating procedure (SOP), may not help children learn important knowledge and skills. Findings also suggest that SOP drills may in some circumstances potentially also raise risk (Johnson, Johnston, Ronan, & Peace, 2014). Thus, this drills-focused CC-DRR/DRE program and app is intended to help overcome some of the problems identified as well as solve some problems linked to scaled implementation (see later section). The app work is underway with the developer, Chris Mills of Strategenics and his team, that is being informed by an Advisory Panel that consists of interested End Users (four have nominated), project team members (3) and children (2 have been nominated, with more likely to be added). Learning objectives and outcomes are to be finalized August 2015, with the prototype being completed during the first quarter of 2015-2016, followed by pilot testing in the second quarter. The modules, and companion brief teacher training, are being developed with the assistance of the Practice and Evaluation Framework, the Advisory Panel and building on a draft set of modules made by our project team partners at Save the Children Australia. When completed, the program will be evaluated for outcome effectiveness (see practice-based evidence section that follows).

Practice-based evidence. A suite of outcome evaluation-focused studies are planned here, including evaluating current CC-DRR/DRE programs as well as newly developed ones. These answer the core question "do CC-DRR/DRE programs produce important student learning and DRR/resilience outcomes?" (see Figure that follows this section). Initial data collection on formal versus informal CC-DRR/DRE and its effects is occurring (Barb Kelly) or has occurred (Anto Amri) through two pilot projects detailed earlier.

Current CC-DRR/DRE programs that have been implemented, with some initial data being collected include the Triple Zero and Pillowcase programs, both developed through End User agencies. Triple Zero is an effort involving some of our End User agencies with the assistance of Briony Towers. Piloting has been occurring from the start of the 2015 school year, with more full data collection to occur in 2016.

The Pillowcase program, designed by the Red Cross, has been implemented in a number of schools through the Australian Red Cross (ARC), with initial data collection happening in the first half of 2015. This project has involved collaboration between ARC and this project. The Project Leader (Kevin Ronan) consulted with ARC personnel (John Richardson; Antonia Mackay, Pillowcase project manager), reviewed materials prior to its dissemination and assisted in the development of initial evaluation material. A draft report has been written by Antonia Mackay (ARC), with input to the draft provided (by K Ronan). Additionally, a journal article is under discussion based on findings and based on the fact that the Pillowcase program has some features that can assist in overcoming known obstacles to scaled implementation of CC-DRR/DRE programs. Additional implementation, and companion evaluation, is being planned.

Other programs planned for practice-based (outcome) evaluation from later 2015 include those from a number of additional End User agencies, including those currently with whom we are co-evaluating their agency programs' "internals" through the Practice and Evaluation Framework (see Evidence-based practice: Current programs section above). These include NSW RFS, Melbourne MFB, NSW F&R, DFES, ARC, AEMI, TFS, SA SES, Vic SES, perhaps others (discussions currently being held with additional End User agencies). The other program slated for evaluation in 2016 will be the drills-focused program discussed in the preceding section.

For this suite of program evaluations, ethics applications for approving evaluation of these programs will be underway in September through RMIT as the Practice & Evaluation Framework phase is wrapping up. Initial evaluations are planned to begin then following that approval, including for agencies who have specifically requested an outcome evaluation to start this year (e.g., MFB). Others will start either late 2015 or early 2016.

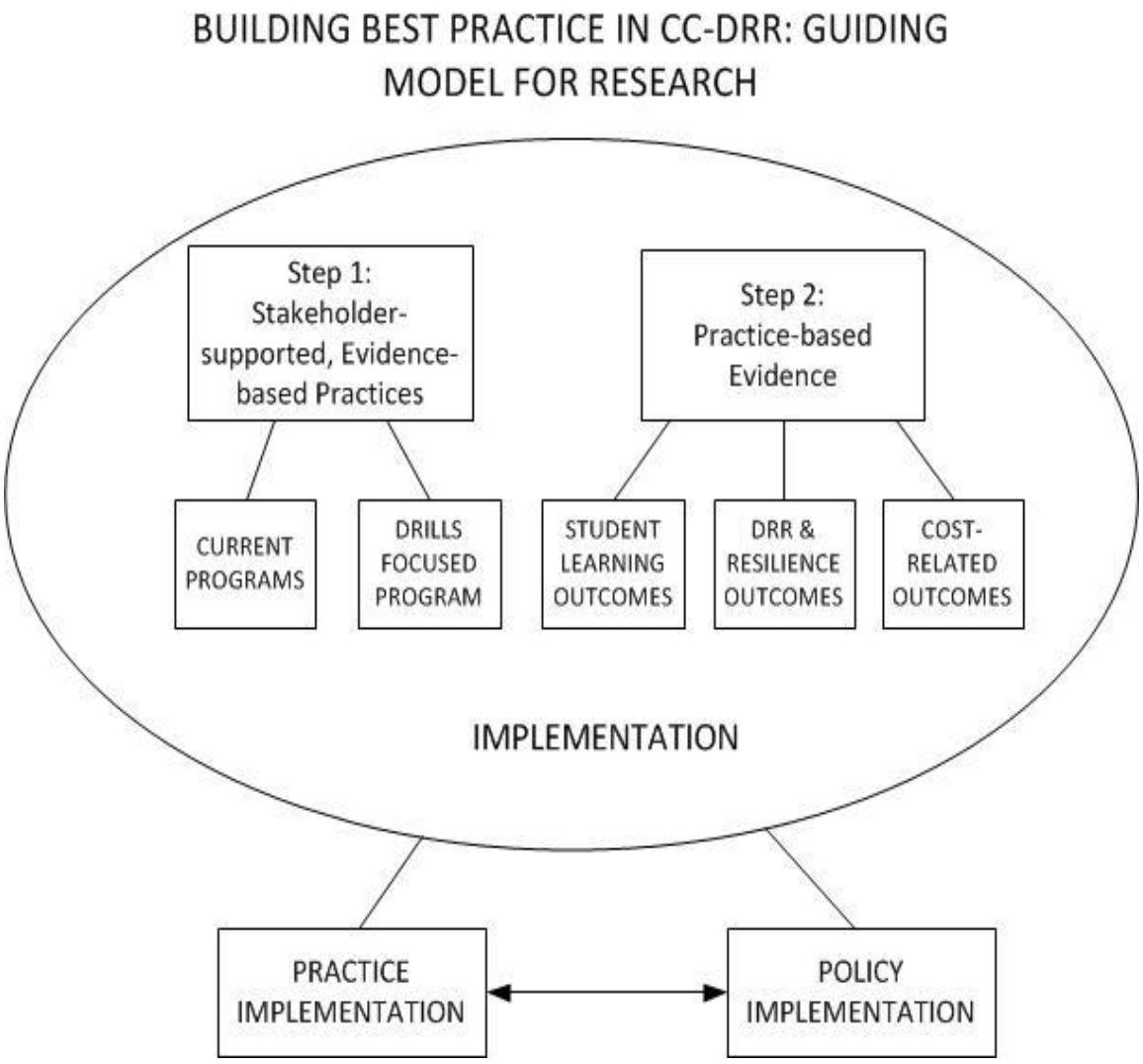
One theme in these evaluations of program effectiveness is do they produce important student learning outcomes and DRR/resilience outcomes, both in the short-term and over longer periods of time. Thus, as part of ethics approval, and child/youth-parent participation in these evaluations, we will be asking to follow evaluation cohorts over time to see about longer term risk reduction and resilience outcomes. This includes in relation to hazards that eventuate prospectively. Cost-related outcomes evaluation is also planned, in conjunction with Fiona Orbison from UWA, part of another BNHCRC-funded project.

As signalled earlier in this report, one other theme in this line of research is to help agencies develop their own tools for evaluating outcome effectiveness. As introduced earlier, our systematic reviews have revealed that agency-driven outcome evaluations are rarely conducted. In addition, all published outcome evaluations of CC-DRR/DRE programs to date have been conducted by professional evaluators (mainly academic researchers) (Johnson, Ronan, Johnston, & Peace, 2014a). Thus, one utilization product planned is a tool, or set of measures (and perhaps simple guidelines), that can make outcome evaluations easier to do.

Others studies are planned including those based on "CC-DRR success stories" (where DRE has led to DRR and resilience outcomes).

CC-DRR/DRE Implementation. To support scaled, sustainable implementation of CC-DRR programs, research is underway through four RHD projects, Anto Amri, Barb Kelly, Ben Martin and, most recently, Mayeda Rashid. Three of the four RHD projects combine the evaluation of CC-DRR/DRE effectiveness with CC-DRR/DRE implementation (Anto, Barb, Mayeda). Across these three projects, one line of the implementation-focused research is on extending previous research (Johnson, Ronan, Johnston, & Peace, 2014b) that identified implementation deterrents and facilitators (Barb Kelly, Anto Amri). Ben Martin's PhD project is slated to look exclusively at implementation problems that includes facilitators and deterrents but also takes a more holistic approach. His project is currently in the planning/pre-confirmation stage and includes plans to create and test a CC-DRR/DRE policy and practice implementation model (or models). As introduced in the previous section, cost-related research is also now being planned in partnership with another BNHCRC project. This CC-DRR project arm is being facilitated by Kevin Ronan from this project and Fiona Gibson from a UWA-led BNHCRC costing-related project.

Utilisation products here include providing a research-developed tool to assist agencies/schools implement programs in scaled, sustainable ways, while ensuring their ongoing effectiveness in producing DRR/resilience outcomes.


BUILDING BEST PRACTICE IN CC-DRR: GUIDING MODEL FOR RESEARCH
Step 1: Stakeholder-supported, Evidence-based Practices
Step 2: Practice-based Evidence
CURRENT PROGRAMS
DRILLS FOCUSED PROGRAM
STUDENT LEARNING OUTCOMES
DRR & RESILIENCE OUTCOMES
COST-RELATED OUTCOMES
IMPLEMENTATION
PRACTICE IMPLEMENTATION
POLICY IMPLEMENTATION

PUBLICATIONS LIST

Johnson, V. A., Peace, R., Ronan, K. R., & Johnston, D. M. (2015). Improving the impact and implementation of disaster education programs for children through theory-based evaluation. Manuscript under revision (*Risk Analysis)*.

Ronan, K. R. (2015). Many advances, continuing challenges towards HFA2 and Post-2015: Policy-practice-research summary and recommendations. Hyogo Framework for Action Thematic Review: Priority for Action (PFA) 3 – Core Indicator (CI) 2: School curricula, education material and relevant training including disaster risk reduction and recovery concepts and practices. Background Chapter prepared for United Nations Office for Disaster Risk Reduction and the Global Assessment Report on Disaster Risk Reduction, 2015. UNESCO/UNICEF: Paris/Geneva.

Ronan, K. R., Alisic, E., Towers, B., Johnson, V.A., & Johnston, D. M. (2015). Disaster preparedness for children and families: A critical review. *Current Psychiatry Reports, 17*, 58-66. DOI 10.1007/s11920-015-0589-6.

Ronan, K. R. (2015). Progress made with school curricula, education material and relevant training in disaster risk reduction and recovery concepts and practices. Special section on Australian contributions to the UNISDR World Conference and the next cycle of the Hyogo Framework for Action. *Australian Journal of Emergency Management, 30(1)*, 8-9.

Ronan, K. R. LeBlanc, J., Kelly, B., & Burke, S. (2015). Community health and disaster recovery. In E. Mpofu (Ed.), *Community-oriented health services: Practices across the disciplines (pp. 243-269). Springer: New York*.

Ronan, K. R., Towers, B., McAuslan, K. Johnson, V.A., Alisic, E., Davie, S., Handmer, J., Haynes, K., Ireland, N., Petal, M., Amri, A., & Johnston, D. M., (2015). Promoting child resilience to disasters: Policy, practice, research. Bushfire and Natural Hazards CRC Annual Conference Proceedings.

Ronan, K. R. (2014). Contribution to UN Science and Technology Group paper draft: How the implementation of the post-2015 framework for disaster risk reduction can be strengthened by mobilising the science and technology community. United Nations Science & Technology Major Group. Planning for the Third World Conference on Disaster Risk Reduction, 2015. International Council for Science (ICSU): Paris.

Towers, B. (2014). Children's knowledge of bushfire emergency response. *International Journal of Wildland Fire, 24(2), 179-189.*

Towers, B. & Ronan, K. (Accepted). Children's health and climate change: Vulnerability, adaptation and resilience.

Petal, M., Ronan, K. R, Davie, S., Alisic, E., Towers, B., Haynes, K., & Ireland, N. (2014). Building best-practice in child-centred disaster risk reduction: Submission to the International Council for Science/United Nations Science & Technology Major Group. Planning for the Third World Conference on Disaster Risk Reduction, 2015.

Burke, S., Gridley, H., Reser, J., Ronan, K. R., & Kenardy, J. (2014). Natural disaster funding: A submission by the Australian Psychological Society to the Productivity Commission. Australian Psychological Society: Melbourne.

Johnson, V. A., Ronan, K. R., Johnston, D. M, & Peace, R. (2014). Evaluations of disaster education programs for children: A methodological review. *International Journal of Disaster Risk Reduction*, 9, 107–123.

Johnson, V. A., Ronan, K. R., Johnston, D. M, & Peace, R. (2014). Implementing disaster preparedness education in New Zealand primary schools. *Disaster Prevention and Management, 23(4)*, 370-380.

Becker, J. S., Paton, D., Johnston, D. M., & Ronan, K. R. (2014). Societal influences on earthquake information meaning-making and household preparedness. *International Journal of Mass Emergencies and Disasters, 32(2),* 317-352.

Ronan, K. R. & Towers, B. (2014). Systems education for a sustainable planet: Preparing children for natural disasters. *Systems*: 2, 1-23; doi:10.3390/systems2010001.

Webb, M. & Ronan, K.R. (2014). Interactive hazards education program in a low SES community : A quasi-experimental pilot study. *Risk Analysis: Risk Analysis: DOI: 10.1111/risa.12217*.

Johnson, V. A. & Ronan, K. R. (2014). Classroom responses of school teachers following the 2011 Christchurch earthquake. *Natural Hazards*: *72 (2),* 1075-1092.

Ronan, K. R., Petal, M. Johnson, V.A., Alisic, E., Haynes, K., Johnston, D. M., Handmer, J., Towers, B., Davie, S., Ireland, N. (2014). Hyogo Framework for Action Thematic Review: Priority for Action (PFA) 3 – Core Indicator (CI) 2: School curricula, education material and relevant training including disaster risk reduction and recovery concepts and practices. Input Paper prepared for United Nations Office for Disaster Risk Reduction and the Global Assessment Report on Disaster Risk Reduction, 2015. CQUniversity: Authors.

Johnston, D., Standring, S., Ronan, K. R., Lindell, M., Wilson, T., Cousins, J., Aldridge, E., Ardagh, M. W., Deely, J. M., Jensen, S., Kirsch, T., & Bissell, R. (2014). The 2010/2011 Canterbury earthquakes: context and cause of injury. *Natural Hazards,* DOI: 10.1007/s11069-014-1094-7, 1-11.

Johnston, D. M., Ronan, K. R., & Standring, S. (2014). Children's understanding of natural hazards in Christchurch: reflecting on a 2003 study. *Australian Journal of Emergency Management:* http://www.em.gov.au/Publications/Australianjournalofemergencymanagement/Currentissue/Pages/AJEM29ONE/Historicalreflection.aspx.

Ronan, K. R. (2014). Solving wicked problems linked to disasters, risk and uncertainty: Children are truly our future. *Australian Journal of Emergency Management:* http://www.em.gov.au/Publications/Australianjournalofemergencymanagement/Currentissue/Pages/AJEM29ONE/OPINIONSolvingwickedproblems.aspx.

Towers, B. & Whybro, M. (2014). *Triple Zero Kid's Challenge Teacher's Guide.* A curriculum based resource produced for Triple Zero Working Group and the

Australian Government Attorney General's Department. Available online from the 17th September, 2014.

Johnson, V. A., Johnston, D. M., Ronan, K. R., & Peace, R. (2014). Evaluating children's learning of adaptive response capacities from ShakeOut, an earthquake and tsunami drill in two Washington State school districts. *Journal of Homeland Security, DOI 10.1515/jhsem-2014-0012.*

Ronan, K. R. & Alisic, E. (2014). Contributions to the Zero draft of the Post-2015 framework for disaster risk reduction: UN Major Group for Science and Technology. CQUniversity: Authors.

CURRENT TEAM MEMBERS

Project Team: Professor Kevin Ronan (lead researcher; CQUniversity); Dr Briony Towers (post-doc fellow, RMIT); John Handmer (RMIT); Katharine Haynes (post-doc fellow, Macquarie); Eva Alisic (Monash); Save the Children (Nick Ireland, Marla Petal, Susan Davie); Research Associates: Joint Centre for Disaster Research, Massey University/GNS Science, New Zealand (David Johnston; Vicki Johnson).

PhD Students: Avianto Amri; Benjamin Martin; Mayeda Rashid (starting August 2015).

Masters Students: Barb Kelly.

Additional Students: Others currently being recruited including PhD students.

End Users: Liz Addison/Tracey Leotta, WA DFES; Sandra Barber, TFS (TAS); Gwynne Brennan/Mathew Henry, CFA (VIC); Fiona Dunstan/Peta O'Donohue, CFS (SA); Bruno Greimel, QFES (QLD); Tony Jarrett/Brenda Doran-Higgins, NSW RFS; Ben McFadgen, VIC SES; Rob Purcell, MFB (VIC); John Richardson, ARC; Bob Stevenson/Greg Mennie, SA SES; Francie Tonkin, MFS (SA), Conrad Walsh, F&R NSW; TBD, AEMI; Michelle Coombe/Simon Goodwin, SAFECOM.

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