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MAPPING APPROACHES TO COMMUNITY ENGAGEMENT FOR PREPAREDNESS IN AUSTRALIA

A framework based on current and future Australian community engagement for preparedness approaches, which benchmarks best practice and facilitates transparent evaluation systems for end-users/agencies

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EXECUTIVE SUMMARY

Getting Australians ready for a natural hazard has taken on a new imperative during the year this project was undertaken. Tasmania and Queensland were subject to unprecedented summer temperatures and suffered damaging bushfires in ecologies that were thought to be permanently safe from fire damage. Queensland then underwent a cascading series of bushfires, cyclones and floods that saw the media team activated for three solid months. Agencies are actively accounting for climate change in their planning and successful preparedness programs are now more important than ever.

This project was designed to map the community engagement for preparedness approaches Australian agencies are currently using and to use this picture to develop closer linkages from frameworks to practice. It was a six-stage project: a literature review, interviews with agency community engagement practitioners and managers, design of a framework that accounted for their approach and then presentation of a toolkit that allowed implementation at grass roots level of the framework, and evaluation of this work.

The literature review confirmed that getting people to prepare for a natural hazard is difficult, even in places where hazards are regular and expected. People living in cyclone-prone areas tended to be better prepared and preparation was considered a social norm in these areas, but still there were large segments of the community who did not register risk or act on a threat. People in bushfire prone areas tended to be the worst prepared, and in particular, people in urban areas, and wildland/urban interfaces. A number of obstacles to preparing emerged from the literature. Key was failure to fully personalise a risk, even when the risk is accepted as likely. The business of day to day lives, cost, fear of being seen to over-react, weighing up likelihood against effort, optimism bias and being overwhelmed by the volume of tasks involved in preparing all have an influence, along with situational factors such demographics and life stage, on hazard preparation.

The literature also showed that community engagement in emergency management covers the whole spectrum of communication, engagement and participation, and that interpretation was used by practitioners used to cover all of these methods of interaction with the community. Therefore the term 'community engagement' was used to refer to work by engagement and communication teams concerned with preparedness for natural hazards.

Our interviews with practitioners explored what preparedness looks like, barriers and enablers of preparedness, what competencies exist in a prepared community and how they and their agency 'do' community engagement. We also touched on what they thought was best practice in the field and what framework/s they use to guide their practice. Practitioners told us that most of them work to the IAP2-based Australian Institute of Disaster Resilience Handbook 6 framework, usually with additions and alterations. Co-design and community development approaches emerged as a goal for many practitioners.

We found a wide range of approaches, usually driven by resourcing and skills. Some smaller states with very small teams undertake information delivery engagement

practices, while other small teams have highly organised community capacity-building programs embedded in their organisation's strategic planning. Several larger organisations are doing community engagement in a measurably successful way. They show that it is possible to get year on year improvements to preparedness levels, as well as illustrating programmed methods of achieving this.

Our interviews gave us rich information from which we were able to build the following model containing five steps, and with three additional different layers. The first overlay features the aims of each step; the second explains the tactics associated with each step; and the third explains and guides the research, monitoring, evaluation and learning that permeates every aspect of the model. The fifth dimension of the model, and a key deliverable of this project, is a competency index, which connects the characteristics of the community with the different stages of the model. We've called the model the Australian generative model of community engagement for preparedness – the diagram below shows the basic framework.
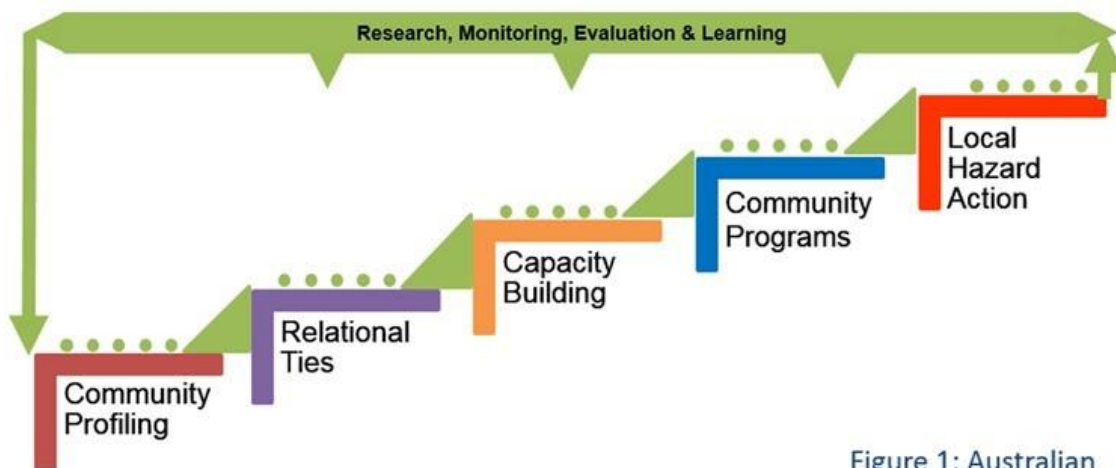
Figure 1: Australian Generative Model of Community Engagement

Following development of the model, we undertook a systematic literature review to determine the effect of checklist preparedness activities for personal safety and coping during a hazard's impact and recovery phases. We used accepted systematic literature review standards and checked these against the Campbell Collaboration's method of systematic literature reviews, and in our first round of searching found 1,451 articles. These were sorted on title, and a further 1,328 excluded. After abstract and full text screening, not one article remained that attempted to examine the effect of discrete or groups of preparedness activities.

What we did find from the systematic literature review was a series of community engagement interventions that had been tested in an academic setting and published in both peer reviewed and grey literature. From this data we were able to compile a toolkit of community engagement techniques that had been tested in an emergency management preparedness setting.

At this point we were able to take the model to workshops of agency, local government and not for profit practitioners in the preparedness space. With their guidance, we were able to simplify the presentation of the model and consider

aspects of the model that would or wouldn't work in practice. The workshops provided an iterative platform, with the model and the workshop materials evolving from the first workshop to the second. We expect the framework to evolve as practitioners mould it to suit and explain their approaches to community engagement for preparedness.

Evaluation was an important concept that emerged from the literature review, the interviews with practitioners and the systematic literature review, and has been identified as problematic by respected researchers Gilbert, Elsworth and Rhodes and their colleagues since 2007 (Gilbert, 2007; Elsworth, Gilbert & Rhodes, 2009; Gilbert, Elsworth, Stevens, Rowe & Robinson, 2010; Rhodes, Gilbert, Nelson and Preece, 2011). From these information sources and from community engagement evaluation literature, we also developed a Monitoring and Evaluation Toolkit as a companion to the Community Engagement Toolkit. Both of these toolkits are separate documents within the project. Both are documents designed to cater for entry level practitioners upward.

This project has provided a platform for advancement of Australian practice in community engagement for preparedness. It has allowed us to map approaches and competencies that have potential to clarify the community engagement planning process. It supports the matching of CE approaches and techniques to community competencies and characteristics, and provides guidance on evaluation.

We have also provided a series of recommendations on community engagement practice and further research ideas that we think will further advance efforts to get Australians ready for natural hazards.

1. INTRODUCTION

Community preparation in disaster response has been empirically established as a key factor in the protection of life during a disaster. Natural disasters, especially bushfires, have provided evidence showing that there is a pervasive lack of preparation (King & Goudie 2006; Martins, Nigg, Louis-Charles & Kendra, 2019; McLennan 2014; McLennan et al. 2011; Pinock, 2007; Teague, McLeod & Pascoe 2010) even in communities with previous disaster experience (Mackie, McLennan & Wright 2013; McLennan, Paton & Wright 2015). Agencies and researchers have also reported the struggle to get people motivated to prepare (McLennan, Elliott & Omodei 2012), and to understand what needs to be done as part of that preparation. A number of community engagement programs have been successful and have been estimated to save lives and reduce the cost of property damage and destruction (Gilbert, 2007). At a higher level, community engagement is also considered central to development of community resilience in disaster (Council of Australian Governments 2011).

Consultation with agencies regarding this BNHCRC project application revealed gaps in emergency agency community engagement knowledge and practice. Specifically:

- Research does not easily translate to practice

- Previous research has not suggested ways to adopt the new knowledge

- There is little transfer of knowledge between researchers and practitioners

- Evaluation has been overlooked in previous research

- Evaluation conducted by agencies is not systematic, making benchmarking difficult

Therefore, these needs frame both the priority and urgency of this project and the potential to contribute to agency and local council action. Agencies have also articulated community engagement as a priority and, in many states in Australia, are making efforts to systemise community engagement and evaluation of its effect (such as Elsworth et al. 2010; Emergency Management Victoria 2017; Inspector-General of Emergency Management 2014). This project addresses this need by developing an empirical framework - built from a systematic literature review of effective preparedness actions, a systematic literature review of community engagement for preparedness, and a synthesis of agency best practices - that offers a systematic and evidence-based standard for agency implementation for community disaster preparation. The framework, and the associated index of core competencies and relationship indices, could also contribute to informing a more sustainable community engagement policy.

This project will consider the more immediate need for community engagement by emergency end-user/agencies for preparedness, which occurs annually, rather than for resilience, which is longer term and involves cross-government involvement including from outside the emergency management sphere.

1.1 GOAL

The research project aimed to map and synthesise the community engagement for preparedness approaches used by Australian emergency agencies.

In doing this, the project will equip agencies with a clear and empirically-based method of undertaking community engagement for emergency preparation, thereby contributing to the overall resilience of Australian communities.

To achieve this goal, the research project developed and tested an empirically informed community engagement framework for emergency preparation from agency current practice. The key aim of the framework was to further guide and support community engagement activities by end-users and agencies. Three key value propositions underpinned the project:

- A community preparedness competency index: The index provides end-users/agencies with a guide for identifying where a community falls along a continuum of competence, and a tool for end-users/agencies to select the starting point and appropriate community engagement activities for that community to advance in preparedness

- A community preparedness framework: The framework was developed as a synthesis of current council-led and agency-led practices, and empirical studies. The framework offers a map to respond and accommodate the complexities of community values, building trust and relationships, in a disaster context. The framework addresses differing levels and the varying needs of community groups for disaster information, preparedness and action within a population. The framework includes toolkits and implementation support along with tools and techniques for evaluation in a readily accessible, and agency relevant, form

- A systematic review of effectiveness of household preparedness activity that was to allow agencies to focus on the most effective household preparedness actions during community engagement activities. This systematic literature review is included as a companion document to this report on the Bushfire and Natural Hazards CRC website

1.2 PROJECT MANAGEMENT

The project was managed in three stages:

1.2.1 Stage 1: Research advisory group and literature review

Formation of Advisory Reference Group

An advisory reference group (ARG) consisting of 10 practitioners and managers was formed with the purpose to optimize communication and collaboration between end user agencies, and the Community Engagement for Preparedness Research Team so that outcomes of the project were relevant and easily applied to practice. The role of the ARG was to provide feedback and advice to the Research Team undertaking the Community Engagement for Preparedness study. This included reviewing progress of the project at each milestone point with a particular focus on assessment of actions

and progress against goals; and providing advice and feedback on proposed actions undertaken as part of the research project

Literature review of current practice, and establishing competencies/ indicators

A comprehensive review of current empirical and industry literature (research, knowledge and practice) focusing on emergency preparedness, community competencies for preparedness, and community engagement for preparedness. This review examined published models and techniques, and built on Gilbert's (2007) early work on assessing community preparedness for bushfires, Handbook 6 - National Strategy for Disaster Resilience: Community Engagement Framework, and Elsworth et al.'s (2010) general framework for community engagement for emergencies published as Manual 45 of the Australian Institute for Disaster Resilience manual series. It also established community competencies and relationship indicators as a foundation for engagement, motivation, and response from the data collected during the study.

1.2.2 Stage 2: Data collection

Data collection of community engagement for preparedness models, approaches and techniques currently employed by participating Australian emergency end-user/agencies was undertaken, and included:

- In-depth interviews (30) with engagement, resilience, and communication staff from all but one Australian agencies that deal specifically and predominantly with natural hazards

- Agency authored documents relating to these activities were reviewed to inform understanding

The questions focused on:

- Models used to guide community engagement and its evaluation

- Enablers and barriers to community preparedness

- What preparedness looks like

- Competencies that support community and individual preparedness

- How agencies do community engagement for preparedness and how they would like to do it

A framework and evaluation mechanisms were developed as an outcome of this stage.

1.2.3 Stage 3: Systematic literature review of preparedness activities

A systematic literature review of the range of disaster preparedness activities and their effect on household safety was the third stage of the project. This stage used systematic review protocols already employed by disaster social scientists (such as Miller et al. 2017) and will be informed by the Campbell Collaboration and similar protocols for these types of documents. This work will build on the work of a number

of researchers (Dunlop et al. 2014; Heagele 2016; Kohn et al. 2012; Uscher-Pines et al. 2013) to identify most effective and therefore most important preparation activities.

1.2.4 Stage 4: Pilot testing

Stage 4 consisted of a pilot test of the framework by presenting it to agency community engagement practitioners and managers at the workshops reported in Stage 5. The pilot was to have been in a specific community over one week, but in the first months of the project it became evident that, taking into account the long term nature of community engagement for preparedness, a one week pilot would not be a practical or valid test of the framework.

1.2.5 Stage 5: Final framework and toolkit

The two full day workshops were an opportunity for researchers to guide agency staff through the research results, the framework, and a community engagement tool kit. At the workshops in Melbourne and Brisbane, attendees were able to consider how the framework fit with their practice, and provide feedback on components that they thought would support their work, areas that needed more consideration, and what improvements could be made to make it more applicable to their practice. The workshops provided researchers with the opportunity to further refine the framework and suite of activities and tools. In addition, as an outcome of the systematic literature review, a full technical report and a plain language summary of the review, including recommendations, were produced and this formed the basis of the Community Engagement Toolkit.

1.3 PROJECT DELIVERABLES

The project offered seven key deliverables:

1. An **index of the core community competencies for preparedness**. This tool supports end-users/agencies to identify engagement techniques required in a given situation based on the competencies of a community to prepare for an emergency

2. An **index of community relationships for preparedness engagement**. This tool supports end-users/agencies to understand, build, maintain and evaluate community relationships for disaster preparedness

3. A new **framework of community engagement for emergency preparation** that benchmarks best practice and facilitates transparent evaluation systems for end-users/agencies

4. An index of the most effective household/personal preparedness activities across a range of disasters

5. A **toolkit to facilitate implementation and evaluation** in a range of-community contexts. The toolkit will provide a coherent, empirically-based suite of activities (tools, messages, and channels) for agencies to use in engaging communities

6. A toolkit and guidelines for **developing networks to facilitate and sustain relationship-based community engagement.** This includes techniques for identifying, maintaining and evaluating agency-community relationships

7. To ensure transfer of this new knowledge, **two workshops** were held to facilitate implementation of the framework, and support adaptation for community-based diversity. A train-the-trainer model developed from these workshops will build capacity within agencies for ongoing implementation and review

2. LITERATURE REVIEW

A literature review provided a foundation to the research project in terms of empirical and industry knowledge and practice of community engagement for preparedness. The review provides a clearer picture of what preparedness for natural hazards looks like, agency expectations relating to preparation by the community, what the obstacles exist to achieving community preparedness, and how agencies might overcome these obstacles.

First, the concept of emergency preparedness from both agency and community points of view is presented, including the levels of preparedness people achieve and what stops them from planning and preparing. Specifically, key concepts of community engagement are presented, and several community engagement approaches that might prove useful in supporting a framework for community information and engagement for preparedness are examined. Community engagement evaluation is also presented and its relevance to this project is identified. Finally, Australian community engagement for preparedness programs with an evaluation component are reviewed.

From this, key concepts emerge that clarify the picture of community engagement for preparedness in Australia and how the implementation and effectiveness of community engagement programs in this country might be understood.

2.1 PREPAREDNESS

Preparedness is a subjective term that means different things to householders and agencies (Paton, Kelly, Burgelt, & Doherty, 2006, pp. 15-16). The conceptual context of preparedness is as part of a sequence of agency activity relating to disaster and which is most commonly described by the comprehensive emergency management model developed by the US National Governor's Association (Staupe-Delgado & Kruke, 2017). This model has 'mitigation' and 'preparedness' preceding the emergency or disaster, and 'response' and 'recovery' following the event. Alternative terms for natural hazards preparation are readiness, contingency planning, emergency planning, disaster capacity building, resilience building, resilience planning, and business continuity planning (Staupe-Delgado & Kruke, 2017).

Staupe-Delgado and Kruke (2017, p. 3) say that a case of preparedness "cannot be readily identified for empirical study and is, thus, not suitable for direct observation and measurement." However, they go on to say that preparedness is an abstract concept that requires operationalisation into more tangible variables and factors, and this makes some measurement possible. They also point out that preparedness is a quality or a process, but this is not mentioned in studies on the concept (Staupe-Delgado & Kruke, 2017). What is identified in the literature consistently is that preparedness is a continuous process, even though, as Staupe-Delgado and Kruke highlight, some of the same literature talks about a desired 'end state' or 'state of preparedness'. In the end, they find that definitions should conceptualise preparedness as an active, continuous and anticipatory phenomenon, with social, planned, non-structural or enabling features (Staupe-Delgado & Kruke, 2017, p.9), that all of these attributes should be present for the definition to 'ring well'. A definition that featured six of the seven attributes that they identified was from the United

Nations Office for Disaster Risk Reduction (UNISDR) (United Nations International Disaster Reduction Strategy, 2004, p. 21):

> *The knowledge and capacities developed by governments, professional response and recovery organizations, communities and individuals to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current hazard events or conditions.*

The UNDRS definition is also used by Queensland in its lexicon, but generally in Australia, the accepted definition for community disaster preparedness is published by the Australian Institute for Disaster Resilience (Australian Institute for Disaster Resilience, n.d.):

> *A community which has developed effective emergency management arrangements at the local level, resulting in: an alert, informed and active community which supports its voluntary organisations; an active and involved local government; and, agreed and coordinated arrangements for prevention, preparedness, response, and recovery.*

This definition presents an organisational view of disaster preparedness, despite the shared responsibilities focus of the National Disaster Resilience Framework (Council of Australian Governments, 2011), implying reliance on the community's participation in formal emergency management networks. It also departs from several of the themes put forward by Staupe-Delgado and Kruke as necessary for a definition of disaster preparedness, namely: continuous, social, and enabling. The omission of these three features, added to the continuous, social and enabling nature of community engagement for preparedness, points us to use of the UN version of the definition of disaster preparedness for this project.

2.2 WHAT PREPAREDNESS LOOKS LIKE

The end state of preparedness of communities and individuals has not been well articulated. The UN (United Nations, 2005) identifies preparedness as an area for action, and breaks it down into the following concepts for action, with the assumption that each could be measured:

a. Strengthen policy, technical and institutional capacities in regional, national and local disaster management, including those related to technology, training, and human and material resources

b. Promote and support dialogue, exchange of information and coordination among early warning, disaster risk reduction, disaster response, development and other relevant agencies and institutions at all levels, with the aim of fostering a holistic approach towards disaster risk reduction

c. Strengthen and when necessary develop coordinated regional approaches, and create or upgrade regional policies, operational mechanisms, plans and communication systems to prepare for and ensure rapid and effective disaster response in situations that exceed national coping capacities

d. Prepare or review and periodically update disaster preparedness and contingency plans and policies at all levels, with a particular focus on the most vulnerable areas and groups

e. Promote regular disaster preparedness exercises, including evacuation drills, with a view to ensuring rapid and effective disaster response and access to essential food and non-food relief supplies, as appropriate, to local needs

f. Promote the establishment of emergency funds, where and as appropriate, to support response, recovery and preparedness measures

g. Develop specific mechanisms to engage the active participation and ownership of relevant stakeholders, including communities, in disaster risk reduction, in particular building on the spirit of volunteerism

Twigg (2009), in the development of characteristics of resilience that were to be applied to the Hyogo Framework for Action 'Priorities for Action', identifies preparedness as measurable according to:

- Organisational capacities and coordination

- Early warning systems

- Preparedness and contingency planning

- Emergency resources and infrastructure

- Emergency response and recovery

- Participation, voluntarism, accountability

In another attempt at developing a picture of what preparedness looks like, Sutton and Tierney (2006) identified preparedness goals (which they called dimensions) in three different levels of society: household, business and public sector/agency. They then developed a set of preparedness measures across each of these levels. Their dimensions for household disaster preparedness were (pp. 15-16):

- Hazard knowledge -hazard identification and risk, impact and vulnerability analysis

- Management, direction and co-ordination

- Formal and informal response agreements

- Supportive resources

- Life safety protection

- Property protection

- Emergency coping and restoring of key functions

- Initiation of recovery

From a household perspective, they gathered the following measures from previous preparedness research instruments and agency guidelines on preparedness (Sutton & Tierney, 2006):

- Hazard knowledge: sources of information about a hazard that might affect the local community, knowledge of actions to take in response to a certain hazard, including having a disaster supplies kit on hand, developing a family emergency plan, property protection measures, community networking and structural vulnerability of property

- Formal and informal response plans and agreements – whether household emergency plans have been developed and plans to reunite if the family is split during the disaster, whether the neighbourhood had watch-type groups and whether plans had been made to look after vulnerable people in the community

- Life safety protection – these included questions on whether respondents had prepared disaster supply kits containing food, water, medical supplies, radio and torch. Training in first aid and drills with children were included in some of the instruments

- Property protection – whether structural mitigation had been undertaken, and arranging furniture and cupboard contents for safety in event of an earthquake

- Initiation of recovery – purchase of insurance

- Emergency coping and restoration of key functions – one survey asked questions about delaying big purchase decisions, cancelling or delaying investments, or saving more money

These concepts are explored in more detail in Section 2.4.2 relating to preparation activities and checklists.

2.3 WHAT IS THE IDEAL LEVEL OF PREPAREDNESS?

Few attempts have been made to determine where on the scale of preparedness individuals or communities lie so that comparisons can be made and estimations of preparedness or not prepared can be made. One study that did (Muir, Gilbert, O'Hara, Day, & Newstead, 2017) asked householders to rate from one to ten their readiness in terms of whether they have:

- An adequate water supply for firefighting

- Prepared a kit of personal protective clothing

- Firefighting equipment to protect the house

- Covered all gaps and vents to reduce sparks getting into the house

- Protective covers for the windows

- Undertaken maintenance activities on their home to improve protection from bushfires

From this, the researchers emerged with a scale out of 60 points that allowed them to quantify household preparation. They were then able to measure changes in preparation over time, with studies from 2012 to 2014, and therefore the effect of activity by the Country Fire Authority in Victoria in that time (Muir et al., 2017). They

found moderate preparation was the average, even though there was a small but significant increase in preparation within the moderate range (from M = 30.2 in 2012, to M = 32.0 in 2013, to M = 32.6 in 2014).

Agencies themselves do not make clear at what point they believe a person or community is prepared apart from dividing preparedness into two aspects – physical preparation, which is the activities presented in checklists, and mental preparation, which is the psychological capability of the individual enhanced by planning (Eriksen & Prior, 2013). Agencies have identified key ingredients of a good preparation plan for fire (McNeill, Dunlop, Skinner, & Morrison, 2014) to:

- Suits the needs and abilities of all household members, and consider all living beings (e.g. pets)

- Includes a backup plan, or a range of options of what could be done in response

- Is flexible and adaptable so it can be adjusted to a variety of situations

- Contains detailed information, such as which information sources would be used, what would be the triggers for action, transport arrangements, emergency contact numbers, safe place of last resort etc

2.4 DO PEOPLE PREPARE?

Large sections of the population generally do not prepare their properties until a hazard approaches, even if they recognise their level of risk of directly experiencing that hazard (Eriksen & Gill, 2010; Martins et al., 2019; McCaffrey, 2004; Paton, Smith, & Johnston, 2005). This section will consider risk perception and preparation, and then the gap between the two.

2.4.1 Risk perceptions

Risk perception is the process of collecting, selecting and interpreting signals about uncertain impacts of events, activities or technologies (Wachinger, Renn, Begg, & Kuhlicke, 2013). In a natural hazard, these signals relate to the likelihood and severity of impact of an incident such as a storm or bushfire. Public judgments of risk are often based on the potential or actual consequences, because these are easy to imagine and understand, but can still be mediated by everyday life and the background of the individual (Bushnell, Balcombe, & Cottrell, 2007). In bushfire, low risk perception is correlated with low bushfire safety information seeking and activity, and few preparation activities (Every et al., 2015). In cyclones, a higher concern for natural hazards is correlated with higher rates of preparedness (Martins et al, 2019). Risk perception also affects intentions, even though these intentions can be in turn affected by the reality of the hazard faced (McLennan, Paton, & Wright, 2015).

Four situational factors can affect an individual's risk perception (Wachinger et al., 2013):

- Hazard factors (the likelihood and severity of the hazard)

- Informational factors (source and level of information, media coverage, involvement of experts in risk management)

- Personal factors (age, gender, educational levels, professions, personal knowledge, personal disaster experience, trust in authorities, trust in experts, confidence in risk reduction actions, involvement in cleaning up after a disaster, world views, degree of control and religiousness)

- Contextual factors (economic factors, vulnerability indices, home ownership, family status, country, area of living, size of the community, age of youngest child)

The factors that seem to have the biggest effect on risk perception are experience, and trust in agencies, scientific experts and authorities, although there are weak relationships between experience and motivation to take protective action in a timely way (Wachinger et al., 2013). There are three possible reasons for this:

- Individuals understand the risk, but accept it as a result of wanting to live where they live

- Individuals understand the risk, but won't accept responsibility for it

- They understand the risk, but don't have the resources to deal with it

In areas that have potential for bushfires, but experience relatively few, the level of risk is balanced with the reasons they live where they live, often taking a back seat to these justifications. For instance, at Mt Tamborine (Bushnell et al., 2007), 78.9% of respondents from this study disagreed with the statement that they hadn't really thought about bushfire risk, but they felt that other concerns outweighed the risk of fire, such as personal, family and health matters, and home and environmental matters. In South Australia, in the less bushfire experienced, but high bushfire risk community of Eden Valley (Trigg et al., 2015), respondents assessed their risk as low to moderate, with only 40% agreeing their family was at risk if there was a bushfire. One reason for this low risk perception is that people underestimate the severity of a bushfire and over-estimate the effect of their preparations on their ability to cope with it (Beringer, 2000), which became evident in research from Tasmania after the 2006 east coast bushfires (Prior & Paton, 2008). However, in some cases, even people in areas that have experienced serious fires in the recent past will mostly consider their risk minimal or non-existent (Mackie, McLennan, & Wright, 2013). A review of seven post-Black Saturday studies showed that between 7% and 33% of respondents did not perceive any risk of bushfire (McLennan, Paton, & Wright, 2015). This was similar in South Australia after fires in 2014 (Trigg et al., 2015). Respondents mostly realised that bushfire could happen in their area, but did not think it would affect them personally (McLennan, Paton, & Wright, 2015).

In contrast to the bushfire experience, two small studies of North Queensland communities affected by Cyclones Larry (King, Goudie, & Dominey-Howes, 2006) and Ului (Ryan, 2017), showed that about 80% of people were experienced with cyclones, and that this experience guided preparation and prompted a search for more information. For those with no experience, there was evidence of their preparation activity being triggered and guided by experienced neighbours, family and friends (Ryan, 2017).

In relatively experienced Queensland communities such as Crows Nest, Esk, Laidley and Kilcoy, householders reported to be aware of their bushfire risk, mainly because

they had experienced a fire in the past 3-4 years (more than two thirds of respondents) (Childs, Pritchard, Gow, & Hastings, 2006). Respondents used their proximity to vegetation as a gauge of their level of risk – the average was 495 metres, but the median was less than 100 metres away.

In flood risk areas, location of the house in relation to bush or a river could also affect risk perception, and people who have been flooded seem to have a higher perception of their risk (Wachinger et al., 2013) than people who have experienced a bushfire (Mackie et al., 2013).

Preparedness is connected to risk perception, but it is expected impact severity rather than likelihood of impact that has emerged as a predictor of increased preparation (McNeill et al., 2014; Prior, 2010) – in fact Martins et al (2019) discovered that even in an imminent disaster, Superstorm Sandy, only 43% of the households had engaged in six of 14 preparedness actions at the time of the storm while just 5% engaged in more than 11 preparedness actions.

Provision of information does not increase the perception of potential severity, but it does increase the perception of probability (Brenkert-Smith, Dickinson, Champ, & Flores, 2013) – so the challenge of this project is to find methods of engagement that increase the perception of the potential severity of a hazard.

2.4.2 Preparation activities

The literature showed that earthquake and bushfire studies dominate in terms of how ready people are for a natural hazard, while other hazards are not well researched in terms of how people undertook preparedness activities. However, preparedness varies from very well prepared in cyclone/hurricane-prone areas, to completely unprepared in wildland/urban areas for bushfire.

In bushfire, while people generally recognise their level of risk, and identify a good range of actions for getting ready, they tend not to undertake these activities themselves. Mackie et al.'s study of three NSW communities that had been affected by bushfire in the past year identified 11 getting ready activities, with between 32% and 76% of interview respondents identifying each of the 11 (Mackie et al., 2013). However, when it came to getting ready, between 4% and 31% actually undertook a range of preparation activities. The biggest number, 35% did nothing because they planned to leave (Mackie et al., 2013), even though leaving requires its own list of activities to be undertaken (McLennan, Paton, & Beatson, 2015). Three-quarters of people living in the bushland-urban interface in Victoria leading up to the Black Saturday Bushfires in 2009 did not undertake any getting ready activity, while people on 'isolated rural properties' were more likely to be prepared (McLennan, Elliott, & Omodei, 2012). An investigation of the preparedness of residents in urban areas on Black Saturday in Australia in 2009 showed that many did not register their risk (53% in Bendigo and 72% in the smaller centre, Horsham) (Whittaker et al, 2013) - or considered what to do (56% and 50%). Generally, the links between householder bushfire risk perception and preparation activities have been inconsistent and 'typically not strong' (Koksal, McLennan, Every, & Bearman, 2019).

Before the 2011 Lake Clifton fire in Western Australia, 59% said they had no readiness for the fire before it arrived, and 33% minimal readiness (McLennan, Dunlop, Kelly, &

Elliott, 2011) and 91% said they had no readiness to respond by either defending their house or leaving early. A range of situational factors seem to affect preparedness (Mackie et al., 2013; McLennan, Paton, & Beatson, 2015), including experience, critical awareness (or risk perception and talking about the risk), sense of community, self-reliance, connection to the natural environment, having a positive outlook and being action-oriented, having enough time and resources, and contact with fire agencies. In Tasmania before the 2013 fires, the most common long term preparation activities were clearing a space around the house, developing an unwritten bushfire plan and clearing vegetation from around the house, reported by more than 50% of respondents (Boylan, Cheek, & Skinner, 2013). This was the also case in South Australia in 2015, with 82.4% clearing around their house and 77.7% cleaning their gutters (Every et al., 2015). Short term activities in Tasmania were mostly undertaken by fewer than 45% of the sample, such as check fire danger ratings and situation (apps, websites, signs), clearing litter from the gutters and yard, filling containers with water for firefighting, and packing a kit ready to leave. All other activities were undertaken by fewer than 30% of the people interviewed (Boylan et al., 2013).

In terms of storm preparedness, people are generally prepared for storm at basic level because many of the requirements and activities for storm preparation align with their day to day activity. For instance, after a storm in NSW in 2007 (Cretikos et al., 2008), 80% of people had basic supplies such as a torch, matches, three days' supply of non-perishable food, mobile phone and candles. Between half and 70% had a mobile radio with batteries, emergency contact lists, and an emergency kit. However, fewer than 50% had three days' supply of water. In the lead up to Superstorm Sandy, New York City residents averaged only half of the possible 14 preparation actions (Martins et al, 2019).

In cyclone-prone areas however, preparation has been measured at high levels. Of 19 preparedness measures tested by Kanakis et al. when there was no threat of a cyclone (2016), 75% of residents had completed 17 measures – the least completed activities being developing an evacuation plan, and sandbagging internal drains and sewerage outlets to prevent flooding. Fourteen of the activities had been undertaken by at least 82% of respondents. Similarly, in the United States for hurricane preparedness, using a scale of 19 items, Hung (2017, online) found that:

> More than 80% of the households indicated that they have can openers, three-day supplies of medicine and canned foods, and rainwear or other protective clothing, as well as knowledge of how to turn off utilities in case of a hurricane. Note that these items and behaviors may not necessarily be aimed at hurricane preparedness but may instead be representative of items or behaviors in the average American household. Given the ages of the participants, these items or behaviors may also have been accumulated or acquired over time.

However, at the other end of the preparedness scale, fewer than 30% of the households reported having roof anchors, whistles and/or distress flags, or electric generators, which were more likely to indicate intentional preparedness activity. Among older residents in Florida, this picture was replicated (Kleier, Krause, & Ogilby, 2018). Close to 100% of the 188 respondents prepared by securing extra medication and spectacles, and ensured they had a mobile phone and chargers. Nearly three

quarters undertook what Kleier et al. called steps for optimal preparedness – all of the steps listed in the Federal Emergency Management Agency's checklist that was available at the time of the hurricane faced by the participants (Kleier et al., 2018). Basic preparation for hurricanes Isaac and Sandy were undertaken early by 88% of respondents (Meyer, Baker, Broad, Czajkowski, & Orlove, 2014), but more effortful actions (evacuation plans, window protection and securing a power generator) were only undertaken by 25%, 55% and 11% respectively.

Research into the perception of individuals of how well prepared they are has usually focused on communities with recent hazard experience (Mackie, McLennan, & Wright, 2013), with the largest proportion of the communities studied believing they were either adequately (up to 58%) or well prepared (up to 41%). In a cyclone setting, reasons for not evacuating in the path of a cyclone or hurricane can often be a perceptions of preparedness based on past experience of a cyclone or hurricane that turned out not to be as bad as generally expected or time has passed dimming the memory of its severity (Milch, Broad, Orlove, & Meyer, 2018; Trumbo, Lueck, Marlatt, & Peek, 2011), or because they misunderstand the source of the danger during the threat – for instance, expecting most damage to come from wind in a cyclone when the biggest danger will come from flooding (Meyer et al., 2014; Milch et al., 2018).

Knowledge of how the hazard manifests itself is thought to affect this subjective judgement. People, particularly those with no experience, underestimate and/or misunderstand the hazard's behaviour and effects, and its psychological effect, and over-estimate their capabilities and preparedness – statements from survivors to the Black Saturday Bushfire enquiry provided graphic evidence of this (Teague, McLeod, & Pascoe, 2010). This optimism bias, coupled with resourcing obstacles, was also evident in the number of people who did not evacuate before Hurricane Katrina (Taylor, Priest, Fussell Sisco, Banning, & Kenneth, 2009) because they had seen many cyclones form over the Gulf of Mexico and come past New Orleans.

When people should start preparing is one point of confusion, with agencies expecting preparation to occur at the start of the storm or fire season, and individuals thinking preparation should be done when dangerous weather is predicted or prevails, or in the face of a storm or fire (Prior & Paton, 2008). Some researchers have identified temporal approaches to planning, such as longer term actions and those activities undertaken under direct threat from a hazard (such as Mackie et al., 2013), while others have investigated depth of preparation (Smith, Taylor, & Thompson, 2015), and the comprehension of residents of the depth required (Paton et al., 2006). At one end of the prepared spectrum is an individual mowing the lawn, and at the other are people who have installed sprinklers on buildings, protective window coverings, cyclone strapping, diesel-supplied fire pumps, independent power and water supplies, fire breaks and other proactive measures. A third approach, put forward for bushfire by McLennan, Paton and Beatson (2015), segmented preparation activity into five categories based on the purpose of the activities, such as preparation for leaving, preparation for making the property and inhabitants safer, preparation for active house defence, preparation for reducing danger to the house and preparation for reducing the vulnerability of the house (mostly structural). Prior (2010) referred to 'soft' and 'hard' activities: soft were those activities easily undertaken and

checked off, and hard being those activities that required more thought, time and finances to implement.

The checklist that emerged from this discussion is one of two methods of gauging preparedness have emerged from the literature, the other being a capability approach proposed by Penman et al. (2013). The checklist of preparedness tasks has been developed for most hazard types (see Table 1 to see the range of researchers who have examined this technique). A second approach, the capability model, was developed in Australia for bushfire and focuses on what it means to be prepared in terms of attributes and equipment (Penman et al., 2013). It is useful in helping people make the decision to defend or leave. Both approaches will be examined here.

2.4.3 Checklists

The checklist has been the most prevalent tool in efforts to motivate people to get ready for a natural hazard. It is used by agencies to motivate and guide preparation (such as Department of Civil Defence, 2018; Federal Emergency Management Agency, 2004; New South Wales Rural Fire Service, n.d.; NSW State Emergency Service, n.d.; Queensland Reconstruction Authority, 2017; Queensland Rural Fire Service, 2015; Victoria State Emergency Service, n.d.).

An extensive range of preparedness actions that can form checklists has emerged from the literature and these have been tabularised (see Table 1) using the purpose clusters of activity developed by McLennan, Paton and Beatson (2015). These have been presented in six clusters of checklists:

Cluster 1: Safety planning

Cluster 2: Preparation for leaving

Cluster 3: Preparation for leaving also useful for staying post-impact

Cluster 4: Preparation for reducing danger to the house

Cluster 5: Preparation for reducing house vulnerability

Cluster 6: Post-impact/recovery planning

The checklist focusing on disasters most prevalent in Australia - storm[1], bushfire and flood (including storm surge) – and those expected by agencies but not common, such as tsunami.

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[1] The definition of 'storm' provided by the U.S. National Weather Service (2009) will be used for this paper: "Any disturbed state of the atmosphere, especially affecting the Earth's surface, and strongly implying destructive and otherwise unpleasant weather. Storms range in scale from tornadoes and thunderstorms to tropical cyclones to synoptic-scale extra-tropical cyclones."

Table 1: Preparedness action checklists by cluster (McLennan et al., 2014)

Activities are generally presented by researchers as specific to a disaster type, so where this is the case, the disaster type has been indicated using the legend s = storm, b = bushfire, f = flood and t = tsunami, ah = all hazards.

Preparation activities	Type	Sources
Cluster 1: Safety planning		
Develop a household emergency plan	s, ah	Dept of Civil Defence 2018, Moon 2010, Mulilis 1999*, Sutton & Tierney 2006
Have an emergency plan in mind	b	Mackie et al. 2013
Have a written emergency plan	b	Mackie et al. 2013
Rehearse/share emergency evacuation plan	s, b	Faupel et al. 1992, Chaney et al. 2013, Mackie et al. 2013
Have a (portable) disaster/ first aid kit, including thermometer and protective clothing	s, ah	Cretikos et al. 2008, Dept of Civil Defence 2018, Moon 2010, Sattler et al. 2002, Faupel et al. 1992, Sutton & Tierney 2006
Have working radio with battery	s, ah	Cretikos et al. 2008,Dept of Civil Defence 2018, Moon 2010, Faupel et al.1992, Wong-Parodi et al.2018, Sutton&Tierney 2006
Spare batteries	s, ah	Cretikos et al. 2008, Dept of Civil Defence 2018, Sattler et al. 2000; Faupel et al. 1992, Mulilis 1999; Sutton & Tierney 2006
Emergency contact lists	s	Cretikos et al. 2008
Talk to other people about the risk and the event	b	Mackie et al. 2013
Search for more information on the hazard, how it might affect them, how to prepare, from agencies or their website	s, ah	FEMA 2004, Mulilis 1999, Sutton & Tierney 2006,
Get cash from the bank	a, ah	Moon 2010, Wong-Parodi et al. 2018, Sutton & Tierney 2006
Make arrangements to stay connected to media/ internet/others during the event	s	Mulilis 1999, Sutton & Tierney 2006
Prepare an emergency kit	s	King et al. 2006
Fire extinguisher	s, ah	Moon 2010, Hung 2017, Sutton & Tierney 2006
Identify or consider building a safe room	s, ah	FEMA 2004, Faupel et al. 1992, Chaney et al. 2013, Sutton & Tierney 2006
Attended a meeting/ seminar/ workshop on storm/ hazard/bushfire preparation	s	Faupel et al. 1992,

Preparation activities	Type	Sources
Have access to emergency reference materials such as first aid, what to do after impact	s	Moon 2010, Mulilis 1999
Access to a landline telephone	s	Wong-Parodi et al. 2018
NOAA weather radio and extra batteries (U.S.)	s	Moon 2010, Chaney et al. 2013, Sutton & Tierney 2006
Have torch/candles/matches in waterproof containers	s	Cretikos et al. 2008, Department of Civil Defence 2018, Moon 2010, Sattler et al. 2002, Faupel et al. 1992, Wong-Parodi et al. 2018, Mulilis 1999
Learn about emergency plans in the workplace /school/day care etc	ah	Sutton & Tierney, 2006
Cluster 2: Preparation for leaving		
Get information on evacuation shelters/options	s	Moon 2010, Chaney et al. 2013
Arrange to stay/have contact with family or friends out of town	s	Moon 2010
Have an evacuation/shelter plan and share this with the rest of the household	s, ah	Moon 2010, Chaney et al. 2013, Wong-Parodi et al. 2018, Meyer et al. 2014, Hung 2017, Sutton & Tierney 2006
Have an evacuation plan for animals/pets	ah	Sutton & Tierney 2006
Have an evacuation route plotted	s, ah, b	Moon 2010, Faupel et al. 2002, Hung 2017, Sutton & Tierney 2006, Mackie et al. 2013
Plan for where family will meet if separated and have to leave, establish a point of contact for all family members outside the area	s	Moon 2010, Faupel et al. 1992, Sutton & Tierney 2006
Have local maps	s, ah	Moon 2010, Sutton & Tierney 2006
Pack medication and glasses	s, ah	Moon 2010 , Sutton & Tierney 2006
Pack personal hygiene items	s, ah	Moon 2010, Sutton & Tierney 2006
Pack paper and pens	s	Moon 2010
Close all interior doors	s	
Cluster 3: Preparation for leaving also useful for staying post-impact		
Fill car with fuel	s	King et al. 2006, Sattler et al. 2002, Faupel et al. 1992, Wong-Parodi et al. 2018, Hung 2017
Shop for/obtain supplies (food, water)	s, ah	King et al. 2006, Meyer et al. 2014, Sutton & Tierney 2006
Pack mobile phone, chargers and power source	s	Cretikos et al. 2008, Moon 2010
Pet supplies (including cage, bedding and food if leaving)	s, ah	Department of Civil Defence 2018, Sutton & Tierney 2006

Preparation activities	Type	Sources
Pack important documents (including insurance and bank docs) or hard drive in waterproof casing	s, ah	Moon 2010, Wong-Parodi et al. 2018, Sutton & Tierney 2006
Clothes for three days packed including rainwear, sturdy shoes or boots	s, ah	Department of Civil Defence 2018, Moon 2010, Hung 2017, Sutton & Tierney 2006
Sleeping bag/bedding for each person	s, ah	Department of Civil Defence 2018, Moon 2010, Hung 2017, Sutton & Tierney 2006
Cluster 4: Preparation for reducing danger to the house		
Bring loose furniture and other outdoor items indoors, tie down larger items, elevate items for flood	s, f	Cretikos et al. 2008, FEMA2004. King et al. 2006, Faupel et al. 1992, Hung 2017, Sutton & Tierney 2006
Take down sails and other temporary structures	s	King et al. 2006
Turn off utilities just before expected impact or when leaving	s, ah	FEMA 2004, Mulilis 1999, Hung 2017, Sutton & Tierney 2006
Clear branches and rotting or sick trees from around the house, ensuring the yard is tidy	s, b	Cretikos et al. 2008, FEMA 2004, King et al. 2006, Mackie et al. 2013
Unplug all appliances to protect against storm surges	s	FEMA 2004
Access/stockpile sandbags	s	Wong-Parodi et al. 2018
Fasten furniture (e.g. bookcases, hot water heater, hangings) to walls	s	Mulilis 1999
Have access to an independent water supply (not powered by electricity)	b	Mackie et al. 2013
Have a generator with three days' fuel	s, b	Wong-Parodi et al. 2018, Meyer et al. 2014, Hung 2017, Mackie et al 2013
Clearing drains and gutters	s, b	Cretikos et al. 2008, FEMA 2004, Mackie et al. 2013
Cluster 5: Preparation for reducing house vulnerability		
Keep house maintenance up to date/make repairs	s	King et al. 2006
Ensure insurance policy covers the hazard	s, ah	Mulilis 1999, Hung 2017, Sutton & Tierney 2006
Tape windows	s	King et al 2006
Install permanent shutters/have timber on hand to put over the windows	s	FEMA 2004, Sattler et al, 2002, Meyer et al. 2014, Hung 2017

Preparation activities	Type	Sources
Install cyclone straps to improve strength of the house/ensure storm resistant buildings	s	FEMA 2004, Mulilis 1999, Hung 2017
Strap or bolt down loose furniture, large /heavy objects	ah	Sutton & Tierney 2006
Cluster 6: Post-impact/ recovery planning		
Store three days (non-perishable) food including for small children	s	Cretikos et al 2008, Dept of Civil Defence 2018, Moon 2010, Sattler et al 2002, Faupel et al 1992, Meyer et al 2014, Mulilis 1999, Hung 2017
Have three days' supply of medications	s	Hung 2017
Store (three days/adequate) drinking water	s	Cretikos et al 2008, Department of Civil Defence 2018, Moon 2010, King et al 2006, Sattler et al 2002, Faupel et al 1992, Mulilis 1999, Hung 2017
Turn fridge onto coldest setting and leave doors closed	s	
Ability to charge mobile phone	s	Cretikos et al 2008
Ensure gas BBQ/portable stove workable/gassed	s	Cretikos et al 2008, Dept of Civil Defence 2018, Hung 2017
Whistle/flag to signal for help	s	Moon 2010, Hung 2017
Dust mask	s	Dept of Civil Defence 2018, Moon 2010
Have wipes, plastic bags and toilet paper	s	Dept of Civil Defence 2018
Can opener, tools to turn off utilities	s	Dept of Civil Defence 2018, Moon 2010, Mulilis 1999, Hung 2017
Wood, wood stove	s	Wong-Parodi et al 2018
Fill bath and other large containers with water for cooking and washing	s	FEMA 2004, Department of Civil Defence 2018
Have on hand water purifiers such as special jug or chlorine/ hydrogen peroxide with a medicine dropper	s	Moon 2010

* Mulilis presents an interchangeable tornado and earthquake preparation scale (Mulilis, Duval, & Bovalino, 2000)

Instruments using a range of these activities have included yes/no values and Likert scales ranging from 1-3 through to 1-5 options measure preparedness levels.

Checklists though have presented problems in that at-risk householders check-off a large number of the activities on the agency-supplied checklists and emerge with an unrealistic expectation of how prepared they are (Prior, 2010), thereby preventing them from doing more, or rationalising that they had done enough to be safe. However, they remain valuable because people prefer to try new practices in stages, and this includes preparation for a natural hazard (Sturtevant & McCaffrey, 2006). Staging progress allows people to progress at a comfortable pace and allows them to gauge progress (Sturtevant & McCaffrey, 2006).

2.5 THE CAPABILITY APPROACH

The capability approach developed for bushfire by Penman et al. (2013) defines the types of fires (flame zone, radiant heat zone, ember zone) and lays out the skills, qualities and resources necessary for a person to effectively carry out house defence in each of these zone types. It is useful, because it paints a clearer picture of what a person would need to withstand to effectively defend a house. The specificity of this approach incorporates a checklist, but attaches to each activity what would be required to complete that activity. Given Sturtevant and McCaffrey's finding that people complete new tasks in stages (2006), this approach would be most useful at the upper end of the preparedness continuum for people who planned to stay and defend and have already committed to some form of preparation. At this point, the capability approach may overcome the problem of over-estimation of preparedness that can be generated by checklists (Sturtevant & McCaffrey, 2006).

2.5.1 The gap between risk recognition and preparation activity

This gap between recognition of the level of risk and action is a result of juggling everyday procedures, dilemmas and trade-offs between social cultural, environmental and economic issues (Eriksen, Gill, & Head, 2010). Three key factors generated the gap between risk recognition and preparation activity: cost (time and money), gender roles, and day-to-day priorities (Eriksen, Gill, & Head, 2010). Each of these factors foils good intentions to get ready before every season.

This intention to prepare (Paton et al., 2006; Paton et al., 2005) consisted of two factors – intention to prepare and intention to seek information (Paton et al., 2006), and while intentions to prepare tend to predict preparation activity, intentions to look for information do not. This has implications for community engagement in that agencies need to convert information seekers into people intending to undertake preparations. Living in a high bushfire risk area was not enough to motivate preparation activity, and that preparing and not preparing, rather than existing on a continuum, existed as a result of separate reasoning processes by individuals that were informed by disparate characteristics (Paton, Burgelt, & Prior, 2008; Paton et al., 2006). For example, decisions to prepare were made on the basis of:

- Responsibility for self and others

- Being connected to the natural environment

- Having a positive outlook and being action oriented

- Having sufficient time

- Being organised

- Being knowledgeable about fires, weather and environment

- Sense of community

Not preparing decisions were supported by:

- Willingness to take the risk (and not prepare)

- Not having a lot of time

- Unwillingness to engage within the community

One key finding of many studies was that people tend to wait to see what happens before making a decision to stay and defend or to evacuate (McLennan et al., 2012; McLennan, Paton, & Beatson, 2015; McNeill, Dunlop, Skinner, & Morrison, 2015, 2016). Previously, this was thought to be a result of lack of recognition of the level or risk, but it has actually been found to be a result of extreme difficulty in making this decision (McNeill et al., 2014) – if the perceived value of one option is not greater than the other, the level of difficulty of this decision "causes paralysing indecision" (McNeill et al., 2014, p.7).

2.5.2 Cues and obstacles to preparation

Knowledge of specific cues that trigger preparedness are helpful to agencies in planning behaviour change community engagement programs. However, adding to a clarifying this knowledge of how to use the cues is work on innovations and decreasing uncertainty by Sturtevant and McCaffrey specifically for natural hazards preparedness.

Innovations that decrease uncertainty are more likely to be adopted (Sturtevant & McCaffrey, 2006). Five characteristics of a new practice affect its adoption rapidity and depth (Sturtevant & McCaffrey, 2006):

- Trialability

- Observability

- Compatibility

- Relative advantage

- Complexity of the innovation

They also identified motivators for change:

- Change agents – people who can provide information but have some kind of expertise and a client system such as fire chiefs, experienced local firefighters (Sturtevant & McCaffrey, 2006)

- Opinion leaders – not necessarily the first people to adopt an innovation, but they are the people to whom others go for advice and information (Sturtevant & McCaffrey, 2006)

In using cues and innovation to develop behaviour change, practitioners also require a knowledge of those factors that prevent or inhibit preparation activity. 'Preparation inhibitors' are obstacles to preparation (Prior, 2010) that include a wide range of factors that are economic, cognitive and social. We have collated these cues and inhibitors into two tables - physical and situational factors (Table 2), and knowledge or cognitive factors (Table 3), to present them more clearly.

2.5.3 Physical and situational factors

The following table (Table 2) draws on key literature to summarise the physical and situational factors.

Table 2: Physical and situational factors for preparedness

Item	Research findings	Source
Cost (economics)	Cost, including tradeoffs with other priorities	Prior 2010, Eriksen & Gill 2010
	Prefer low cost options such as buying a hose instead of installing a sprinkler system	Every et al. 2015
	Many of the low cost options are those options that are part of daily life (such as having hoses on taps etc), so while ticking that box makes a household somewhat prepared, it also allows households to over-estimate how prepared they are if they haven't undertaken high cost and more serious fire defence options.	McLennan et al. 2015b
	Participants indicated cost was a factor, even though there was no correlation between household income and extent of preparation for hurricane, and the preparation materials available from FEMA contained only low cost activities	Kleier et al. 2017
	People don't expect to lose their house and therefore don't see the economic benefit of preparation – social benefits may be a more effective focus.	(Sturtevant & McCaffrey, 2006)
Lack of time		Prior 2010
Not owners of the property	Renters less likely to clean gutters, read literature or to have discussed a plan with their family/housemates	Beringer 2000
Physical ability, ease of undertaking the job, need for help from others	Tasks more easily undertaken such as clearing gutters than arranging an independent water source	Every et al. 2015
	In hurricanes affecting older people, there was a positive relationship between the extent of preparation and the number of people living in the house	Kleier et al. 2017
Experience	People who had experienced multiple hurricanes were more likely to have higher levels of preparation than people who had experienced one or no hurricanes. Kleier et al.	Kleier et al. 2017

Item	Research findings	Source
	explained that this could have been a result of the variability of severity of hurricanes: people who had lived through one hurricane may have experienced little or no personal disruption	
	North Queenslander who regularly experience cyclones are more likely to be very well prepared at an intermediate level and well prepared at a more advanced level (such as having a dedicated emergency kit)	Queensland Government Statistician 2012, 2013.
	People who have never experienced a bushfire are less likely to be prepared or listen to/hear preparation messages	Mackie et al. 2013
Waste of time/level of risk is lower priority than other life events	The threat is unlikely so it would be a waste of time	McLennan et al. 2015b
	Willing to take the risk that bushfires deserved a lower priority than other demands	Paton et al. 2006
Government regulation preventing certain actions	Laws preventing clearing of vegetation according to fire agencies' recommendations	McLennan et al. 2015b
Lifestyle preferences	Amenity-led migration leads people to live in more fire prone communities without recognition that extra effort needs to be invested to live there safely.	Eriksen and Gill 2010,
Insurance	McLennan et al. 2015b thought lack of insurance might prompt the decision to stay and defend, but the data did not support this.	McLennan et al. 2015b
Gender	Women are generally more involved in mitigation and preparation activities than men	Morrow 1995, Mulilis, 1998
	Women have a higher perception of their risk in terms of likelihood and severity to certain hazards than men	Lindell and Whitney, 1998
	Culture in Australia leads to women accepted gendered roles concerning bushfire: as supporters and carers, and not proactively taking the responsibility for learning about bushfire and how to activate defence mechanisms that men in the household have installed. They tend not to believe in roles for women in volunteer agencies and tend to leave the decision-making to men, even though decisions may not be made until the fire arrives. Lack of knowledge transfer within households as a result needs to be addressed by agencies.	Eriksen & Gill, 2010
Environment and bushfire weather	Weather is a significant trigger for people who prepare – when the weather is hot, dry and windy.	Prior, 2010
Visualising what preparedness looks like	Field days and other techniques that allow people to see what the practice of preparation should produce are more likely to prompt preparedness activity. People often need to	Sturtevant & McCaffrey, 2006

Item	Research findings	Source
	see the results of activities to visualise what it should look like for them – such as defensible space or fuel reduction.	

2.5.4 Cognitive and personality factors

The following table (Table 3) presents the cognitive and personality factors that may contribute to preparation inhibitors:

Table 3: Cognitive and personality factors

Item	Research findings	Source
The decision to leave	Once householders made the decision to leave, they were unlikely to make significant investments in time or money to prepare their property.	Prior, 2010
Sense of community/ social capital	Sense of community has been found to influence preparation activity, with well-connected people living in well-connected communities more likely to prepare	Mackie et al. 2013, McLennan et al. 2012, Prior 2010
	In some cases, activity by one person triggers activity in neighbours and sense of community improves individual sense of self-efficacy because people believe they have support and increases risk perception	Prior 2010
	The ability to share anxiety with others also became a trigger for preparation. People are more likely to undertake activity if they work together with neighbours across ownership boundaries; the work involved in preparation becomes the norm rather than the exception	Sturtevant & McCaffrey 2006
	High levels of social capital are connected to storm preparedness	Martins, Nigg, Louis-Charles & Kendra, 2019
	Disagreements within families can be a reason not to prepare; more isolated people may be unwilling to collaborate with neighbours on matters such as vegetation management and this also is cited as a reason not to prepare.	Paton, Burgelt & Prior 2008
Fear of over-reaction	Perception by others that if an individual takes action, they will be over-reacting to what they think is a small bushfire threat	Paton et al. 2006
Optimism bias	People are generally optimistic, leading to an unrealistic appraisal of their risk – this was particularly the case for recently-arrived life-style residents in this study	Mackie et al. 2013
Outcome expectancy	A person's belief in the effectiveness of preparing will affect their decision to prepare or not and is closely linked to the expected severity of the hazard (in this case, bushfire) – so expectations of a more severe fire triggered ideas that it would be pointless trying to protect their property from that type of fire. The consequence is that people will wait to see the type of fire to judge what level of preparation they should do, which, by then, is too late for most preparation. Outcome expectancy can be influenced by experience and house-type.	Prior 2010, McNeill et al. 2014

Item	Research findings	Source
	Two groups emerge from research – those who believe that preparing is an effective strategy, and those that believe it would not make a difference to their safety and that it was a waste of time.	Paton, Burgelt & Prior 2008
Need for cognition	This personality trait is the tendency of an individual to engage in and enjoy thinking. Relating to bushfire preparedness, people high in this characteristic may are perhaps more inclined to seek out accurate information about the risk, thereby increasing their awareness of the risk.	McNeill et al. 2015
General indecisiveness	This characteristic was found to have a positive relationship with delay in making the decision to evacuate or to stay and defend (and therefore to plan). It was also negatively correlated with need for cognition. People who are high in indecisiveness tended to feel that they were less able to control bushfire outcomes by preparing.	McNeill et al. 2014, McNeill et al. 2015
Trait anxiety	Indecisive people perceive themselves less able to control bushfire outcomes by preparing, and so they will not see the point of undertaking preparedness activity.	McNeill et al. 2014, McNeill et al. 2015
	People who scored higher on trait-anxiety worried more about bushfires, but completed a higher percentage of bushfire preparation activities than those who worried less.	McNeill et al. 2014
	The effect of anxiety on preparedness is mediated by perceived vulnerability and self-efficacy when preparing for a terrorism incident	Wirtz et al. 2017

2.6 IMPORTANCE OF CONTEXT

The effect of physical, situational, cognitive and personality factors is evident in community engagement programs undertaken for preparation in Australia. These factors create context, and this was a significant concern for Elsworth, Gilbert, Stevens, Rowe and Robinson (2010). Disaster type, location of communities, level of existing preparation knowledge, community experience, attitudes to the natural hazard and the risk it presents and demographic factors form a context that should guide the approach to community engagement for preparedness.

For instance, they found that aspects of the socio-demographic and associated geographic context of the Blue Mountains region seemed to affect the success of a NSW Rural Fire Service Street Firewise program in the northern and southern areas of its application. "The more demographically stable central Blue Mountains, consisting of a number of townships that run along the main highway with a pattern of side streets, parks etc., appears to provide a generally supporting context for the successful implementation of the street meeting format" (Elsworth et al., 2010, p. 87). The upper communities were more spread out and isolated rural communities, while the lower areas were larger settlements that were more suburban. They did not identify the characteristics of these areas that made them unsuitable for the program.

Geographic location also seems to affect the implementation and sustainability of Victorian Country Fire Authority Fireguard groups, which are active across most

rural and urban interface regions in Victoria but appear to be particularly prevalent in peri-urban and rural localities on the outskirts of Melbourne. "Municipal websites, for example, report that in September 2008 there were 153 Fireguard groups in the Shire of Yarra Ranges to the east of Melbourne and 60 in the Macedon Ranges to the west" (Elsworth et al., 2010).

Context factors such as reliability of the natural hazard could explain the seemingly second-nature preparation of North Queenslanders (Ryan, 2017; King, Goudie & Dominey-Howes, 2006) compared with relatively low rates of preparation within southern states for bushfire (McLennan, Dunlop, Kelly & Elliott, 2011; Mackie, McLennan & Wright, 2013; Every et al., 2015; McLennan, Elliott & Omodei, 2012).

2.6.1 Organising the context factors

The context factors gleaned from the literature review are numerous and complex, so it is necessary to find a method of sorting these to ensure they are accounted for in any proposed community engagement for preparation framework. One option is the Motivation/Opportunity/Action framework, a social marketing approach that allows sorting of characteristics into one of the MOA groups, with the resulting classifications enabling practitioners to identify the best approach for behaviour change. This framework was developed to investigate behavioural change required by regulatory environmental authorities (Rothschild, 19991; Binney, Hall & Shaw, 2003) and has been applied in Australia to determine Australian farmers' receptiveness to rabbit control programs (Binney, Hall & Shaw, 2003; Binney, Hall & Oppenheim, 2006). Rothschild (1999) uses three constructs – motivation, opportunity and ability – and examines the relationships between these to determine what approach to use to achieve behavioural change. He applied this to public health behaviour change, but in Australia the model has been used to provide a foundation for environmental management behaviour change programs.

The MOA framework is based on the power of self-interest as the primary motive, and considers the "what's in it for me" principle in terms of exchange, as well as timing and payback (Rothschild, 1999). The challenge for emergency management communicators, as with health prevention workers most interested in Rothschild's work, this payoff may never happen or it may be delayed for many years. It also accounts for competition – in his model he discusses product competition, but in an emergency management setting, this might easily apply to competing demands for time and attention, which emerges from the literature review as a major obstacle to prevention behaviour. The MOA framework supports eight classifications of people in terms of their MOA, and provides guidance for each one from a selection of three methods – education, marketing (engagement) and law (Binney et al, 2003). We will use the framework to sort the situational factors that were collected from the literature in the previous section, with the results presented in Table 4.

Table 4 - Context factors sorted according to the MOA Framework

Motivation
Not the owner of the property
Experience
Waste of time/low prioritisation of risk
Government regulation preventing action
Lifestyle preferences – more effort to live where they live
Lack of insurance
Gender – women higher risk perception
Weather – a trigger for preparation
Decided to leave so don't need to do more
Sense of community
Fear of over-reacting and subsequent judgement
Optimism bias – reducing perception of risk
Trait anxiety where worry increases prep, but can be mediated by self-efficacy (ability to make decisions and take action supported by preparation)
Opportunity
Lack of time
Weather – allowing burning off
Need for cognition – increased thinking and then information seeking will help make room for opportunity
Ability
Cost
Physical ability, ease of undertaking the jobs
Gender – roles and perceived physical ability
Outcome expectancy – a fire will always be bigger than me
Visualising what preparedness looks like can prompt action
Indecisiveness – ability to make a decision

In sorting the characteristics, we have attempted to simplify the segmentation process that will allow is to factor in context when determining approaches to effective community engagement for preparation. This table shows the importance of motivation in bushfire preparedness decision-making.

2.7 CHARACTERISTICS OF WELL-PREPARED AND UNPREPARED

There are some additional general characteristics of people who are well prepared and those who are unprepared. People who lived with others were better prepared than those who lived alone, as were those who were able to access help to get ready (Kleier, Krause, & Ogilby, 2018) and the depth of community involvement has also been linked to higher rates of preparation (Mackie et al., 2013; McLennan et al., 2012; Prior, 2010), but not in all studies (Every et al., 2015; McLennan, 2014). Those who had experienced multiple hurricanes were the best prepared, but those who had experienced just one hurricane were no better prepared than those who had experienced none (Kleier et al., 2018). People who intend to prepare are more likely to carry out their intentions if they have a strong sense of risk perception and self-reliance, and individual responsibility, a moderate to high sense of community and perceptions of community expectations and norms (McLennan, Paton, & Wright,

2015; Paton et al., 2005), trust in preparation information sources such as agency staff, and if a certain hazard occurs frequently in their region (Paton et al., 2005). Those people who are less anxious about a hazard occurring are more likely to prepare (Paton et al., 2005).

People who leave tend to have made the decision to leave, or will leave after a policy of 'wait and see'. People who 'had a plan to leave' tended not to make plans beyond that decision (McLennan et al., 2012; Prior, 2010) – they did not identify destinations, routes, triggers for leaving or the process between receiving the warning and driving out the gate. In other words, they had not completed their thinking around leaving. The 'wait and see' leavers (19%) (McLennan et al., 2012) also had not identified triggers or a process for leaving. McLennan (2014) characterised the motivations of the three different approaches to fire preparation as:

- The leavers – avoid danger

- The defenders – protect assets

- The wait and see-ers – avoid making an un-necessary decision

A fourth group – the oblivious - could be added to this based on research from the 2009 Black Saturday bushfires, which showed that a large number of people, especially those living on the suburban fringe, thought a bushfire unlikely that weekend (Whittaker, Haynes, Handmer, & McLennan, 2013) or were taken by surprise by a fire (Handmer & O'Neill, 2016). These four groups do not sit on a continuum of unprepared to prepared – they have very different reasons for their activity (or lack of activity), which not related to the amount of information they have acquired and retained, or their progress through the range of activities (Paton et al., 2008; Paton et al., 2006). In fact, they are four separate target publics with different information needs and who require understanding of a range of motivations for taking action.

2.8 PERCEPTIONS OF PREPAREDNESS AND KNOWLEDGE

Research into the perception of individuals of how well prepared they are has usually focused on communities with recent fire experience (Mackie et al., 2013), with the largest proportion of the communities studied believing they were either adequately (up to 58%) or well prepared (up to 41%).

Knowledge of bushfire threat and survival, or knowledge of fire behaviour, has rarely been investigated. Knowledge of bushfire survival has been significantly lower for bushland-urban interface residents than rural and town residents. However, people, particularly those with no experience, underestimate fire behaviour and its psychological effect, and over-estimate their capabilities and preparedness – statements from survivors to the Black Saturday Bushfire enquiry provided graphic evidence of this (Teague, McLeod, & Pascoe, 2010).

2.9 WHERE INFORMATION ON GETTING READY COMES FROM

Even bushfire-experienced communities seem to have a low knowledge of the ways that agencies communicate in the preparation or warning phases. A study

of three NSW towns that had recently experienced a bushfire (Mackie et al., 2013) showed that:

- Fewer than 20% of residents could identify the Prepare. Act. Survive message

- Fewer than 30% were aware of fire danger rating signs

- Fewer than 20% of Shoalhaven and Yass study participants could identify the bushfire alert hierarchy (Coonabarabran was 45%)

- Rural Fire Service apps or resources attracted low awareness – less than 45% for Yass and around 30% for the other two communities

Sources of preparation advice were identified as:

- Local volunteers (35%)

- Television (22.5%)

- Letterbox drops (18%)

- Radio (10%)

- Newspaper (7.5%)

Common sense or 'gut feel' emerges from a number of studies as an often-reported source of preparation knowledge (Boylan et al., 2013; Mackie et al., 2013), with more than 45% of Tasmanian respondents in a study relying on this for preparation knowledge (Boylan et al., 2013), and between 50 and 60% in NSW communities (Mackie et al., 2013). In the U.S. television and radio were most frequent sources of information for older people for hurricane preparation information, and family and friends were primary sources of support (Kleier et al., 2018), but television was not considered a credible source of information for wildfire preparation in Nevada (McCaffrey, 2004).

2.10 LEAVING EARLY

People who intend to leave in a bushfire do not prepare well, and many who intend to stay and defend will change their plan at the last minute, having done no preparation for leaving (McLennan, Paton, & Beatson, 2015). Focus groups in Victoria showed that residents are confused about what "leave early" means – many assumed that it meant to leave when they were told to by agencies, or when they saw smoke or flames (Tibbits & Whittaker, 2007) and these ideas came up again in post-Black Saturday research (Whittaker & Handmer, 2010). More than three-quarters do not intend to leave on a Code Red/Catastrophic fire danger rated day (the study was held when Code Red was the most extreme option). Research around a Code Red day showed that 50-60% of people intended to leave the night before or early in the morning, but 66% stayed at home on the day, and of the people who were not at home, only 1.5% left because of the fire conditions. Tibbits and Whittaker (2007) also found that people had a clearer understanding of what was involved in staying, but had not thought clearly about what would be involved in leaving. The 'wait and see' phenomenon is problematic, even in experienced communities – McLennan, Paton and Wright's (2015) review of seven post-bushfire studies found that

between 5% and 29% of study respondents used this strategy. They also found that residents who intended to leave as their main bushfire strategy did not develop a plan for this action.

2.11 IMPLICATIONS FOR COMMUNITY ENGAGEMENT

Paton (2005, p.28) discovered that preparation could be broken down into three phases:

1. Motivation to prepare

2. Formation of intentions

3. Conversion of intentions to actions

They discovered that people do not necessarily sit on a scale of low to high levels of preparation, with movement up the scale prompted by one community engagement strategy for all. Instead, they found that some people may hardly be on the scale of preparation at all, inhibited by anxiety about the hazard and their thought processes dominated by reasons for not preparing – this was particularly so in earthquake, where anxiety about the hazard could prevent preparation activity. On the other hand, others were at different places on the preparedness scale - they intended to prepare - but experienced more tangible obstacles to preparation. Paton et al. (2005) argued that engagement strategies therefore need to have two different goals and target audiences: to reduce or remove these cognitive blocks amongst those who can only find reasons for not preparing; and to motivate those who do intend to prepare, so they can overcome more tangible obstacles, such as busy lifestyle, that prevent their intentions from being realised (Paton et al., 2005). Eriksen and Gill (2010) were concerned about complexity of the gap between intentions and actions, which they pointed out was often overlooked in behaviour change research.

The next section of this literature review explores the psychological foundations of engagement, and discusses implications for community engagement, and then community engagement for preparedness. It will also discuss some of the popular frameworks for community engagement, and conclude with a framework of evaluation for engagement.

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3. ENGAGEMENT AND COMMUNITY ENGAGEMENT

3.1 ENGAGEMENT

Engagement is a multidimensional relational concept featuring psychological and behavioural attributes of connection, interaction, participation, and involvement, designed to achieve or elicit an outcome at individual, organisation, or social levels (Johnston, 2010, 2018). Kahn (1990) argues an individual must be engaged or engagement needs to be psychologically present to undertake or perform a behaviour. At an individual level, engagement is founded in psychological dimensions relating to cognitive, affective, and behavioural attributes. These dimensions work together to achieve an individual state of engagement (Johnston, 2018) in the following ways:

- *Cognitive engagement* suggests an investment in attention, processing, or thinking skills to develop understanding or knowledge. Cognitive engagement embodies the idea of interest in a topic and a willingness to exert the effort necessary to comprehend complex ideas, master difficult skills, and determine what is seen and understood. Cognitive engagement is founded by a recognition that the topic is relevant or salient to the individual. While individuals can know (have knowledge) something based on experience or based on reasoning (Spender, 1996), understanding relates to comprehension. Johnston (2018b) defines cognitive engagement as an individual's investment in attention and processing to develop understanding or knowledge about a topic or an idea

- *Affective engagement* describes the emotional dimension of response such as enjoyment, belonging, or repulsion. Positive or negative valence embodies affective dimensions of engagement, such as a sense of belonging, attraction, fear, or anger. It is suggested that the affective engagement can lead to conditions for motivation, interest, or concern

- *Behavioural engagement* represents the behavioural dimension of engagement, relating to concepts of participation, interaction, collaboration and behaviours that result from cognitive or affective engagement

3.1.1 Engaging a community

Community engagement is the pattern of activities implemented by agencies with the aim to collaborate with and though community members to address, respond or mitigate issues that affect the health, well-being or social status of the community (Bowen et al., 2010; Fawcett et al., 1995; Scantlebury, 2003). Community engagement as a process works to facilitate "understanding and evaluation, involvement, exchange of information and opinions" relating to a topic (Johnston, Lane, Devin, & Beatson, 2018, p. 173).

Engagement at a group or community level represents a collective state of engagement, symbolised by behavioural (collective action, group participation), cognitive (shared knowledge) and affective forms (orientation, intention, and experience) and is an outcome of a socially-situated and

relational process (Johnston, 2018). Listening matters (Macnamara, 2016). The Australian Institute for Disaster Resilience (AIDR) defines community engagement as "the process of stakeholders working together to build resilience through collaborative action, shared capacity building and the development of strong relationships built on mutual trust and respect" (AIDR, 2018, p. 2). Agencies responsible for community engagement programs are therefore challenged to create a process that creates (or co-creates) meaning through listening, communication and action, and for the consequences of those actions to hold value for both the individual and also members in a community (see Johnston, 2018b for more reading on this).

Successful community engagement therefore must align at the nexus of engagement dimensions and of engagement processes. Engagement dimensions respond to cognitive, affective and behavioural attributes, while engagement processes are fundamentally communication and relationship based, engagement processes provide the scaffolding for idealised states of engagement to be achieved. This means that in an emergency management setting, the obstacle of personalisation of risk must be overcome before any of these levels of engagement can be successful (Daniels, 2017).

3.1.2 Attributes of an "engaged" state

Johnston (2018) argues an idealised engagement state is characterised by high levels of an attribute on a sliding engagement continuum scale. Negative or low engagement states are represented by increments of low, to very low, measures of the attribute state. Cognitively, an engagement state describes a high level of interest (personal/situational), knowledge, or understanding of a focal topic. An affective engagement state describes a person's emotional states and reactions to that topic, incorporating both positive and negative emotional conditions such as enjoyment, fear, belonging, or repulsion. A behavioural engagement state captures activity associated with engagement, such as interaction, action, and participation. Engagement as a state also incorporates the notions of disengagement and non-engagement. Disengagement is where the individual state of engagement represents the lowest levels of cognitive, affective or behavioural dimensions measured against the engagement continuum. Engagement can therefore be measured on a continuum ranging from negative to positive levels of each dimension attribute (Johnston, 2018).

Table 5: Continuum of engagement attributes: cognitive (C), affective (A), and behavioural (B) dimensions of engagement – (source Johnston, 2018, p. 24)

Construct/ attributes	Description	C/A/B	Disengaged-nonengaged Very low	Engaged idealised Very high
Knowledge	Knowing—level of information/facts (deduced/induced/ co-created/ experience based)	C	Unaware, uninformed, and unfamiliar	Knowing, aware, and informed
Understanding	Level of comprehension	C	Indifferent, misunderstand, and uncertain	Comprehension, recognition, and absorption
Attention	Level of notice and interest	C/A	Apathy, indifference, unaware, and disinterested	Interest, curiosity, awareness, and salience
Beliefs (internal) Attitude (expressed)	Range of opinions, principles, and philosophies	C/A	Distrust, suspicion, scepticism, and doubtful	Trust, faith, consideration, and confidence
Motivation	Range of intrinsic/extrinsic reason/cause	C/A	Uninspired, detached, and removed	Inspired, connected, and rationale
Connection	Level of actual/perceived relationship	C/A/B	Disassociated and detached	Association and bond
Experience	Level of encounter	B/A	Unwilling to encounter	Encounter and feeling
Involvement	Level of connection	A/B	No connection Unwilling involvement	Connection, contribution, attachment, and immersion
Interaction	Level of contact	B	No contact No transfer	Contact, transfer, transmission (co-creation outcomes)
Action	Level of action	B	No action	Deed, act, do, and accomplish
Participation	Level of participation	B	Uncooperative Non-participative	Cooperate, combined, shared, two way, and mutual
Orientation	Level of disposition	C/A	No intention Lacks preference	Emphasis, tendency, and preference

## 3.1.3 Community engagement processes, models and frameworks

Community engagement frameworks within industry and academic sources typically follow a continuum or process approach. The following section presents the most commonly used or cited frameworks, first by industry and then by empirical literature.

The IAP2 Public Engagement Spectrum

IAP2 is an international member association consisting of individual practitioners and organisations that have an interest in, or practice, community engagement and participation. IAP2 aims "to promote and improve the practice of public participation or community and stakeholder engagement, incorporating individuals, governments, institutions and other entities that affect the public interest throughout the world" (IAP2, 2018). IAP2 2017 annual report (IAP2, 2017) reported 1108 memberships of the association including private and corporate memberships. Anecdotally, the Public Engagement Spectrum is the most

commonly cited public engagement framework used by government agencies in Australia. IAP2 notes it is the leading public participation association in Australasia and the largest IAP2 affiliate in the world (IAP2, 2018).

Figure 1: IAP2 Public Participation Spectrum
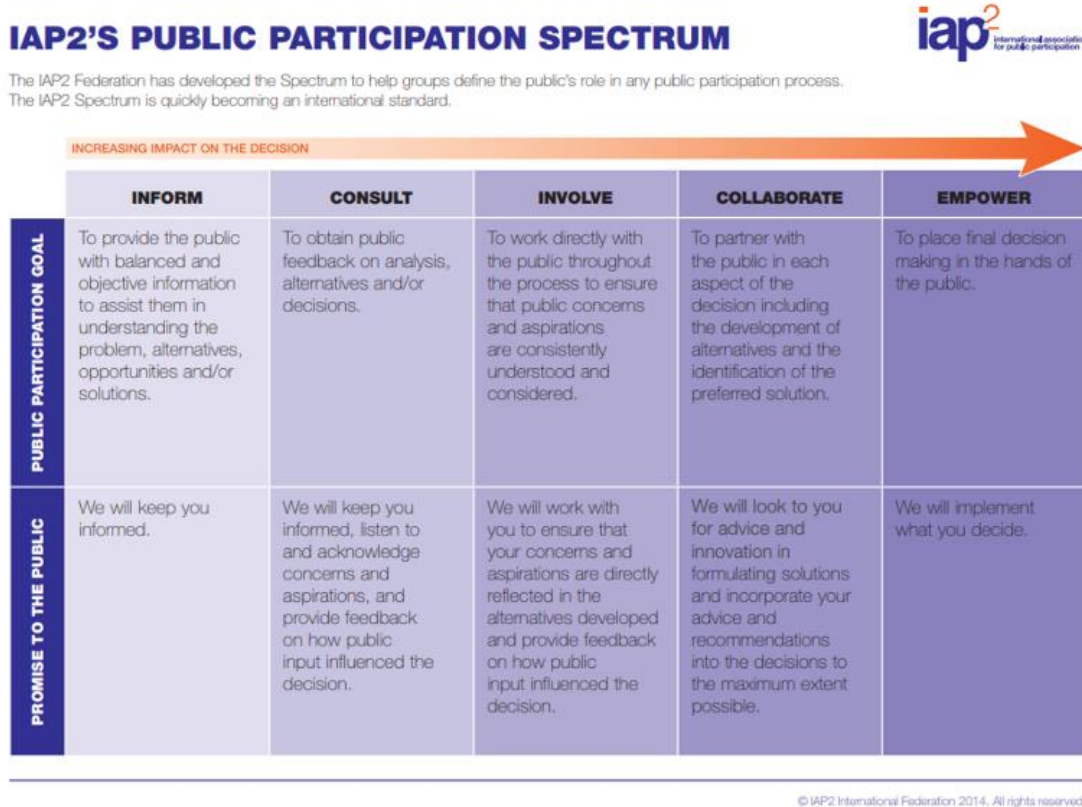
The IAP2 Public Engagement Spectrum – describes a continuum from inform, consult, involve, collaborate and empower with a description of each stages goal and promise to the public. Earlier versions of the spectrum also listed suggested tactics for each stage. IAP2 states its public participation spectrum assists practitioners select the level of stakeholder participation and "defines public's role in any community engagement program" (IAP2, 2018).

Quality standards of the spectrum were developed and published by the IAP2 Federation in May 2015 (IAP2, 2015). These standards aim to offer a "standardised process to formally assess the quality of an engagement practice which impacts on critical decision making and relationship outcomes" (p. 6). In March 2017, led by the Canadian chapter of the IAP2, a qualitative review of the spectrum from P2 practitioners was undertaken to identify the spectrum's "use, limitations, benefits, and potential changes that could be made to ensure it better reflects current contexts and needs" (IAP2 Canada, 2017, p. 1). The review found there was no consensus towards changing the spectrum, and the report identifies concerns relating to term confusion and misunderstandings; that the spectrum was organisation-centric resulting in an imbalance of power; the spectrum focuses on a single decision outcome; the spectrum was too project focused; that the spectrum levels/continuum-points may need to be modified/adjusted; and that the spectrum may be too simplistic.
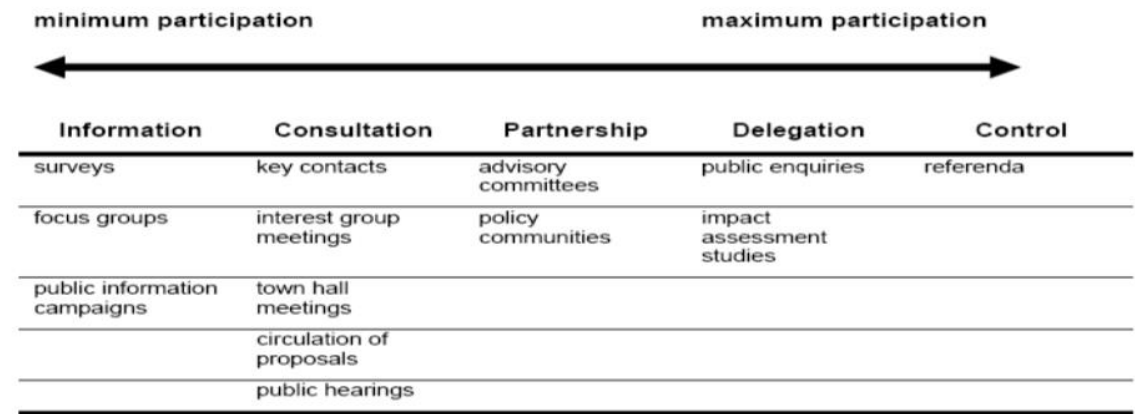
Recommendations were offered for the IAP2 Federation to address these concerns.

Continuum of participation

Shand and Arnberg's (1996) continuum of participation (see Figure 2) ranges from information to control. The continuum is focused on a serious of choices relating to the type of participation sought. Bishop and Davis (2002) (see Figure 3) later build on this model and identified appropriate tactics to deliver on the choices (such as public hearings for consultation).

Figure 2: Continuum of participation (Shand & Arnberg, 1996)

minimum participation			maximum participation	
Information	**Consultation**	**Partnership**	**Delegation**	**Control**
surveys	key contacts	advisory committees	public enquiries	referenda
focus groups	interest group meetings	policy communities	impact assessment studies	
public information campaigns	town hall meetings			
	circulation of proposals			
	public hearings			

Map of participation

Bishop and Davis (2002) developed a Map of Participation (Figure 3) and argue participation, and by association engagement, map participation type with communication or behavioural objectives, and key instruments. They argue that participation – as consultation, partnership, standing, choice or control, is best understood as a discontinuous set of techniques chosen based on issue and politics.

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Figure 3: Bishop and Davis (2002) Map of participation

| Participation Type	Objective	Key Instruments	Limitations
Consultation	• to gauge community reaction to a proposal and invite feedback • consultation is only participation when information gathered can influence subsequent policy choices	• key contacts • surveys • interest group meetings • public meetings • discussion papers • public hearings	• delay between consultation and any outcomes • communities feel betrayed if they do not like the decision • expensive and time consuming for complex decisions
Partnership	• involving citizens and interest groups in aspects of government decision-making	• advisory boards • citizens' advisory committees • policy community forum • public enquiries	• issue of who can speak for a community • bias towards established interest groups • legitimacy issues with those excluded form the process
Standing	• allowing third parties to become involved in the review process	• review courts and tribunals • open and third party standing • statutory processes for social and environmental impact assessment	• only relevant for those issues which come to court • expensive and time consuming • bias towards well funded interests • legal approach may be inappropriate for some issues
Consumer Choice	• allowing customer preferences to shape a service through choices of products and providers	• surveys, focus groups • purchaser/provider splits • competition between suppliers • vouchers • case management	• relevant only for service delivery issues
Control	• to hand control of an issue to the electorate	• referendum • community parliaments • electronic voting	• costly, time consuming and often invasive • are issue votes the best way to encourage deliberation?

Continuum of community engagement

Bowen, Newenham-Kahindi, and Herremans's (2010) Continuum of Community Engagement explored the key antecedents and consequences of community engagement strategy. They conceptualised community engagement strategy as the pattern of activities implemented by firms to work collaboratively with and through groups of people to address issues affecting the social well-being of those people (Bowen et al., 2010; Fawcett et al., 1995; Scantlebury, 2003).

Bowen et al. (2010) note the dominance in the literature of 'continuums' with engagement strategies ordered from least to most involved. They synthesise these into three strategies - 'transactional', 'transitional' and 'transformational' engagement (see Figure 4).

Figure 4: Continuum of community engagement (Bowen et al, 2010, p. 304)
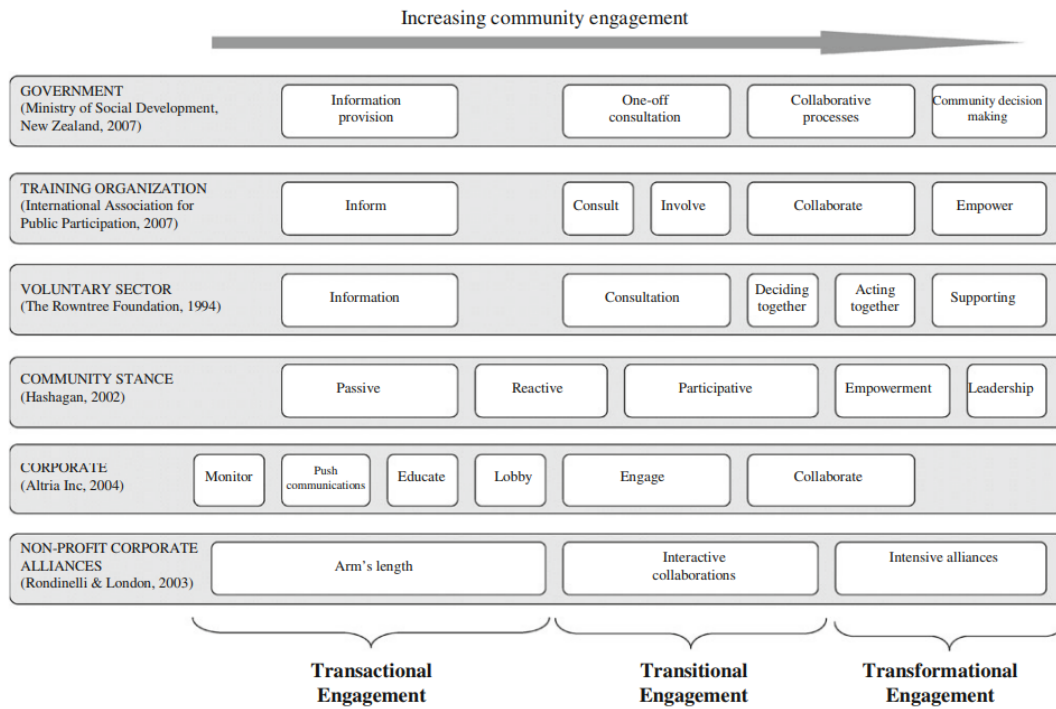
By identifying the antecedents and outcomes of the three strategies, Bowen et al. (2010) differentiate between the type of agency (i.e.: government, corporate etc.) and summarise these across stance, tactics, communication type, frequency, and control (see Table 6).

Table 6: The three community engagement strategies (Bowen, et al., 2010, p. 305)

	The three community engagement strategies		
	Transactional engagement	Transitional engagement	Transformational engagement
Corporate stance	Community investment/ information "Giving back"	Community involvement "Building bridges"	Community integration "Changing society"
Illustrative tactics	Charitable donations Building local infrastructure Employee volunteering Information sessions	Stakeholder dialogues Public consultations Town hall meetings Cause-related marketing	Joint project management Joint decision-making Co-ownership
Communication	One-way: firm-to-community	Two-way: more firm-to-community than community-to-firm	Two-way: Community-to-firm as much as firm-to-community
Number of community partners	Many	Many	Few
Frequency of interaction	Occasional	Repeated	Frequent
Nature of trust	Limited	Evolutionary	Relational
Learning	Transferred from firm	Most transferred from firm, some transferred to firm	Jointly generated
Control over process	Firm	Firm	Shared
Benefits and outcomes	Distinct	Distinct	Joint
Illustrative studies	Brammer and Millington (2005) Gabriel (2006) Stern (2001)	Foo (2007) Maranville (1989) O'Regan and Oster (2000)	Parker and Selsky (2004) Tracey et al. (2005) Westley and Vredenburg (1991)

While Bowen et al. (2010) were seeking to understand antecedents and consequences, a relational approach explored this topic within a relational framework.

Community engagement relational framework

A relational model of community engagement (Johnston, 2010) argues community engagement is facilitated across a communication triad of information, consultation, and participation, with triad elements distinguished by the nature of communicative and behavioural interactivity between the organisation and community members involved.

Community information provides a one-way dissemination of concepts (information) relating to a topic or problem to a geographically defined community group or individual members of a community. Information dissemination should not be confused with engagement (Taylor & Kent, 2014). A foundation for effective community therefore relies on relevant, appropriate, and timely information provided to the community.

Community consultation is the process to solicit opinions and views by individuals and interested community members relating to a specific organisation-defined issue (Johnston, 2010). Consultation therefore allows the organisation to retain the power to make the ultimate decision informed by a range of diverse perspectives. The effectiveness of any consultation process requires organisational members to have the skills, knowledge and what Taylor and Kent (2014) refer to as an engagement orientation. It also requires the organisation to have the skills and knowledge to analyse the solicited opinions in a meaningful and transparent way to provide meaningful insights to be useable for decision-making.

Community participation suggests an active role by community members in the creation of meaning and developing solutions to complex social problems or proposed solutions that affect a specific community (Janse & Konijnendijk, 2007). Participation relates to a sharing of power to influence (or have a say) in the final decision, rather than pure involvement. This model is illustrated in Figure 5.

Figure 5: Relational model of community engagement (Johnston, 2010)
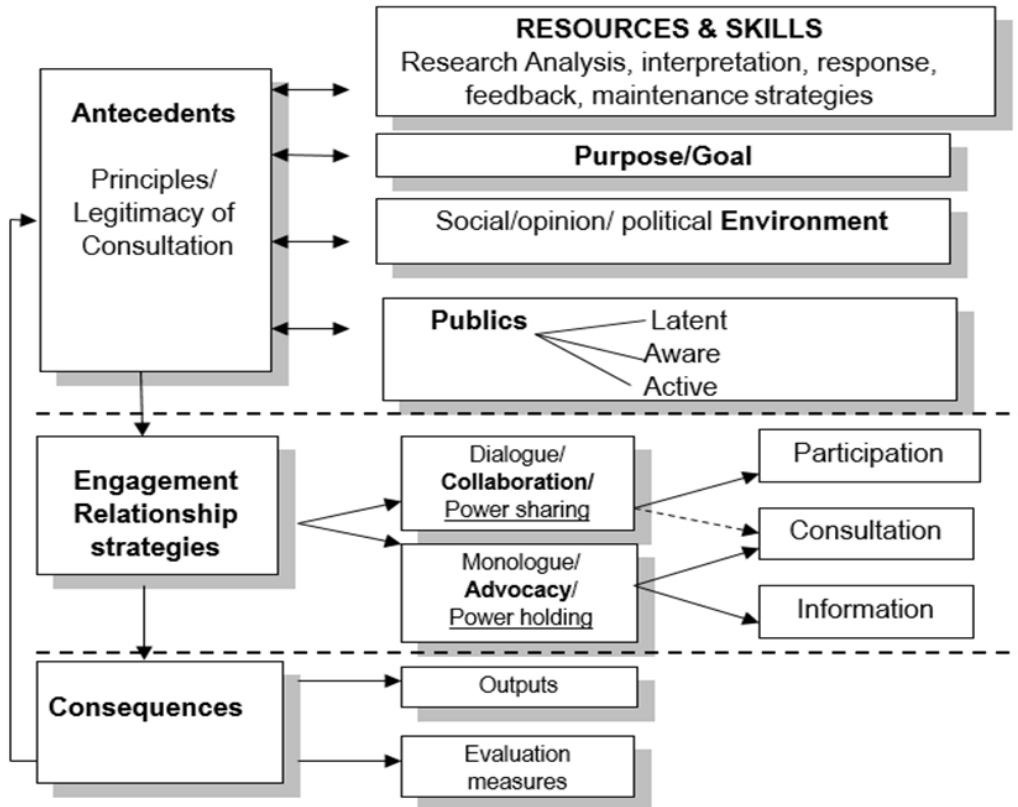
3.1.4 Process model of stakeholder engagement

In a CSR context, Lane and Devin extended Johnston's (2010) process model to operationalise stakeholder engagement whereby the process of engagement is undertaken in three steps – identifying and selecting appropriate stakeholders, reaching them and securing their interest, and implementing engaging strategies. They argue that a focus on achieving outcomes that contribute to the enhancement of stakeholder relationships is more sustainable using this method.

Figure 6 - A process model of stakeholder engagement in CSR (Lane & Devin, 2010)
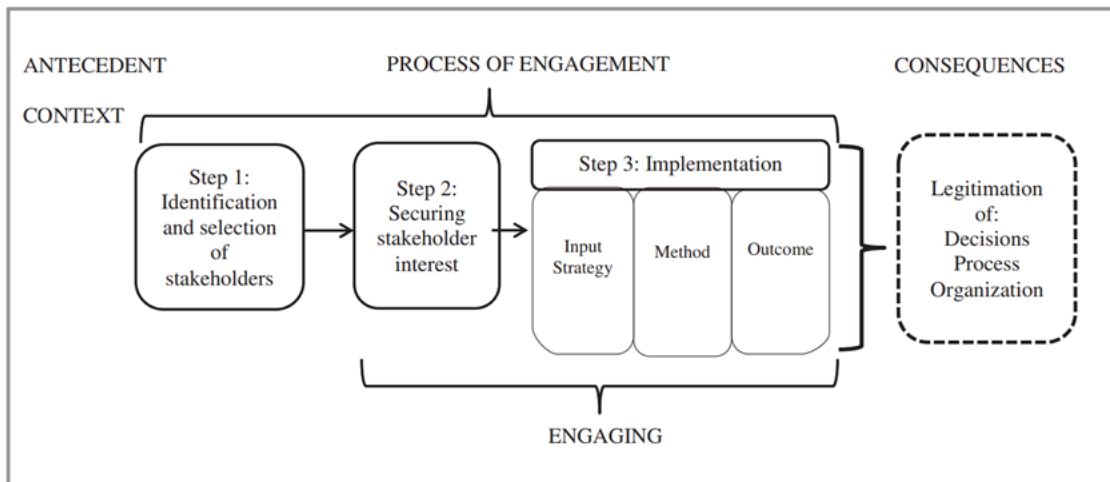
3.2 COMMUNITY-LED APPROACHES: DEVELOPMENT AND DESIGN

In addition to the key models described above, two key community-centered approaches to engaging with a community are relevant for disaster preparedness– specifically community development and co-design.

3.2.1 Community development

Community development as an approach was developed from post-World War II reconstruction efforts to improve less-developed countries (Wise 1998).

Community development is described both as a process and as an outcome (Phillips & Pittman, 2009). As a process – community development focuses on the capacity and ability of communities to act collectively. Long (1975) suggests this means teaching people how to work together to solve common problems. Community development therefore is an educational process designed to help adults in a community solve their problems by group decision making and group action (Long, 1975).

As an *outcome*, community development focuses on the physical, social, and economic improvement of a community (Phillips & Pittman, 2009). Ploch (1976) describes this as the "active voluntary involvement in a process to improve some identifiable aspect of community life; normally such action leads to the strengthening of the community's pattern of human and institutional relationships" (cited in Mattessich & Monsey 2004, p. 59). Other conceptualisations of community development focus on local decision making being at the core, with programs developed to improve lifestyle (live/work) factors (Huie, 1976) of that community (see Mattessich & Monsey, 2004). The initiation of action by a local group to influence or change a situation directly affecting that local group (community) is highlighted by Christenson and Robinson (1989) as also being central to a community development approach. This influence can be conceptualised as "a series of community improvements which take place over time as a result of the common efforts of various groups of people" (Dunbar 1972 cited in Mattessich & Monsey 2004 p. 59).

Phillips and Pittman, (2009) summarise the goal of community development is ultimately to social capital, through influencing the ability of a community to act collectively, and through taking collective action, there is an improvement for a community at either a physical, environmental, cultural, social, political, economic, level. Social capital is defined by Putnam (2001) as "… networks and the associated norms of reciprocity have value" (p. 1).

Models of community development are comprised generally of four key steps.

1. Bringing people together (connections and networks). Identifying and exploring factors that underpin marginalisation or exclusion

2. Building evidence and a future vision (collective understanding/ shared values)

3. Developing understanding, knowledge and capacity

4. Mobilising and organising, networking and taking action

Figure 7 Illustrates one such framework offered by the European Community Development Network that ranges from collective learning to collective action and equality

In summary, the underpinning approaches to community development offer important insights for a community centred approach to community engagement. The next section explores co-design as a community-led approach.

3.2.2 Participatory design, co-design, and service design: As community-led approaches

Participatory design emerged in the 1970s as a way for users and designers to create better products, systems, spaces through a process of collaboration. Ehn (2008) argues these collaborative processes enhance, share power in, and can influence, the design - decision making process with end-users. More recently, participatory design has shifted to other contexts such as in policy development, education (collaborative learning) and is labelled with terms such as co-design or service design. Codesign aims for collaborative ways to create knowledge and address problems occurring in specific contexts (Fontan et al. 2013). In other words, codesign facilitates bottom-up discourse formation, (vs traditional authoritarian, imposed definitions and parameters) whereby the community is led to participate in the production of the service [development, building] they need or want (Vaillancourt, 2009). This approach is particularly suited to "wicked" problems such as those confronted in disaster management.

Codesign is a process where communities and agencies (i.e.: people with different backgrounds, perspectives, expertise etc) share their knowledge (see for example, Kleinsman, 2006). As Manzini (2017) notes, this encapsulates "…the idea that different people with differing ideas and motivations, from a variety of backgrounds and with different skills can take part in a series of conversations that seek to change the state of things" (p. vii). Manzini (2017) reminds us that this coming together has a number of requirements (to be successful), including:

- Alignment of ideas and motivations of participants
- Produce shared visions and aims
- Create conditions for contribution and collaboration
- Articulate action – to put their decisions into effect (Manzini, 2017, vii)

The contribution of codesign and community development align with, and facilitate, a community centred approach to disaster preparedness particularly addressing the variety of contexts, hazards and challenges that Australian

communities face. The function of building capacity and ability of communities to act collectively, of aligning motivations to produce localised actions, and the sustainability of community centred capacity supports and enriches community engagement practice. These collaborative approaches become a foundation for community-led action. The next section moves to a more specific context of community engagement – an overview of community engagement for emergency management.

3.3 COMMUNITY ENGAGEMENT FOR EMERGENCY MANAGEMENT

In an emergency management setting, community engagement activities have focused on preparation, immediate response, and recovery, and models developed to describe this specialisation have generally incorporated all three phases of disaster. This section will consider the models currently used in emergency management and will examine the way these models treat the preparedness phase of disaster management. Agencies in Australia have been active in searching for a theoretical underpinning for their work and appear to have led the world in development of models specifically for emergency management community engagement.

3.3.1 Community engagement model for emergency management

The community engagement model for emergency management illustrated by the Australian Institute of Disaster Resilience (Figure 8) draws on the internationally recognised Public Participation Spectrum of the International Association for Public Participation (IAP2). This framework aims to "provide guidance for those working in emergency management to effectively engage with the community" (AIDR, 2018, p. 1) and contextualises the framework by defining community engagement values, principles and practice in Australia (emergency management). While this model draws heavily on the IAP2 public engagement spectrum, the circular notion better reflects the changeable nature and influence of the external environment, which can influence a community's position and the engagement approach required. Like the IAP2 spectrum, this framework focuses heavily on the organisational approach and does account for the features and situational factors of the communities that agencies work with.

Figure 8: Community Engagement Model for Emergency Management (AIDR, 2018, p. 6)

3.3.2 The Victorian bushfire experience and a segmentation framework

One of the few engagement models developed for natural hazards preparedness comes from the Country Fire Authority in Victoria, whereby the Victorian community is segmented into four levels of involvement (Inspector-General for Emergency Management, 2016; Rhodes, Gilbert, Nelsson, & Preece, 2011). This model (see Figure 8) is based on the theory of diffusion of innovation. The model also includes the activities that research has shown will be effective with each group. The groups are:

- Active and involved (estimated to be 31% of the Victorian population[2])

- Ready and interested (35%)

- Done it already (21%)

- Not into bushfire (13%)

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[2] Note that the Victorian population is subject to rigorous and regular bushfire preparedness campaigns, regular serious bushfires, and in some areas, deep community engagement, and therefore would have a higher base level of bushfire knowledge than, say, the Queensland population.

Figure 9: Country Fire Authority's segmentation of the Victorian community
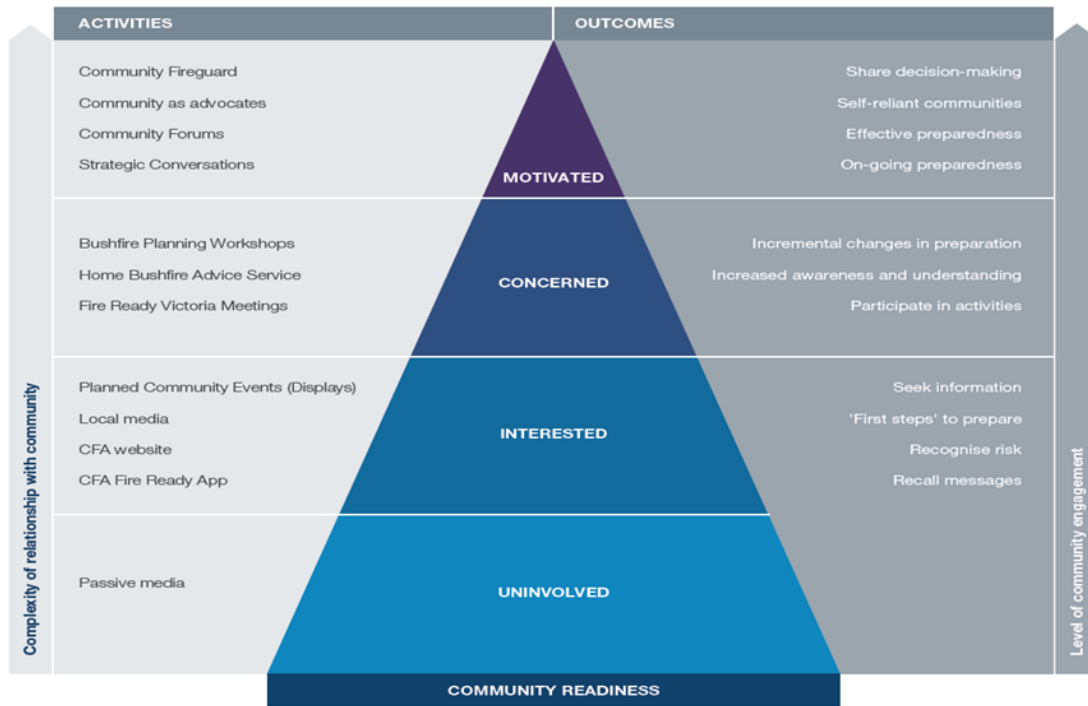
Active and involved: motivated and actively involved in mitigating bushfire risk, significantly more informed than average and actively seek information. This group is more likely to recognise bushfire risk in their area and actively prepare, and they are less likely than other groups to wait and see what happens on a high risk day. They are also more likely to get involved in activities that agencies stage, and are more likely to live on a non-residential block. Similar demographic to the overall community population.

Ready and interested: a motivated group that is less committed to preparation, but more interested than the average in learning more. They have a similar level of risk perception to the active and involved group, but see themselves as less well prepared, and only about half of them will attend activities staged by agencies.

Done it already: Not highly motivated to prepare because they see themselves as well informed and at relatively low risk and bushfires as not relevant to them. They see themselves as well prepared even though those preparation measures turn out not to be at a high level. They are less likely to attend agencies meetings or activities, but those who do attend multiple activities. More likely to be elderly, but similar demographically on other factors.

Not into bushfire: Least motivated to act and most likely to underestimate their risk and threat levels. Tend not to be interested in finding out more about bushfire, and more likely to assess themselves as 'not at all' or 'slightly' prepared. This group intends to rely on agencies for help during a bushfire and most likely to use the 'wait and see' approach, are least likely to evacuate early and less likely to stay and defend. People in this group are least likely to have attended agency activities, more likely to have lived in their area for less than 10 years, and will probably live on a residential block. This group is also more likely than the other groups to be aged 18-44 and be a couple with children.

3.4 COMMUNITY COMMUNICATION, EDUCATION AND ENGAGEMENT IN AUSTRALIA

Programs that inform and engage the community at any of these levels on relevant natural hazards have a patchy record in Australia. Elsworth et al. (2010), in developing guidelines for the communication function in emergency management for the Australian Institute of Disaster Resilience, were critical of the application and measurement of communication programs, saying they were:

- Supported by low levels of resources

- Suffered from lack of professional design and delivery

- Targeted limited audiences

- Were not often subjected to evaluation

- Were sporadic rather than sustained

The outcome of these shortcomings has been clearly demonstrated in major incidents in Australia. Reviews of post-disaster reports and debriefs (Cole, Dovers, Gough, & Eburn, 2018; Ryan, 2017; Ryan & Matheson, 2010) found that between 12% and 20% of problems experienced before, during and after incidents related to agencies' communication with affected communities. Cole et al. (2018) found that of 1,136 recommendations from post-event reviews, 58 related to community education and preparedness, and this aspect of emergency management featured in 25 of the 55 events examined.

However, Elsworth et al. (2009, p. 23) found that programs at any level of the community engagement had the "...clear potential to achieve positive outcomes at both the 'individual' (resident, household, family) and community levels". They determined that there were four key processes for achieving success in communication programs (Elsworth et al., 2010):

1. Engagement

2. Trust and self confidence

3. Confirmation and reassessment

4. Community involvement, participation and collaboration

Engagement relates not only to the take-up rate by individuals of information and programs and their motivation to learn more, but to processes that allow agencies to look for, listen to (Macnamara, 2016) and use local knowledge, and involvement of the community in designing and implementing programs. **Trust and confidence** relates to trust in agencies, as well as individual and community confidence in what they have learned, and their ability to face the natural hazard challenge. This self-efficacy will also result in less reliance on agencies during an incident, and less loss of trust in agencies when the community discovers that not every property can have a fire engine to protect it.

The **confirmation and reassessment** process is important in moving communities from the lowest level (or even complete lack) of awareness, to the highest level of engagement and activity. Some communities, such as Victoria in relation to

bushfires and Queensland in relation to cyclones, may already be at the upper levels of this scale because of their extensive experience with major events. Other communities, such as much of some parts of Tasmania (Prior & Paton, 2008) and Queensland (Bushnell, Balcombe, & Cottrell, 2007) in relation to bushfires, are at the very lowest end of the scale, and require certain approaches to move them off this low base.

Elsworth et al.'s final ingredient of success for community education and engagement programs is **community involvement** (2009). However, the position of each community will determine the techniques and tools used, the messaging that is implemented, as well as the behavioural outcomes. This supports the idea that informational tools should be used to expose communities to information and ideas and attract their attention to the issue of preparation and receptive to more information. Once the point of interested is reached, the community's experience, knowledge, interests, concerns, fears, values, priorities and preferences for success (Webber, Gissing, Dufty, & Bird, 2017) can be tapped into to move them up the scale to full involvement in community preparation for bushfire, or any hazard.

This higher level of community engagement tends to be the goal for many agencies, and this could be a reflection of the importance of engagement in the National Strategy for Disaster Resilience Community Engagement Framework. This framework defines community engagement as "… the process of stakeholders working together to build resilience through collaborative action, shared capacity building and the development of strong relationships built on mutual trust and respect" (Attorney General's Department, 2013, p. 2). This means that agencies need to work "…in partnership with the community, building on existing networks, resources and strengths, identifying and supporting the development of community leaders and empowering the community to exercise choice and take responsibility" (Attorney General's Department, 2013, p.3).

3.5 EVALUATION OF COMMUNITY ENGAGEMENT

Evaluation is needed in all types of communication campaigns (Macnamara, 2018). Evaluation of community engagement for hazards preparation, response and recovery has been problematic, with Elsworth et al. (2010) critical of the efforts of agencies to review the success of their activity. Bowen et al. (2010) also argue that evaluation of community engagement efforts to date are hampered by a focus on phenomenon rather than theoretical concepts, and the disconnect between the rhetoric and reality of community engagement with concepts such as 'partnership' and 'collaboration' that are inconsistently used making comparison and evaluation of programs difficult. Like other fields, there is no standardised evaluation of community engagement for preparedness programs.

3.6 WHAT HAS WORKED IN COMMUNITY EDUCATION FOR PREPARATION?

Elsworth et al. (2010) complained that while they reviewed almost 300 separate agency programs and activities from around Australia, only 14 had been

evaluated and analysed in detail for outcomes by the agencies. The previous section of this report discovered that risk perceptions and preparedness activities can be difficult for agencies to influence and change – this may be a result of the weaknesses in agency communication program planning that Elsworth et al. identified in their review. However, some studies have shown that small interventions conducted the right way with a research foundation can effect some change (Daniels, 2017; Dufty, 2008). This section will highlight those programs that have produced positive results, and attempt to identify the reasons for their success. These success factors will then be summarised into table form. The programs will be sorted in order of the level of engagement they seek, with the levels derived, for simplicity, from the IAP2 framework: inform, consult, involve, collaborate, and empower (International Association for Public Participation Australasia, 2016).

3.6.1 Effective information programs

Information campaigns involve materials and resources that provide information in a one-way form of communication. Resources include websites, brochures, fact sheets, stickers, promotional items such as manuals and plan templates, advertising, social media accounts, billboards and booklets. They often work in tandem with the first level of involvement, public meetings. The inform level on the IAP2 engagement matrix aims to provide the community with "…balanced and objective information to assist them in understanding the problems and alternatives, opportunities and/or solutions" (International Association for Public Participation Australasia, 2004).

According to Paton (2007), information availability and hazard experience influence the level of reliance people have on agencies, with low levels of information and experience increasing reliance on firefighting agencies. The need for foundation information delivery in less experienced communities was demonstrated by research on the East Coast of Tasmania in 2006 (Prior & Paton, 2008) and in evaluation of the CFA's Bushfire Planning Workshops (Rhodes et al., 2011). Many of the Tasmanian respondents had no experience of bushfire and no previous bushfire education, and consequently had unrealistic expectations of agencies, the nature of the fire, and what they needed to do to prepare (Prior & Paton, 2008). In the Bushfire Planning Workshop example, intended outcomes could not be achieved because many people arrived at the workshops without the prerequisite knowledge of bushfire, their own risk profile and preparedness. What was to have been an activity of involvement and collaboration turned into an information session for some attendees (Rhodes et al., 2011). This foundation can often be overlooked as an effective education tool in reviews of emergency preparedness (Nous Group, 2013), even though success has been demonstrated in a few well-designed cases.

The most recent of these success stories comes from Rural Fire Service (RFSNSW), which engaged a behavioural economics consultant to help research and analyse target publics and then develop messaging and images on materials for its 2016 Get Ready NSW campaign (Daniels, 2017). This campaign achieved:

- 50% increase in correct identification of their level of risk by householders (which was shown to be problematic in the previous section)

- 27% increase in the number of people who discussed a bushfire plan with their family, and most importantly

- 32% increase in the level of effective preparation (that is, more than just clearing the gutters and mowing the lawn) by study participants

The success of the program was attributed to the way the materials were simplified to identify four easy steps in the preparedness process, each assigned a symbol:

- discuss (what to do if a bushfire threatens)

- prepare (for bushfire season)

- know (the bushfire alert levels)

- keep (all the bushfire information numbers, websites and the smartphone app)

These are illustrated in Figure 10.

Figure 10: RFS NSW Get Ready campaign materials

The campaign included web pages (one pictured in Figure 10), visual advertising for mainstream and online media, downloadable guides and checklists, the MyFirePlan app, and Get Ready weekends held by local brigades.

StormSmart - a pilot campaign conducted by the Victorian State Emergency Service and the City of Wodonga in October 2006 - also showed effective results (Dufty, 2008), although the materials formats and messages used were not

reported in detail. The study identified the action guide as particularly effective. The campaign involved distribution of the action guide (whether this was mailbox dropped or distributed by some other method is not clear), brochures, posters, web pages, meter box stickers and community barbecues.

The campaign was effective in a number of areas (Dufty, 2008):

- residents improved their knowledge of which agency to call for help (from 68% before the campaign to 82% after)

- 17% felt unprepared for storm before down to 6% two months after

- the number of people with a home storm emergency plan rose from 12% before to 20% two months after the campaign

- 58% felt moderately prepared before, 31% two months after

- 5% felt well-prepared before, 36% two months after

- no-one felt very well prepared before, 6% two months after

- 86% of respondents said they had read the action guide

Anecdotally, the community barbecues were effective – two were held, attracting 40-50 people to each, where agency staff were able to use the action plan to guide residents through the necessary preparation for storm. About 45% of the survey participants had attended a StormSmart barbecue.

A weakness of the campaign was the low recall by participants of which emergency number to use (Dufty, 2008) – only 4% surveyed could recall the correct 13 number. In addition, the meter box stickers were identified as not useful – possibly because the message was not congruent with the medium, which seems to have been developed for flood education and transferred to the storm campaign.

3.6.2 Effective consultation campaigns

On the IAP2 spectrum, 'consult' is the level of engagement at which public feedback is obtained on analysis, alternatives and/or decisions (International Association for Public Participation Australasia, 2004). No consultation campaigns were found for this analysis, although consultation is evident in the first stages of involvement and collaboration campaigns that are considered in this section, and agencies around Australia regularly undertake community research.

3.6.3 Effective involvement campaigns

Most preparedness programs include some mechanism that allows communities face-to-face contact with agencies, and therefore to move from passive acceptance of materials to demonstrable involvement. Often this involvement provides a trigger for preparedness activity (Inspector-General for Emergency Management (Victoria), 2016). The IAP2's concept of involvement means working with community members directly or face to face to ensure that public concerns and aspirations are understood and considered. In this context it would include ensuring that these concerns and aspirations can be acted upon by the individual to reduce personal risk and to ensure each group understands

the other and the constraints they face. Involvement programs usually entail public meetings, but a few other innovative approaches have been tried in Australia.

An example was a Tasmanian bushfire preparedness program piloted in 2009 (Frandsen, Paton & Sakariassen, 2009). This program involved interactive information sessions that were mostly presentations and demonstrations about risk levels and preparedness and was part of the Bushfire: Prepare to Survive program. In addition, three of the communities received field days, in which fire officers attended a number of different properties in a day and spoke about the risks and preparedness activity required. The four pilot activities, which were held in small communities at high risk (Frandsen, Paton & Sakariassen, 2009):

- attracted 220 people

- 92% of these said they intended to become more prepared after attending

- 43% said the forum made them realise they had to be more self-sufficient than they realised

- benefits including getting more information about bushfires and how to prepare, a better understanding of community preparedness, and motivation to start preparing immediately, which translated into actual activity for a few in follow up interviews

- The field days, which included fire and council officers, were well received, but data was not collected. Anecdotally, the field days allowed networking between neighbours, allowed specific local knowledge to be delivered, and showed that each community requires a slightly different approach, a one-size fits all approach doesn't work

FireReady in Victoria (formerly known as Bushfire Blitz) is a series of community meetings/street meetings featuring presentations by fire agencies held in high-risk areas in rural and bushland/urban interface areas. Bushfire Blitz days (1997-2003) prompted improved levels of knowledge of risk and planning, higher levels of bushfire preparation activity, and demonstrated an "inspiration effect" – prompting preparedness action, often for the first time. In the FireReady iteration (post-2003), 47% of randomly selected survey respondents had attended at least one of these meetings, 1 in 4 in the previous six months.

The top reasons for people attending these meetings were to:

- Get information about the level of bushfire risk in their local area

- Get information on new developments or issues that they may not have been aware of

- Use the knowledge to prepare their bushfire plan

People who attended felt the meetings:

- Provided useful information and updates about changes and initiatives

- Provided motivation to undertake preparation and planning activities

- Helped them develop their preparedness plan

- Created a basis for co-operation with neighbours

- Provided information and understanding, which was the main benefit (28%)

- Provided insights into how to prepare and improve their safety as the major benefit (15%)

- Prompted better planning including decisions on protective actions and evacuations

Evaluation respondents for this program were classified according to their readiness and open-ness to preparation. The Active and Involved group were much stronger in the view that they were actively looking for information and updates, and the Done it Already group (people who were lower on the involvement scale) were more likely to say there were no benefits attending, which reflected the general belief outlined in the Target Communities section that they were well informed about bushfire safety and that the threat to them was minor.

The FireReady research also asked why people didn't attend:

- Meetings and information provided were not useful

- Information is not relevant because they have decided to leave if threatened

- Attendance is not necessary because information can be gleaned from other sources

- Meetings are too time consuming for busy people (or are held at inconvenient times)

- Meetings are unpleasant to be involved in - too crowded, emotional

- Meetings are not adequately advertised or promoted

A second effective program was the CFA Home Bushfire Service by fire officers to give advice about risk and preparedness, which was a service offered as an outcome of the Victorian Bushfire Royal Commission after Black Saturday in 2009. The results of this activity were:

- 17% of respondents accessed the service

- 54% knew of the service

People used it to:

- check, review, confirm and validate existing preparation and plans (16%

- recognise living in a bushfire prone area (15%)

- get information and advice from CFA (37%)

CFA also offers a Household Assessment Tool, an online and paper tool that walks householders through factors that allow them to assess their level of preparedness. It was also set up as a result of the Victorian Bushfires Royal Commission. However, it has been subject to low usage and high dropout rates,

and only half of the 15% of survey respondents who had used the tool had worked all the way through to complete course of action provided by the tool.

Community Fire Units (NSW RFS) were developed specifically for the urban interface context of New South Wales cities and larger towns where it was believed that there was a less well-developed 'sense of community responsibility' than in rural areas and a 'greater reliance on agency or government support in times of crisis' (Lowe, Haynes and Byrne 2008, p 23). Additionally, the socioeconomic characteristics of many urban interface localities meant that potential volunteers were not able to make a large time commitment to an organisation, such as that required for membership of a volunteer fire brigade. The CFU model was thus designed to provide urban interface communities with 'a level of self-reliance with a minimum of commitment' (Lowe, Haynes & Byrne 2008, p 23). Urban interface regions are expanding rapidly into rural areas in New South Wales and are subject to quickly developing fires with the potential to over-run available firefighting resources (Lowe, Haynes a& Byrne 2008, p 23). Localities that were targeted by the NSWFB for development of CFUs included streets that had a particular risk due to poor access and a topography of proximity to high fuel loads (Lowe, Haynes & Byrne 2008, p. 29).

It was also reported that localities with CFUs were 'likely to exhibit other forms of community action ... such as neighbourhood watch or bushcare groups, suggesting an existing spirit of community action and co-operation' (Lowe et al., 2008, p. 29). This increased social cohesion might be associated with the homogeneity of households in the locality (similarities in age, family development, background, community stability, shared bushfire experience) and the particular nature of the high-risk locality (suburban cul-de-sacs on the urban fringe).

3.6.4 Effective collaboration campaigns

No evaluated campaigns that fit the IAP2 criteria for collaboration were found for this project.

3.6.5 Effective empowerment campaigns

'Be Read Warrandyte' was a community-led initiative to get more households ready for fire after the 2009 Black Saturday Bushfires. It involved local residents, councils, local brigades and the Country Fire Authority and included development of a local video, adaptation of government messages to the local situation, workshops and tours (McLennan, Whittaker, & Handmer, 2015). Interviews were held after three years of the program, with anecdotal evidence from these showing that the program achieved community safety benefits beyond its goal of having "more Warrandyte households with effective bushfire plans" (which was not accurately measured, but recognised anecdotally and via two surveys).

Community Fireguard, a program developed by the Victorian Country Fire Authority in response to the 1983 Ash Wednesday bushfires, is a community capacity building program that encourages local people to collaborate with neighbours to prepare for bushfire with support of a facilitator with relevant experience (Gibbs et al., 2015). Gibbs et al. reviewed the cost and outcomes

associated with participating in this program, finding that social and economic benefits to the community were an outcome of the program – risk of property loss was reduced from 35% to 21% amongst participants; fatalities were reduced by 40%; and each FireGuard group saved $250,000 in cost to their community over 100 years (2015). Other outcomes were an increase in the connectedness of local people and their sense of community, better communication between neighbours, and increased information dissemination Fairbrother et al. (2013).

3.7 WHAT DOESN'T WORK

Early research (Paton et al., 2005) discovered that no one intervention would facilitate change in all stages of preparation. For example, providing information based on sound risk communication principles may change risk perception, outcome expectancy and timing, but is not suitable for changing critical awareness, self-efficacy, action coping or trust, particularly in the case of earthquake, where anxiety about the earthquake can inhibit preparation – they recommend that in the case of their particular New Zealand study, strategies based on social justice, participation and empowerment would be more appropriate (2005). Information strategies are also not appropriate for changing anxiety levels that block preparation – but changing these levels of anxiety is necessary before other change strategies can be implemented. They suggested attitudinal and normative influences, or deeper social engagement techniques, might be effective to achieve this (2005).

Further on information campaigns, McLennan et al. (2015b) recommend that "…effectiveness of bushfire safety programs based on making educational information available in conventional forms to householders and expecting them to avail themselves of this to plan and prepare for a possible bushfire will be limited. Householders' 'awareness-to-action' gap represents an endemic problem for fire and land management agencies, necessitating new approaches which engage residents of at-risk communities actively in mitigating their bushfire threat…" (pp. 24-25). Awareness of an issue is not enough to change behaviour (Muir et al., 2017) – there are a number of steps: exposure to the info (awareness), understand and believe the info (beliefs), have the resources and skills (capacity), derive benefit (or perceive a benefit from) the change (motivations), and be reinforced to make the change (maintenance) (Muir et al., 2017). Behaviour change is expected to be linear, which it is not, and this is the reason for backsliding if the maintenance phase is not sustained. Awareness of risk is not enough to motivate preparation (Eriksen & Gill, 2010; Muir et al., 2017).

Individual program evaluations have also found inconsistencies between expected results and reality. For example, McNeill et al. (2014) expected that an intervention that made residents more aware of the potential loss of key services such as water, electricity and other services, would increase preparedness, but receiving this information had no effect at all on preparation activity. McNeill (2014) also tested several interventions that had been effective in education and/or health and found:

- Letting residents focus on the three easiest preparation activities influenced intentions but did not have an effect on preparation behaviour two months later

- Getting residents to focus on commitment versus progress towards the goal of being prepared produced two results. Those who considered how much they had done in terms of progress towards preparedness completed more psychological planning actions, while those who considered how much they had done in terms of commitment to being prepared completed fewer psychological preparations

- Finding tools to measure and evaluate community engagement programs in disaster preparedness is a priority

4. LITERATURE REVIEW CONCLUSIONS: IMPLICATIONS FOR PREPAREDNESS

The literature review produced a number of interesting findings about the way people prepare for natural hazards in Australia and the implications for agencies in their efforts to increased levels of preparedness.

4.1 DEFINITIONS AND FRAMEWORKS – KEY POINTS

- The definition of community preparation that agencies work to (AIDR glossary, n.d.) does not support three of the key features of preparedness – that it is a continuous process, a social undertaking, and that preparation is an enabling activity

- The end state of preparedness has not been well articulated in Australia

- Whether it is possible to have an ideal level of preparedness is not clear, and if so, what that ideal might look like

- Many people are not on a continuum of preparedness as they may experience cognitive blocks to progressing to high levels of preparedness – or they may vacillate between more prepared and less prepared

- Community engagement is a process of moving people through a continuum of relationships of varying depths

- People can require community engagement techniques from all three approaches (information, consultation, participation) regardless of where they sit on this continuum

- The CFA Victoria segmentation framework that classifies the community into four predominant attitudes should be used as a foundation for further development that enables fine-tuning of this initial segmentation, and also cross-hazard application

- Segmentation is accepted as necessary in community engagement literature

4.2 PREPAREDNESS – KEY POINTS

- Likelihood of hazard risk is not a motivator for preparation, but potential impact of a hazard is

- People living in bushfire-prone areas seem to be more resistant to preparation than people who live in cyclone-prone areas

- Context affects the success of agency programs, in particular:
    o Location – urban, interface, semi-rural and rural
    o Experience – with more positive effects for cyclone and flood
    o Trust in agencies and direct contact with agencies
    o Cost

- o Sense of community and the effect of peers

- o Indecisiveness and anxiety about the hazards

- This importance of context points to segmentation as an important feature of community engagement programs

- Personalisation of risk is the biggest obstacle to preparation

- Motivation factors present the biggest range of subsequent obstacles to preparation, with opportunity and ability factors almost negligible

- Triggers are needed to cut through the following mindsets:

  - o Preoccupation with the demands of day-to-day life and low prioritisation of preparation

  - o Under-estimation of risk or even no acknowledgment of risk

  - o Optimism bias that inflates their sense of safety

- People weigh up the advantages of staying to defend or leaving – it there is no obvious benefit of doing one over the other, they won't make a decision and 'wait and see'

- Anxiety about hazards (especially earthquakes) can prevent preparation

- More investigation of evaluation is necessary for this project

- Social norms and attitudes of a community can be a sound motivator for people in that community

4.3 STRATEGY AND TOOLS – KEY POINTS

- The first step of any community engagement should be about personalisation of risk and potential impact

- Agencies have recognised the need for segmentation, but are struggling to translate this into community engagement action

- Checklists are valuable to certain groups for their goal-setting motivations, but for others can promote a false sense of sufficient preparation once a few things on the list are complete

- Dividing checklists into different aspects of preparation (such as preparation for leaving, preparation for defending property) can be useful for pinpointing where weaknesses exist in an individual's planning

- Tools need to be more engaging and take into account more complex factors and understandings

- Follow-up is important to ensure people move to higher levels of preparedness after they show some awareness and efforts to prepare

- There is potential for further development of community connections and the role of peers in triggering and motivating preparation

- A plan for leaving should be a focus of agencies as much as the plan for personal safety and property defence

4.4 CONCLUSION

This section reviewed research so far undertaken on natural hazard preparedness, the field of community engagement, emergency management engagement models, programs, techniques and evaluation.

The next section will present the methods used to collect data on the picture of community engagement for preparedness in Australia as well as the results of this data collection. Part of these results will be development of a diagrammatic model that represents Australian agency and organisational approaches to community engagement for natural hazard preparedness.

5. RESEARCH DESIGN

Community preparation is a key factor in the protection of life and property during a disaster. Natural disasters, especially bushfires, show time and again that there is a pervasive lack of preparation (King & Goudie, 2006; McLennan 2014; McLennan et al. 2011; Teague, McLeod & Pascoe, 2010), even in communities with previous disaster experience (Mackie, McLennan, & Wright 2013; McLennan, Paton, & Wright, 2015). Agencies and researchers have also reported the struggle to get people motivated to prepare (McLennan, Elliott, & Omodei, 2012), and to understand what needs to be done as part of that preparation.

Community engagement (CE) has been offered as a potential solution to motivate people to prepare. As outlined in the Literature Review, CE aims to facilitate "understanding and evaluation, involvement, exchange of information and opinions" relating to a topic (Johnston, Lane, Devin, & Beatson, 2018, p. 173). The Australian Institute for Disaster Resilience (AIDR) defines CE as "the process of stakeholders working together to build resilience through collaborative action, shared capacity building and the development of strong relationships built on mutual trust and respect" (AIDR, 2018, p. 2). A number of CE programs have been successful in saving lives and reducing the cost of property damage and destruction (Gilbert, 2007). Agencies have articulated CE as a priority and in many states in Australia are making efforts to systemise CE and evaluation of its effect (similar to Elsworth et al. 2010; and such as Emergency Management Victoria 2017; Inspector-General of Emergency Management 2014).

5.1 RESEARCH QUESTIONS

Five research questions, developed from the literature review guided methodology, specifically:

1. What are the attributes of a best practice approach to CE for preparedness?

2. What frameworks and models for CE do Australian end-user/agencies use for preparedness?

3. What are the key community competencies for preparedness in disaster response?

4. What approaches do Australian end-user/agencies use to identify and build community competencies for preparedness?

5. What approaches do Australian end-user/agencies use to engage with and create relationships with communities for preparedness?

5.2 METHOD

5.2.1 Sampling

The participant sample was purposive and comprised of 30 CE practitioners and operational staff (9 males and 21 females) who worked closely in CE in emergency management in Australia. Participants were recruited from the list of emergency agencies operating in every state, with additional snowball

sampling used to recruit participants who could talk about non-agency initiatives that agency staff thought worked well.

Every state in Australia was represented in the sample. Participants represented all Australian non-metropolitan fire agencies and all but two State Emergency Services. It included three local councils, a nation-wide aid agency and a local community centre. Criteria for sampling of participants applied criteria at three levels: Disaster type, type of agency, and location. Table 7 summarises these criteria and the indicators used for each:

Table 7: Sampling criteria for participation by agency and hazard type

Priority	Criteria	
1	Disaster type	Slow flood Flash flood Cyclone Bushfire (southern Australia) Bushfire (northern Australia) Storms
2	Type of agency	State LG level Community level
3	Location	All states and territories

The sampling was designed to capture perspectives from agencies' that ranged from responding to one type of crisis, to multi-disaster response agencies.

The type of agency was also important because of their different places in the Australian disaster management landscape, and therefore, their different operating environments and goals for disaster management. Table 8 summarises the agency types represented in the sample:

Table 8: Sample representation by type of agency

Agency	Number
EM agencies*	25
LGA	3
Not-for-profit/others	2
Total	30

* Includes oversight agencies

Representation by all states and territories was sought. Table 9 summarises the number of agencies and organisations with which interview participants worked.

Table 9: Summary of state representation by agency

State	Number
Queensland*	10
Victoria	8
New South Wales	4
Western Australia	3
Tasmania	2
South Australia	1
Australian Capital Territory	1
Northern Territory	1
Total	30

* Includes local government, which has emergency management functions in mitigation, preparedness and recovery phases in that state.

Queensland represented a large number of the participants because five of the seven funding agencies were from Queensland, with three representing local government. We wanted to include the view of local government in the project but were keen to get the perspective all Australian emergency agencies. The limit of 30 interviews in the project design resulted in us capitalising on the relationship already established with Queensland local governments to ensure the local government view was included.

The time of the year, approaching incident season in the southern states and in the thick of disasters in some of northern Australia, also restricted the number of people within some agencies that we were able to gain access to – some agencies were able to provide access to one or two people, while others were able to connect us with more.

The study involved a two-stage process. The first stage included a series of semi-structured, in-depth interviews (n=30). The interviews were conducted from October 2018 to January 2019, by telephone and online using the meeting software, Zoom. Each session was recorded and professionally transcribed (verbatim), with interviews taking between 40 and 80 minutes. Empirical and grey literature was used to build an interview guide. Participants were asked questions about their role, the CE approach they employ, what they have found works and doesn't work, their ideas on what preparedness looks like, and competencies they thought people needed for effective preparedness. We also asked about what they saw as barriers to and enablers of preparedness in communities, and evaluation techniques participants used and those they would like to use. The question guide is available from the authors.

5.3 ANALYSIS

Analysis of data was undertaken in a dual or binary approach – using thematic analysis (NVivo) and automated content analysis (Leximancer). The research team combined both approaches because we wanted to ensure that the analysis was as complete as possible. The analysis of depth interviews identified key concepts, themes and relationships between these. While the Leximancer analysis identified the reality of distance between the intent and outcomes of the themes that emerged, and provided more context around the concepts.

NVivo is a software package for handling data that allows researchers to store and sort rich text, as well as well as automatically sort sentiments, themes and attributes. Advantages include its advanced query and data management tools that allow complex questions to be asked of the data (Bazeley & Jackson, 2013). NVivo requires researchers to code the data and develop underlying themes or categories, making the data analysis a subjective process (Sotiriadou, Brouwers, & Le, 2014). Analysis undertaken using NVivo therefore requires systematic checks of reliability and validity (Sotiriadou et al., 2014). While this subjectivity is a weakness, it is negated somewhat when the research is built from an 'a priori' model against which coding can be undertaken (Cretchley, Rooney, & Gallois, 2010), which is the case for this project.

Leximancer is an automated content analysis tool that undertakes the analysis and allows it to be undertaken without preconceptions and unaffected by the bias of the coder/s (Cheng & Edwards, 2019). Leximancer is supported by

Bayesian theory (Cheng & Edwards, 2019), using a quantitative process to undertake qualitative analysis (Chiu, Bae, & Won, 2017; Tseng, Wu, Morrison, Zhang, & Chen, 2015). There are four advantages to using Leximancer over other qualitative software packages (Chiu et al., 2017). First, the software makes it possible to quickly and efficiently analyse large amounts of data. Second, it can identify the concepts and themes in an exploratory way, and third its does not make pre-existing assumptions about word meanings, and therefore subjective bias can be eliminated. Finally, there is very little intervention from researchers, so Leximancer produces a range of different results that researchers could not uncover using manual processes. Angus, Rintel, and Wiles (2013) also argue that Leximancer generates a concept list that is statistically reliable and reproducible and doesn't require checks for reliability and validity.

5.3.1 Analysis – manual thematic analysis

Analysis commenced after each interview, with each researcher creating a memo documenting relationships that emerged between concepts presented in the interview and previously found concepts. Transcribed data were then loaded into NVivo 12 to facilitate two further iterative stages of analysis. The first stage, topic coding, involved coding transcripts at word, sentence, and paragraph level into core topics (nodes). The topic coding round used a grounded approach (Glaser, 1992) to allow themes to emerge from the data rather than analysing the data against pre-existing concepts from academic literature. Two of the researchers met to discuss the resulting topic nodes and their attributes.

The second stage, analytical coding, applied an inductive analysis of the data to generate an exploratory understanding and explore the origins and nature of CE for preparedness at the individual (agency) level, and then at a population level. Consistency in the identification of data relevant to each category – between the two researchers, and between each interview – was facilitated by the development of a coding book. This instrument specified how each category was described in the literature, and how they were reflected in interviewees' comments and the resulting topic codes. The coding book was a 'living' instrument, constantly refined and revised as more topic codes from the interviews were analysed against the four categories of social impact dimensions.

5.3.2 Analysis – concept mapping

Leximancer is an advanced text visualisation analysis software. The data or information is displayed by means of a conceptual map that offers a visualisation of the main concepts found in the data as well as how these concepts are related or positioned in relation to other findings in the data. Leximancer provides a means of quantifying and displaying the conceptual structure of text/data, and a means of using this information to explore interesting conceptual features.

For analysis using Leximancer, the transcripts were cleaned of introductory greeting and discussion and devices such as 'um' and 'okay', and the speakers tagged with an identifier that distinguished the interviewers' words from the participants' answers. Using the program's default settings, 51 concepts were generated in 13 themes. However, some of the concepts generated were

unhelpful in answering the research questions, such recurrent words with no meaning such as 'probably', 'stuff' and 'things'. These concepts were dropped from the concept list, and others carefully considered for meaning and/or relevance to the research questions, such as amalgamating verbs with extensions such as 'talk', 'talks' and 'talking' and words with plurals such as school and schools.

5.4 LIMITATIONS

A number of limitations are relevant to this study. First, the study presents an agency-based perspective of CE for preparedness and sought participant views from CE professionals whose responsibilities spanned a CE function or responsibility. As participants varied widely in both experience and qualifications in CE, the study can only be generalised to an organisational view. Future research should examine community member perspectives of CE for preparedness. Second, the higher proportion of females (n=21) to males (n=9) reflects the population distribution of communication and engagement based roles being predominately female. While this may be viewed as a limitation of the study, the sampling reflects the industry profile. Third, while a range of documents were provided by agencies for the purpose of this study, these were not consistent in form or content. So while some documents represented high level policy (for CE), other documents were artifacts (communication collateral). Therefore the analysis of these documents represented an emergency management population perspective, rather than agency or hazard types.

6. FINDINGS

The findings are presented in two sections. The first section presents the thematic analysis (NVivo) organised by research question. The second section presents findings using Leximancer analysis.

6.1 THEMATIC ANALYSIS

The first research question asked participants to identify the attributes of a best practice approach to CE for preparedness, and second, what frameworks were used by their team or organisation to guide CE for preparedness. To respond to these questions, first, preparedness and goals for preparedness was investigated. Three key themes emerged, specifically, an awareness and understanding of risk, recognition of self responsibility, and the notion that preparation within a community is widely held as desirable and valued.]

6.1.1 Articulating preparedness

Several key categories relating to preparedness emerged articulated through goals for a preparedness program, barriers and enablers to preparedness. These are described below:

Risk – understanding and recognition

This theme reflected that community members needed to understand the nature of the risk and what that means in terms of action. This presented as a challenge to many communities as different hazards presented different risks, therefore recognizing risk was viewed as central to preparedness.

Self-responsibility – motivation, planning and action

This theme reflected the locus of responsibility for preparing for emergencies. Layers of action – described by some participants as a funnel, recognized that different actions aligned with different levels of preparedness. Building on theme one (risk recognition), self-responsibility acknowledged that emergency services may not be available at the time of need, and both individuals and communities needed to take the lead in preparation activities. This includes having the motivation to plan and act on preparedness activities, sharing, socializing and supporting preparedness in the community so it becomes an accepted way of behaving.

We talk about it like it's a funnel...It is raising awareness; that where a community lives in their landscape might be impacted by fires. So we base this on the scientific evidence and the modelling. So that first step is really to get people prepared, raise their awareness, to say, "Hey, did you know that where you live can have bushfires?" The next level down in that funnel is "understanding the risk"; "what does it look like? Are we likely to have fires occurring every year, every five years, every ten years?", it's that probability kind of likelihood; but, also, "What are the consequences; what are the things that could potentially be impacted by bushfires?" So then there's that awareness; and then there's understanding, which is that more specific, "fire behaviour,

probability, values that are impacted". Then we go further down in the funnel that "risk perception". It's the "so what" question for people. They might have very in-depth understanding of fire risk in their area; and we know that there is more and more research that's coming out that says, "You know what, communities are actually pretty aware that where they live is at-risk of being impacted by fires negatively." (Participant # 351)

Community culture of preparedness - Preparation as a social norm

This theme emerged as a socially situated approach to preparedness. Communities that are prepared value community led/nurtured activities. They resource, celebrate and energise preparedness activities. These communities seek information, connection, resources and relationships to support, monitor and lead preparedness.

…the more people within the community that are talking about "preparedness", normalises it. It is not just a dooms-day approach that we are really taking; (it) is trying to normalise the idea and make it something that everyone does. But we have also kind of tried to take away the magnitude of what "preparing" might be. So we say, "You are more prepared than you think; because if you really sat down and actually thought about it, you would know where to go. But you need to articulate that with everyone. You actually need to think about it. It can't be a snap decision." (Participant # 227)

6.1.2 Enablers for preparedness

A number of "enablers" were identified by participants for preparedness. An enabler was conceptualized as something that was either an antecedent to preparedness, or supported the ability of an individual or community to prepare. Four key enablers were identified by participants:

Community connectedness – relationships

Community connectedness, or the social connections and relationships that community members had with each other, was viewed as a central thread to a strong and capable community. For example, as one participant expressed

…when we see a connected community, they are more likely to be a prepared/resilient community. I think "connectedness" is a big part of it; and that is connectedness with themselves but, also, connectedness with agencies like us and a whole heap of others. You know, it isn't just about [name of agency]; it is definitely about connectedness with council and other government departments and a whole heap of different players. (Participant #232)

…those connections with longer-term residents and, also, connections immediately, in your immediate area; so that when the ship hits the sand, you are linked in others and you can call on others for help, if you want, or you need. (Participant #217)

Community ownership and connection to place and others

The second enabler was the recognition or acknowledgement by the community that they owned the risks, but also that their community is unique (not one size fits all). This was deeply embedded within a view that community members were deeply connected to their community and to other people in their community.

> *So it's about "neighbours helping neighbours"; it's about having phone tree...having access to [describing unique needs of community]...all of that sort of thing. So, yes, I think what we see, where they are resourced, where they engage with the community, where they empower the community to take the lead on these things and that partnership of working together, to formalise and acknowledge those things. (Participant #224)*

Community leadership

Community leaders or champions play a special role in a community. Participants identified these people as trusted and credible leaders, who either motivated other community members, or played a role in communicating information that was trusted.

> *So there were people in the workshop that were what I would call "community champions". There were Indigenous people, even though they are connected to a culture, but they are seen as the "elders/champions". And there were people from different cultures who were seen as community champions, from different cultures; so from Asian cultures, particularly. So there were people there that I would say were recognised in themselves as champions/leaders or as people who people trusted, who were credible. (Participant #224)*

> *So it varies incredibly between communities, but in terms of where we have seen our biggest successes, has been where you have got active community leaders in a given community; not necessarily. (Participant #217)*

> *…we have those key champions, the community champions, like, the hairdressers and the real estate agents and the like - it seems to be normalising it, sharing it, so that it's something that everyone is discussing. (Participant #224)*

Community resourcefulness

Enablers for preparedness was also captured as a community skill – a network and capacity to solve problems and be flexible and adaptable. This network offered a capital or resource that the community could draw upon for preparedness.

it's about "neighbours helping neighbours"; it's about having phone tree …having access to [items]...all of that sort of thing. What we see, where they are resourced, where they engage with the community, where they empower the community to take the lead on these things and that partnership of working together, to formalise and acknowledge those things. Letting them also, though,

being guided and being adaptable; so that it is not a [agency] badged program but the [agency] has some level of assurance that that is something that the community wants and needs; it also assists them; and similarly it allows that community group or organisation to keep continuously improving those programs. (Participant #224)

6.1.3 Barriers for/to preparedness

Similar to enablers, participants identified a number of barriers that either constrained, hindered, obstructed or deterred a community from adequately preparing. Three key barriers to or for preparedness were identified – embedded systems and processes, optimism bias, and issues around communication, such as conflicting messages. These are discussed below.

Embedded systems and processes

This first barrier was really a reflection on historical or traditional approaches to emergency management and preparedness – and the role of agencies in this system. For some participants, this reflected a belief generated within their community that someone will come and save individuals in that community, or tell them what to do. There was also a recognition that the increasing number of emergencies meant that systems were slow to catch up and that the perception of the "save" within the community was increasingly distant from reality.

Optimism bias

The second barrier is technically an optimism bias, with community members believing that they will never be in a situation that requires them to respond – or in other words, it happens to other people. Aligned with this is a recognition that individuals are genuinely busy – and prioritizing preparedness falls well behind coping with basic life activities, such as parent or work responsibilities. The barrier also reflected a sentiment of self-efficacy - that some people either don't have the capacity to prepare or they don't think they have the capacity to prepare.

Communication - Conflicting messages

The final barrier was a reflection by practitioners that the community may be getting conflicting messages or that messages need to be more tailored for relevance and need. This theme recognized that community members have a lot of "noise" to deal with and preparedness messages often compete with the clutter of other messages. As many agencies generate their own messages, there was a view that for some segments of the community, messaging was confusing and they tended to "turn off" or deflect key actions that were needed for preparedness.

6.1.4 Competencies for preparedness

The third research question asked about the key competencies for preparedness in emergency management, and what approaches were used to identify and build community competencies for preparedness? To answer this research question, participants were asked to reflect on what competencies they found in communities that allowed those communities to be better prepared.

Participants identified both community and agency competencies that contributed to community preparedness. Based on Woodruffe (1993), competencies were viewed as a set of values and behaviour patterns that a community or agency needs to have in order to perform its tasks and functions effectively.

Community competencies

While a range of community-based competencies were offered by participants, these can be synthesised into three key competencies.

1. Community-centred and community-led activity: The first was active and connected relationships within the community that facilitated proactive preparation. Participants believed there was a strong level of interaction and involvement in communities that demonstrated this competency, and a high level of social or community-based activity or social groups. This capacity also reflected a strong valuing of place and a genuine care of others. Members of these communities genuinely felt a strong social connection with others. Trust was part of this (trust in the key person giving the message or facilitating the community's progress)

2. Confidence in ability and capacity to act and the role of trust: The second competency was an accurate reflection and assessment of skills and knowledge (to prepare) in the community. This accuracy delivered a confidence in the ability and capacity to act. Communities that were weak in some areas undertook activities (skills/knowledge building) or sought resources to meet the needs identified in their assessment. A capacity to be resourceful was to find how, and where, to get additional information/help/support – and according to participants, this capacity also builds a level of trust in the messages

3. Accurate risk perception: Understanding of and knowledge of the risks – and being accurate in the perceptions of personal and community risk was considered to be the most important community capacity. This theme was also reflected in participants' understanding of communities that undertook scenario building – or 'what ifs' – so the community had the ability to respond to varying types of emergency scenarios. The capacity of communities and individuals to think through possible scenarios was also thought by participants to provide a capacity to understand the consequences of certain actions – and of doing or not doing certain activities. Also important were:

   - Roles of individuals/groups in communities (there will be categories)

   - Relationships (nature/types and depth of networks)

   - Barriers for community preparedness

   - Enablers for community preparedness

   - The location of responsibility for community preparedness

- Attitudes that different segments of the community have about getting ready for a natural hazard

Agency Competencies

Participants reflected that agencies also need to have a range of competencies for CE for preparedness. These competencies reflected three key themes.

1. The first agency competency described was the **cross-agency commitment** to valuing a community-centred approach to preparedness. While most participants felt that there was a shift toward this approach, some suggested that others within their own organisations and inside others were slower to adapt or accept a change from a traditional command-based preparation

2. Second, participants recognised that having **trained and fully resourced staff** is a required capacity. Competencies such as 1) expert knowledge, 2) skills, 3) experience and 4) a community-based engagement approach were the fundamental needs of CE teams. Having appropriate staff that are trained and resourced appropriately is a prerequisite to effective CE in emergency management

3. The third competency is having **staff or interagency colleagues embedded in and connected to local communitie**s. Overwhelmingly, local knowledge and relationships – or knowing how to access local knowledge – was a core capacity reflected on by most participants. This meant that using networks within and across agencies allowed greater penetration and effectiveness for preparedness

6.1.5 Community Engagement for Preparedness – Programs

The final research question asked about approaches to engaging with communities – specifically for preparedness. First the goals of a CE program are discussed, followed by different approaches to, and influences on, engagement.

Goals and qualities of a CE program

The goals of a CE program can be summarised as three key themes; the first relates to building community connection, resilience and trust. The second theme within the goals reflected both an empowerment and involvement of the community, following a community development approach. The third theme reflects the tailoring of a CE program so that it meets the needs, and risk profile, of a specific community.

- Building community connection, resilience and trust: Overwhelmingly, CE practitioners highlighted the importance of connections and relationships within a community and between communities. This theme focused on the capacity building of a community, and the complexity of knowledge, skills and resources needed – depending on the capacities of a community. While this element of a program was very much focused on building connections, it often merged with the next theme of empowering a community

- Empower the community to facilitate a community-led preparedness program. This theme focused on providing access, resources and touchpoints to support a community-led preparedness activity and also aimed to strengthen the relationship between agencies and community leaders, in their efforts to motivate the community to prepare

- Tailored to meet the needs of a specific community

Four qualities or characteristics of a CE program emerged as being the most important. These included being authentic, bringing community members on a journey, being relational, and having an end goal of building capacity or a level of social capital for preparedness.

Authentic

Being authentic captured not only the process but also the content of messages provided as part of the CE program. For example, some participants recognised a shift in how their agency conducted CE programs– and noted that more successful CE activities were tailored to the specific characteristics of the community, as illustrated by this participant:

> So it [the CE program] is very reflective of what the community looks like; and therefore is more genuine, if that makes sense. And then as you say, there is that cooperation that needs to be valued between the two that forms more of a partnership approach, rather than a "big stick" agency sort of focus. (Participant #224)

For others, it meant that the CE program needed to be embedded in the community, and be community led with the locus of responsibility on that community. This represented a shift in telling, to supporting preparedness efforts, as illustrated by this participant:

> …genuine engagement...in terms of, "We are not telling you what to do. We are engaging in conversation." …now it's the case that unless you engage genuinely, the public are not fools... (Participant #226)

Finally, authenticity was reflected in the risk related to that community. For some, authenticity meant that a greater focus on outcomes for a specific community was needed.

> …it is that local knowledge/people…being genuine about the benefits of preparedness and what it can do for people. (Participant #341)

Bringing the community on a journey

For some participants, the notion that preparedness was done in isolation of other emergency management activities was a weakness and that communities needed to be part of the whole disaster management journey.

> …we actually need to engage community into disaster management systems/ arrangements; not just prep them up so that they are ready for warnings and they know how to prepare. We need to include

them in the planning process; we need to include them in the exercises that we do as agencies in the back room. We need to open the doors, so that we are bringing the community with us on our journey in strengthening and improving the disaster management arrangements. (Participant #222)

Other participants reflected on the success that comes from bringing community members "on a journey" and the benefits from that process, including sustainable capacity building outcomes:

…the journey that we have taken them on the last five years has been very good; to the extent that they are riding around...speaking amongst themselves about resources and the other things…they are working, work-in-progress. (Participant #221)

…bring them along the journey and facilitate reference groups; getting people involved in scenarios, and how to manage those expectations. … social development and just people with the actual ability to translate a semi-technical document and approaches into something that means something for those involved. (Participant #228)

Relational ties

Relationships and a relational quality to CE was a dominant theme across participants. Relational qualities were expressed as an antecedent and an outcome to CE, but also as something that practitioners recognised as being central to their role.

…it's about building a relationship with community. So if we are out in the our orange overalls; it is about relationships; it's about hopefully influencing community to take some sort of positive action, whatever that might be. (Participant #347)

…the importance of establishing relationships in local communities from an engagement perspective…and we see this at football clubs, we see it in all kinds of clubs, where the majority rely on motivated individuals to get things done. We need to move from a cultural and framework perspective beyond that, to greater community involvement, in preparedness. (Participant #114)

Relationships formed a central part of an engagement program – where the value of engagement offers being embedded within a community leveraged CE activities.

…we use the "know your patch, grow your patch" philosophy, if you like; where the engagement officer lives in that area, they work in that area; and it is their job to finds out those networks in the community; and then build up relationships with those networks; and then facilitate a process where the key people are then being connected with other people in the community, and being used as a resource to facilitate networking within that community. (Participant #219)

Capacity building

Capacity building featured as a central outcome of many CE programs. Capacity building meant that CE programs became sustainable and that community members build skills and knowledge in emergency preparedness and with that, came a sense of responsibility.

> *In terms of what we do and how we work with communities; shifting from very much a top-down approach to more of a bottom-up, community-led, grassroots approach to working with communities. The [CE] program is a very targeted program. It aims to build community resilience and shared responsibility with the set number of communities that we are working with. It also has a major component to it, which is building sustainability into the process; so that doesn't always play out that way, but that's where we try to go when we go into communities, is to work with them to - so that at the end of a two-year period, for example, that we are working extensively with communities, they can walk away really owning it and that it's not just going to fall over or stop happening in terms of preparedness initiatives, when we step away from that community and start working with another community in [place] (Participant #217)*

…the aim of our community engagement - it's about empowering communities to be self-reliant and to take action at the local level, to assist their community. (Participant #233)

6.2 APPROACHES TO COMMUNITY ENGAGEMENT

No single approach to CE was found across agencies. While IAP2 was the most mentioned framework, it was often applied as either a guiding philosophy (due to a framework or resources) or it was mentioned that it was adapted. Of those agencies that did not use IAP2, a number of other approaches described the foundation or framework for their CE approach. These included community development, codesign or collaboration, and community-based emergency management. In addition, a command and control approach was also recognised as used in some circumstances.

6.2.1 Community development and collaboration

Community development was particularly relevant to two geographical areas and mentioned as a desired approach by a number of other practitioners. For the one of these key areas, the practitioner defined community development as:

> "…*the process of working with at risk communities to identify and implement strategies to strengthen and develop resilience to fire and other emergencies. This process is guided by the [name of agency] Customer Service Charter.*"

A community development approach to CE essentially describes a process where "community members come together to take collective action and generate solutions to common problems." The Community Development Society

developed core principles of good practice to guide the practice of community development. These principles include:

- Promote active and representative participation toward enabling all community members to meaningfully influence the decisions that affect their lives

- Engage community members in learning about and understanding community issues, and the economic, social, environmental, political, psychological and other impacts associated with alternative courses of action

- Incorporate the diverse interests and cultures of the community in the community development process; and disengage from support of any effort that is likely to adversely affect the disadvantaged members of a community

- Work actively to enhance the leadership capacity of community members, leaders and groups within the community

- Be open to using the full range of action strategies to work toward the long-term sustainability and well-being of the community (Community Development Society 2016)

For many practitioners, these principles were reflected in their current, or desired, approach to CE:

For most communities - and we do it ourselves as well - it's how you are connected as a community and how you work together to tackle particular challenges; whatever the challenge is…Over summer, it could be fires; over winter, it could be floods or both… So it's taking a community development approach to look at "how do we strengthen connection within communities and with agencies, to address different challenges? (Participant #351)

…community development is a real specialism, particularly in engaging with diverse communities… I know it's a thing we should do…"How do I actually engage, get out there, get them involved in things?" That is the part that is really missing for me; and I don't have that skill-set. So certainly, that community development type skill-set is a critical missing piece. (Participant #228)

…we do have a community development framework which guides our practice and we have a program aim/objectives that guides the program, essentially. (Participant #217)

We need to have a look at how we change the way we are doing things from a community engagement perspective, to have greater collaboration/involvement with the community; rather than just saying, "You guys need to do this; now, off you go and do it." We need to have of the continued conversation. (Participant #114)

6.2.2 Codesign

Codesign emerged as a desired methodology for CE whereby community members were involved in creating the solution. Selloni (2017) regards codesign as a form of citizen empowerment. It is through this form of collective and active reflection that coproduction of social innovation processes (to solve complex and often wicked problems) emerge. The Australian Centre for Social Innovation (2016) defines codesign as collaboratively designing and testing services with participants. Codesign was aligned with a community-led approach, similar to community development, but offered more of a structure around how this could happen.

> *I guess in a perfect world, I would start with co-design…Often, in the past, we have made assumptions that we know what to tell the community and how to tell them, that that will work. To some extent it does and it has. But I would like to see that we involve our stakeholders and the community, in the process right from inception. So if we have got some sort of problem that we want to solve, let's bring people in right from the start and get them to co-design what the solutions look like; and, also, get some ownership. (Participant #232)*

> *One of the processes that we used in [name of place] was a participatory planning process. So you are a facilitator - you are facilitating the community through that process rather than telling the community what the process is. (Participant #222)*

For other participants, community-based or involved planning featured as a way to achieve community ownership of the outcomes related to preparedness

> *I think that's where it needs to come from. I see a big future in community-led and community-based planning. We have got a couple of examples where communities have been pro-active and we actually work with them to undertake their own planning. (Participant #350)*

6.2.3 International Association of Public Participation spectrum

The International Association for Participation (IAP2) public participation spectrum was cited by many practitioners as a guiding framework for practice. The organisation - IAP2 - states the "Public Participation Spectrum is designed to assist with the selection of the level of participation that defines the public's role in any CE program". In addition, the spectrum aligns different levels of participation with goals, resources, timeframes and interest over the decision to be made and articulates a "promise" as a guiding commitment at each level. The IAP2 is the foundation for the Community Engagement Framework published as Handbook 6 as part of the Australian National Strategy for Disaster Resilience (Australian Institute for Disaster Resilience, 2013).

For some participants, the IAP2 spectrum was a philosophy to guide CE practice:

> *…from the IAP2 spectrum and side of things, how we operationalise it is: we recognise that the different functions on that wheel, where it's "informing or empowerment or collaboration", it's going to - not*

necessarily one of those is the correct approach for working with the [name] community or [name] community. It's about trying to recognise/identify that "at this point in time, it might be about empowerment or just informing"; also working with a group of tourism providers, it might be "informing", for example. Some people use that wheel/spectrum, in terms of going from left to right, in terms of "inform" through to "empowerment". We try to move that around and say, "It's about trying to select where things are at a given point in time to tailor things to a community". We try to use that as an overarching philosophy in terms of considerations around, when we are going into community A- "where's that community at; where are they sitting at, at the moment?" They might not be anywhere near that "empowerment" level; they might be at "informing" at this point in time. (Participant # 217)

We are now working through the implementation of a framework where the principles are aligned with IAP2 good practice; and the aim now is to embed that within the organisation … So that talks more about the shift from provision of basic information to involving communities more in the decision-making on - whatever that means- whatever that might look like. Certainly our engagement efforts and more recent programs that have been developed, aim to be a lot more inclusive. We have community-based, community-driven, community-led type programs; and they are all kind of hybrids of essentially a community-led planning process; where communities can drive and own their own plans for preparedness. (Participant # 339)

The IAP2 spectrum was also used in association with other approaches, recognising more of a community influence on joint action

…we need to have a look and change our approach, so that the local community connection is there before an event. The way we are going to do that is through changing the way we work with people; taking on what you would call some "IAP2" community engagement principles; and ensuring that people have buy-in and people have the skin in the game from a community perspective, to be involved; rather than being a bystander. (Participant # 114)

6.2.4 Command and control

Command and control was recognised by participants as emerging from the traditional foundations of emergency management – that is, the community is commanded and controlled. This approach was acknowledged as appropriate during an emergency response, but not so appropriate for building community capacity in preparedness. In some cases, this traditional approach to preparedness was a source of frustration, and that while the role of the community was recognised as being vitally important, it was not always followed through in process or practice.

I find it really difficult, when trying to communicate the intent and nuances of what 'real community engagement is for community

empowerment', to people who come from military or command and control background. They work in a totally different paradigm. (Participant # 222)

The EM community as well-intentioned as it is, comes from quite an insular mindset of 'heroes'. It comes from - and it's got better - but I think that it's still quite strongly evident in my mind, that we still take a very, "If it is not a control and command sort of firefighter approach, it's very much a bureaucratic State Government approach," which sort of says…"This is what we need you to do. This is what we think you should do; this is how we think you should do it; here's a fold-out pamphlet, on off you go." One of the key barriers is that we don't involve the community. I have 19 people that sit around a table from a subcommittee point of view on committee engagement, and not one of them is from the community. So they are all there representing an agency or a not-for-profit or an association; of course, everyone is a community member in their own right; but we don't have a strong representation of that. (Participant # 224)

We often talk about 'empowerment' being about "priority, confidence and then giving control over to the community". But I don't actually think that. Some of our more structured – 'command and control' structures don't actually allow or permit that. I believe that our command and control structures are used in situations where command and control is not required. So our skill-sets of the sector bluntly apply, command and control, when it really is more of a leadership and empowerment role. And I don't know if - sometimes we are not as good at making - wearing the different hats, if you like. (Participant # 343)

The frustration was best expressed by this participant:

It is very difficult sometimes for a lot of that research to bed down into organisations and to actually influence what has been done in the past for a long time, for 20 or more years. And a lot of the people that make decisions in these organisations are also very traditionalistic in their thinking. So half the battle is, "Okay, we have got all this great evidence; we might have ideas on how to implement it; but if we don't get agreement from the powers that be in organisations, then it's a better way to - better use of our resources and time and money now, then, again, we will be doing what we have always done," because they feel that's still the best way. (Participant # 350)

6.3 INFLUENCES ON ENGAGEMENT

The data suggest that there are multiple, diverse influences on engagement. At the organisational and agency level, the culture within which engagement is enacted will influence outcomes. Two influences seem to be competing: culture vs command and control. Many practitioners felt they were battling for a presence/visibility or that the agency did not really understand what they were doing or why. It is difficult to facilitate and implement CE when supervisors don't understand it.

6.3.1 Resourcing

Participants noted that resourcing also influenced engagement. When an agency valued engagement, it was more likely to support engagement activities. There needs to be more buy-in at all levels around the return on investment in engagement activities.

6.3.2 Time

Most participants recognised that it takes time for engagement to work. Many noted though, that they needed to demonstrate outcomes early in their positions. However, outcomes were not always achievable (sometimes because the agency doesn't necessarily understand engagement or what can be measured). The lack of evaluation of engagement appears to be a problem as many agencies didn't formally measure CE and thus had no tangible evidence of outcomes of their CE efforts.

6.3.3 Staff

In addition to organisational level influences three aspects of staffing seemed to matter a great deal. Staffing levels, staff quality and staff experience were listed by many participants, who noted that staff who were 1) well connected, 2) knew how to engage many levels and 3) knew the difference between tactical-based information delivery levels and a community-centred approach were perceived to produce more beneficial outcomes. Agencies noted that the disaster preparedness field needed more of these staff members, suggesting that these competencies and qualities can be trained up.

6.3.4 Community characteristics

At a community level, two key influences on engagement were found. The first was the characteristics of the community. In most cases, practitioners, when asked what influences engagement in practice, mentioned that the characteristics of a community will often be a predictor of a successful CE program. This meant that strong connected relationships, visible and respected community leaders, and a 'can-do' or proactive attitude. This attitude often reflected that particular community group's understanding of the actual and perceived hazard risks.

6.3.5 Practitioner connections

The second most influential factor was that practitioners had connections with community. Practitioners expressed that personal connections to a community appeared to facilitate a more successful uptake of a program for preparedness. This meant that for some practitioners, having staff who lived or worked in the area was considered very beneficial. For those who had no local connections, establishing strong relationships with local community fire services, local law enforcement, or other similar agencies was used as a launch pad – working on the premise that local relationships were the first, most important aspect of a new CE program or facilitated longer term success through building those relationships.

6.3.6 Opinion leaders

The role of opinion leaders and 'influencers' – that is, those people with a legitimate leadership role in a community, and those who were well connected – played an important role in influencing, motivating, and communicating CE actions and programs for preparedness. Practitioners reflected that those communities who didn't have these types of individuals who were willing to step up and connect/communicate – were not as effective in their preparedness activities. Usually opinion leaders and influencers were found at the centre of the organising effort for preparedness.

> *If you want to find the influential people within the communities that you are working with, ask around; find who is involved, who has leadership roles, who has less obvious leadership roles but are highly influential within those communities; and you foster relationships with those guys. So it's that ripple effect. You have then a group of people; they tell you who else they work with; you go talk to those people; you build a relationship with those. You find more people; you go build a relationship with those people. It's kind of a social network analysis that people tend to do, as practitioners. (Participant #251)*

At a group level, it was also found that interest groups who collectively attract community members though membership, such as bowl clubs, parent groups, service clubs such as Rotary, sporting clubs, etc., were very important for CE. Participants reflected that it is through these groups that agencies can reach broader community members, and gain access to their networks.

> *…where we have seen our biggest successes, has been where you have got active community leaders in a given community; not necessarily. Sometimes they are a member of a community group or the local fire brigade or local government; and then other times, it is often just individuals that live within those communities that are motivated and passionate to drive and create change within their communities; and that's certainly where we see the successes, if we have got people in the community that are driving it. It is not reliant on - when it becomes reliant on us as an agency, we don't see that sustainable. (Participant #217)*

> *[A community leader] become a facilitator. [They] become a broker and a facilitator for all of these amazing people within their community or the business community, who all of a sudden jump on board. They are the gold. And when we talk about "building resilience" - I think of it like a spider's web. Every touchpoint, every time a web gets created, every touchpoint, is just building a bigger net. And I think of a net, "If something was to fall into it, it's going to bounce back." All of those people that we know, already have a net. (Participant #224)*

6.3.7 Hazard type and experience

There was also strong recognition that past experience of a hazard reflected the engagement for preparedness.

I think experience details a hell of a lot. Even just hearing some of the experience, doesn't give you that experience. An experience of these events, and [we are] talking about extreme events, you can't really get that - you don't have that experience. …You can impart a feeling of that stuff and that is incredibly powerful but unless you have been through some of that and have had a loss associated with that. (Participant #229)

…the people I found were really good, were people who had the experience. You can't explain to them, "What it's like being in a cyclone", until you are in a cyclone…I couldn't explain that to people; I couldn't explain how deafening it is; but these people were - they had the experience and they said, "We just couldn't believe the noise that went on for hours and hours...". (Participant #218)

There was also recognition that in a cognitive sense, people could not think about multi-hazards i.e. flood and fire. Often this related to the most dominant hazard, but that other hazards were also present (for preparedness). For some participants, this caused an anxiety as they reflected on the fact that in some cases, full and frank information – as in the warts and all picture, was not given.

We don't want to give them all the information that they might need about risk the area that they live in, because we might affect house prices. I am going to be cynical - we want to shock people into action. If we actually gave them far more, greater depth of understanding of the reality of the risks that they live in, they might make better decision based on that information…you hear it all the time - people with a rational mind choose to undertake action that's harmful. (Participant #227)

There was also a reflection by some practitioners that for many community members, different types of hazards reflected different types of 'threats'.

…the hazards themselves are the exception; the hazards in the communities are very different. Just how to portray - I think media is very different. Looking at the hazards that we deal with, there seems to be less of a threat in floods, and part of that is the culture that we live in. We deal with water a lot and water is not a threat in our culture. It's actually seen as something that we play in the majority of the time. And media has this context and media portray the playing in floodwater a lot, when we have flood/storm events. So I think they [hazards] are seen differently but approaches/principles around how we deal with hazards and engagement/resilience are much the same. (Participant #229)

6.3.8 Tensions

A number of 'tensions' in the practice of CE emerged during the interviews. A tension is defined as a factor or influence that needed to be resolved, accommodated, or accepted by participants. Overall, six tensions emerged, including control and command; community led versus other (community centred); shared responsibility; Positive paradox (honesty) and a coexistence with public relations activities. Each of these will now be discussed.

Command and control

Command and control was a tension that drove a power balance that had potential to diminish the effectiveness of CE activity, and recognition of the effect of CE on operational outcomes.

I have got a community engagement background and for so long I've not being able to cut through. I find it really difficult, when trying to communicate the intent and nuances of what real community engagement is for community empowerment, to people who come from military or command and control background. (Participant #222)

Shared responsibility

The concept of shared responsibility does not seem to be embedded in emergency operational practice, despite the national CE policy framework being adopted by most CE teams. Functional messaging is aimed at developing trust in government. But such focus on the positive outcomes of new equipment, capacity, and infrastructure may actually decrease interest in personal or community-led preparedness and could promote the reliance on what the community perceives to be a well-equipped and trained agency. In addition, some participants referred to lack of agency trust in communities to come up with the best approach for preparedness within that community, and reluctance by agencies to relinquish that responsibility.

Positive paradox (honesty)

The stakes are high when it comes to government communication due to being both an instrument of the people, which presents a paradox for the needs of the organisation against the needs of the people. The stakes are particularly high when it comes to community action to prepare because of the potential harm that comes from not taking appropriate action.

…I think the more the councils and the disaster agencies do - we are doing it in good faith. We are doing it to empower people; to help them make decisions; and put planning into place to make themselves deal with that situation a whole lot better; But to some degree, we are taking that away…disempowering, because the more that we do, they are going, "Oh, they have got that covered. We don't have to do anything. And they will tell me what to do." (Participant #221)

…sometimes, what we ask of people to do - and actually, often, it is conflicting. The SES will say one thing; the fire brigade say something else. Then there's another group that say that "I need to have other things". So there isn't even a consistent what 'preparedness' means message across all the agencies that have a vested interest in it. And I think what we need to do is probably look a bit at what New Zealand has done around the WREMO/Wellington area; that they just get people to prepare for earthquakes. Basically, if you are prepared for an earthquake, you will survive anything. And it's one preparedness message from everyone. It is not a multitude of different, "You need

to have this in it. You need to have that. You need to" - you know, there is conflicting messages about what preparedness means. And I think also that, then people will be prepared for fire when in actual fact their risk is more like flood or their biggest risk is probably not having power for a number of days or heatstroke. (Participant #227)

Co-existence with Public Relations

Participants noted that much of their public relations/publicity is the announcement of 'good news' revealed an active effort by government leaders to advance or improve publics' quality of life in some way; however, as this study suggests, these seemingly favourable actions and initiatives may be actually damaging key publics they are supposed to serve. Communication as good news is also an instrument of public policy, as it reflects a political discourse and the role of public opinion as an indicator of public policy effectiveness (Gerber & Neeley, 2005) and public sentiment.

…one of the most dangerous things that came out of preparedness for us was that the SES and the Government announcement [that it] was a one in 1,000-year flood. So everyone just went, "Well, that won't happen until 999 years; so I don't need to do anything now." Sometimes our language can build complacency within communities. (Participant #227)

6.4 MONITORING AND EVALUATION OF CE FOR PREPAREDNESS PROGRAMS

The role of monitoring and evaluation, and subsequent learning (MEL), was recognised as important by the majority of practitioners. Recently, the Australian government published "A Monitoring and Evaluation Framework for Disaster Recovery Programs" (2018). This recognition reflects the fact that emergency management organisations need to be able to collect, analyse and apply data to monitor programmatic progress. These data are valuable because they warrant claims about the outcomes and impacts that have occurred due to project activities.

Monitoring is a continuous assessment of project implementation related to agree upon schedules and indicators. Monitoring provides CE officers and their agencies with continuous feedback on implementation, helping them to identify actual or potential successes and problems as early as possible to facilitate timely adjustments to project operations.

Monitoring occurs across many levels, in varying forms, and in close collaboration with emergency management partners. Monitoring activities measure outputs such as counting regular site visits, social media and web hits, attendance at events, number of people trained, internal weekly or monthly reports, and a regularly scheduled review of output and outcome data. Outcomes, a higher level attitudinal or behavioural result from emergency management activities, include increased knowledge, increased efficacy, and behavioural changes such as families and communities creating and practising disaster plans. Impacts are the highest level measurement where this are sustainable community changes that create resilience to diverse emergencies.

Evaluation is a periodic assessment of an organisation's outputs, outcomes and impacts. Evaluations take many forms but they examined the relevance, performance, efficiency, and impact (both expected and unexpected) in relation to stated objectives. Interim evaluations such as semi-annual reviews of progress, after action reviews, and grant reports provide a prognosis of an organisation's likely effects, and a way to identify necessary adjustments in future operations.

Learning from monitoring and evaluation allows adjustments to be made during implementation of a community engagement program, facilitating changes in tactics, channels, messages or timing. Learning represents a reflexive approach to engagement practice.

Three findings were identified in the data. Varying evaluation data, evaluation capacity, and the need for flexible and scalable evaluation tools.

6.4.1 Varying evaluation processes

An analysis of the data found that there were varying attitudes and approaches in monitoring and evaluation. Almost all agencies engaged in some type of monitoring and evaluation. Practitioners had positive attitudes toward evaluation. They recognised both the role and importance of evaluation to CE for preparedness but also recognized that it was a complex and often difficult or under-resourced function. Only a (very) few agencies had formal, organised and scientific approaches to evaluation.

Data collection by participants' organisations for evaluation ranged from counting outputs such as number of people attending an event, number of people research by door to door campaigns, website visitors, social media followers, and other 'counting' approaches. There were fewer attempts to collect and measure outcomes. Examples of emergency prepared outcomes included surveys to measure recall to campaign messages (using survey monkey or volunteers), sustained knowledge and practise outcomes from trainings, and qualitative interviews to gain insights into individual behaviour change. Impacts were ascertained by after action reviews following emergency events as teams looked back on how many lives were saved and how many people enacted their disaster plans. Some organisations preferred qualitative data as 'very beneficial' and when they occur right after an emergency, interviews can provide insights into the decision points that people used in their response.

Several different evaluation approaches were identified by the participants. Some originations followed a codesign approach. The codesign approach was treated as a 'perfect world' scenario where stakeholders, agencies and relevant groups participate in the design of emergency preparedness and also participate in the evaluation of the project. Several organisations noted that they viewed conversations with members of the public as valuable tools in determining the overall success of their projects. Conversations allowed emergency teams to gain in-depth insights into personal experiences. One interviewee noted that "...we tried to create reference groups and include community members, stakeholders, agencies, to try and have more robust conversations around some of the trade-offs in decision-making that needs to happen."

6.4.2 Evaluation capacity

The second finding was evaluation capacity. The data indicated that there are varying capacities for evaluation across CE staff. Some acknowledged that their agency was in the process of developing an evaluation framework. For other agencies, evaluation was a new aspect to their function. Some also recognised that previous attempts at evaluation had not worked effectively.

A few agencies pointed to specialist roles that were responsible for evaluation. These roles supported the CE functions of the agency. Again, these roles seemed to be in development and expertise in evaluation was often tied to a person, rather than function or org capacity.

About one third of participants noted that evaluation is linked to the strategy of CE. They noted that evaluation was something the community development people do or should do as part of their role. Many agreed that evaluation needed to be embedded into CE activities.

The evaluation literature suggests that monitoring and evaluation is a combined responsibility for nearly all organisational members (Taylor, 2011). Yet, many participants noted that "evaluation is not our remit (job)" and "we don't have the time, money, or skills". Some noted that they did not operate at a programmatic level that can be evaluated easily. Additionally, participants noted that their work with other agencies meant that were concerns that evaluation of their particular contributions would be difficult.

Some organisations are doing evaluation in a meaningful way. Agencies and organisations that win government grants often have budgets for an evaluation component, usually at the end of the project. Agencies often hire external consultants to provide an objective account of the project's outcomes and impacts. Some highly skilled evaluation analysts have joined organisations and have brought their skillset to programs. But, most of the 30 organisations in this sample did not have a dedicated monitoring and evaluation specialist. Collecting data can be overwhelming. Some noted that they need ways to systematise data (or intelligence) that come informally to the project. Participants also noted that closing the loop is important.

6.4.3 Flexible evaluation tools

The third finding was that there was a need for flexible and scalable evaluation tools and tool kits. All participants reported that they wanted to improve their evaluation capacity—even those with highly skilled evaluation experts. There is a clear need for flexible, scalable tools and toolkits to make evaluation meaningful and useful.

Participants noted that they wanted better survey methods to measure attitude and behaviour change. Others wanted flexible tools to measure the outcomes of events such as workshops, trainings, and specific CE techniques. Interviews, surveys and post incident reports can be time consuming data collection tasks. Monitoring and evaluation templates may help organisations save the time that ultimately saves lives.

Some organisations have created longitudinal data collection initiatives to track change over time. This is great start to gaining meaningful evidence to measure project impacts.

6.5 SUMMARY – THEMATIC ANALYSIS

The thematic analysis section presented findings and dominant themes relating to articulating preparedness, enablers and barriers for preparedness, competencies for preparedness, and CE programming for preparedness. The next section now presents the analysis using Leximancer, and findings are visualised in a concept map and structure.

6.6 CONCEPT MAPPING FINDINGS

The thematic analysis from the previous section provides a qualitative analysis of the 30 interviews. This section describes the Leximancer analysis – and the visualisation of the themes and relationships within and between the key concepts that were found in the data. This analysis provides a complementary and visual perspective of the interview findings.

This section presents the findings emerging from analysis using Leximancer, a computer software tool that undertakes thematic analysis. It works by identifying terms within a piece of text and then weighting those terms depending on the semantic structure of the surrounding sentences. Not all uses of a term will be counted toward a cluster of the same term because of the way it has been used in a certain context. Leximancer then identifies co-occurrence of these weighted terms to develop concepts. The co-location of concepts in turn supports the generation of themes.

The resulting first-run concept map is represented in Figure 1. The large colour spheres are 'themes' and the black words within the themes identify the 'concepts'. As would be expected, given the topic, 'engagement', 'preparedness' and 'community engagement' were dominating themes.

Figure 11 - Initial Leximancer concept map
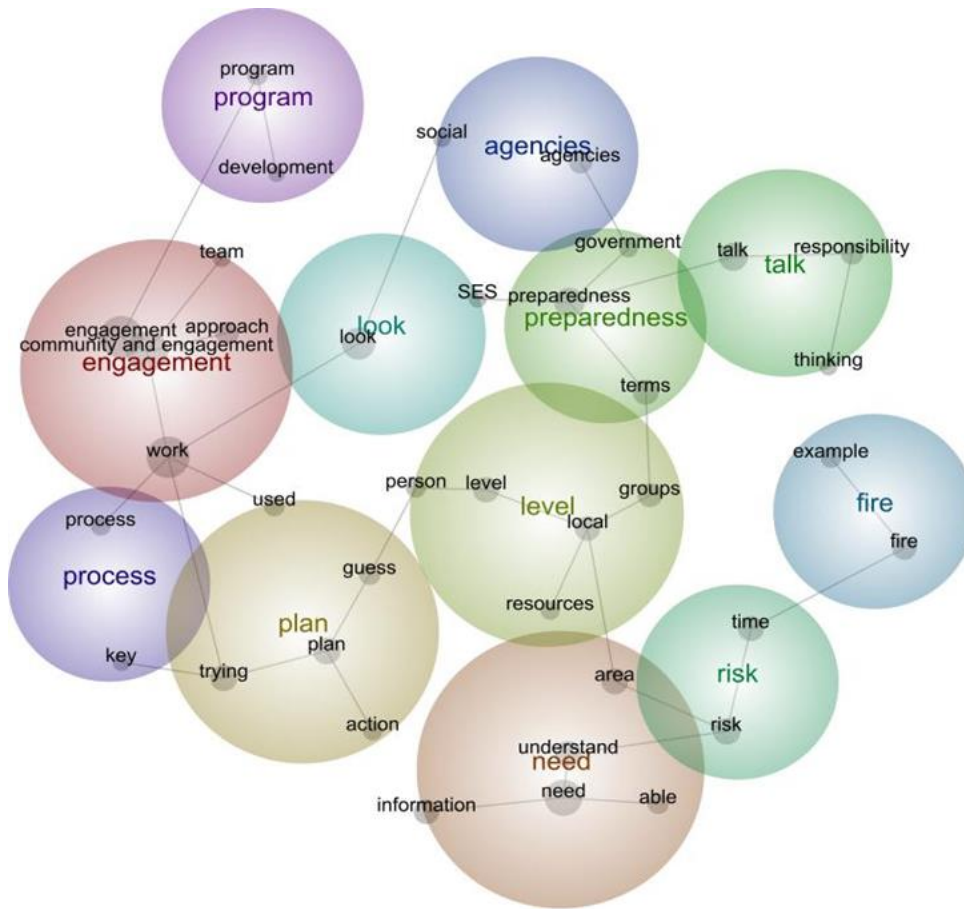
Each sphere represents a theme that is developed by the clustering of the words and their association with other words. The connectivity of the themes are listed below in Figure 2, with the colours corresponding to the spherical themes on the map. The connectivity score represents the proximity of the concepts in each theme to concepts in the other themes.

Figure 12 - Themes presented by Leximancer in the first run

Theme	Connectivity	Relevance
engagement	100%	
need	69%	
plan	49%	
level	48%	
preparedness	34%	
talk	29%	
risk	26%	
look	24%	
fire	18%	
agencies	15%	
process	11%	
program	10%	

The results of the initial analysis showed that further refinement of the Leximancer set-up was required, with the need to remove the topics of the interviews – community engagement for preparedness – as these concepts dominated the

analysis, possibly obscuring other important concepts and themes. A range of other adjustments, such as amalgamating the specific agencies into a generic 'agencies' concept, removing concepts that emerged from speaking devices such as "I think", "I was talking about...", "for example". The full list of adjustments that were undertaken to arrive at the final iteration of the analysis is found in Appendix 2.

6.6.1 Major Concepts and related terms

The final map is presented in Figure 13 and the list of themes and their connectivity within the interviews is included in Figure 14.

Figure 13 - Final Leximancer concept map showing concepts (dots) and six predominant themes (coloured spheres)
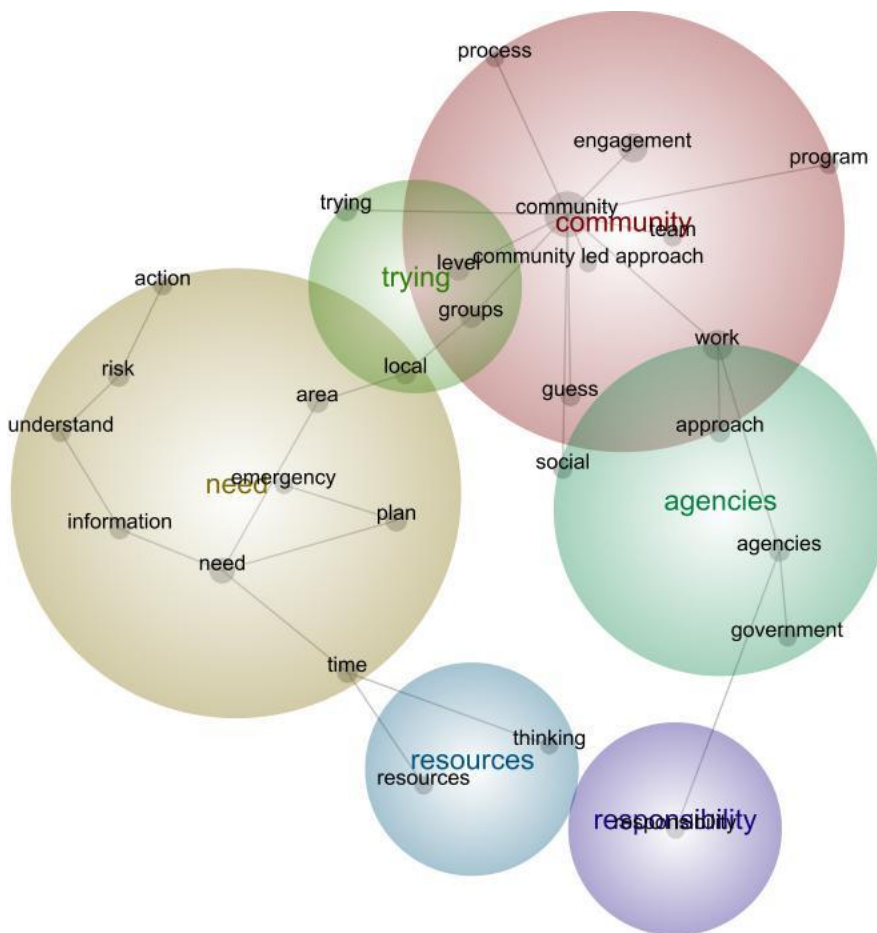

Figure 14 - Themes that emerged from the analysis and their connectivity within the interviews

Theme	Connectivity	Relevance
community	100%	
need	61%	
trying	32%	
agencies	18%	
resources	05%	
responsibility	03%	

The map showing the analysis of the interview transcripts shows six key themes and their connectedness to the other themes. 'Need', 'trying', 'community', 'agencies', 'resources' and 'responsibility' emerged as the key themes from the interviews. When we look at the comments underlying the most interconnected themes, 'need', 'trying' and 'community', they show a pattern of considerable effort to match, facilitate or provide community needs, and to some degree of frustration ('trying'). Some concepts, while showing expected strong connections to neighbouring concepts, showed unexpectedly strong connections outside their themes.

For instance, 'need' was very strongly linked to information, understanding and action (with high counts of connections), but was as strongly connected to community-led approaches in a semantic way (fewer counts, but stronger meaning).

The concept 'understand' was almost entirely related to participants' perceptions that large portions of the community don't understand their level of risk, or the need to prepare. This was a one way perception of "understand" that did not refer back to the agencies or practitioners. This finding suggests that practitioners feel that understanding is only needed by the public, not that understanding is needed by the professionals.

The concepts relating to understanding of risk by individuals and the community sit at the information delivery end of the need-trying-community sequence of themes and had weak connections to concepts such as 'community-led approach' or 'engagement'. This finding may indicate that risk and risk perception is perceived by practitioners to be mainly influenced by information delivery and perhaps not so well connected to the higher level relational communication that comes from relationship building.

In contrast, the discussion on community engagement and community-led approaches was closely linked to the process and to agency structures - program delivery, process, engagement teams themselves and the way practitioners work on a program. There was less discussion about community needs in relation to these dialogic approaches than there was in the 'information' concept.

Embedded in the centre of the map in the theme 'trying', were references to local connections and groups, and local level/area agency involvement. This theme and these concepts linked to the two largest themes, 'needs' and 'community'.

The connections between 'agencies' (a general term usually meaning the wider organisation outside participants' specific teams) and the local concepts 'area', 'groups', 'local' and 'level' were weak, perhaps indicating lack of embedded or formalised local approach. The location of the concept 'responsibility' was interesting. It lay on the outer edge of the map with a solid connection only to 'agencies', but additional connections to 'resources' and 'government'. This could be a reflection of agencies' understanding of the way the community thinks of shared responsibility, and the protective actions of agencies despite the shared responsibility narrative. Its distance from the theme 'community', buffered by 'agencies' is also illuminating – this may be reflective of inconsistencies in the way responsibility is entrusted to the community by agencies. This is a telling

finding and suggests that agencies perceive themselves as separate or distinct from the people they are trying to serve. If accurate, there are ways to create more connections between agencies and the communities they are mandated to serve.

The concept 'plan' was very closely connected to effort by the engagement teams ('trying', 'need' and 'information'). The associated comments seem to indicate that the development of a plan was starting point for being prepared. Interestingly, 'plan' had strong links to 'community-led approach'. Another interesting point was that when asked about what preparedness looked like, practitioners mostly identified communities that were socially connected, hazard-experienced and held common values – this map suggests that the first identifier of preparedness for practitioners is actually possession of a plan, even though these other qualities lead to increased likelihood of developing a plan.

The location of the resources theme was instructive: it was closer to the 'information' /'perceptions of risk'/'need for a plan' concepts and furthest from the 'community engagement'/'community-led approach' concepts. This might be explained by consistent mention by practitioners of processes for preparedness action (such as community meetings, having/need a plan) and the lack of processes and techniques mentioned in relation to community-led approaches.

Another interesting concept was 'guess'. At first we thought this was a conventional device of speech such as 'stuff', or 'things', but as we looked at the sentences containing this concept, we realised that they were articulating uncertainty in what was working, what should be applied and how the community was reacting to the community engagement function. It sits in the community theme, very close to the agency theme, and right next to 'work', which includes ideas on what works and what does not.

The concepts providing the overlap between the themes 'community' and 'agencies' was the work and expertise of practitioners themselves (and the doctrine and support of their organisations). This indicates that the community engagement function is an important conduit between the two. Links from the concept 'agencies' across to 'area', 'local', 'level' and 'groups' provided a second conduit to on-the-ground operational staff, who were less well-connected with the agency vision for community engagement and often not 'into' engagement, but have potential to strengthen local ties.

6.6.2 Initial conclusions from the Leximancer analysis

The community-led approach has emerged as a concept in its own right, indicating support for this approach by many of the participants. This, in conjunction with the recognition that local level engagement is most desirable and successful, and that many agencies have volunteer operational staff in these local areas, points to the need to somehow meld the two approaches. However, the analysis revealed that the organisational engagement systems may not yet be strong enough to support a community-led approach from the frontlines. In addition, the language around community-led approaches in this study tended to overlook community needs – although this may be because these needs will emerge from the process itself. Regardless, the conversations

around information delivery at one end of the spectrum, and the community-led approach at the other end are very different in their form and structure, and this may be a hindrance to achieving community-led engagement in future.

The fact that practitioners appear in this analysis as a link between the agency and the community is encouraging. Ideally, the community engagement teams should be a seamless facilitator of discussion and collaboration between the organisation and its publics, and the overlap of the themes 'community' and 'agencies' on the Leximancer concept map indicate that this discussion is already under way.

6.7 DISCUSSION AND IMPLICATIONS EMERGING FROM THE INTERVIEW DATA

The results from the study to date suggest four key implications for a CE for preparedness framework.

6.7.1 Community led

Community engagement for preparedness needs to be community led. The implications are that communities need to be (or feel) more empowered to create their own localised strategy. Many of the agencies participating in this study recognised the power of CE. Yet, many felt unprepared, unsupported, or under resourced to help their community members take ownership of their emergency response. Future emergency management initiatives should focus on empowering local communities to initiate, lead, and tailor CE for preparedness – and provide resources to support and facilitate this approach.

6.7.2 Co-design and community development

Co-design and community development approaches provide greater opportunities to support community-led preparedness, and offer a more sustainable base for community engagement. The consistent emphasis on community-centred approaches, and the recognition of the role of community led initiatives, suggests that the locus of engagement needs to be a community initiated effort. To sum it up, future preparedness activities need to be three things to be successful: local, local and local.

6.7.3 A relational approach

The data in this study suggests that tailored, relational-based community centred CE programs for preparedness are the most effective and desirable. However a relational approach to emergency preparedness presents a number of challenges and risks in terms of resourcing. Future emergency management initiatives should take a more networked, relational approach that better links the agency, the CE practitioners and the community.

6.7.4 Importance of community networks

The importance of knowing about, accessing and leveraging preparedness engagement through community networks is clear from this study. Most of the interviewees concurred that teams are tasked with conducting authentic CE

and participation, and supported in this by policy at federal level. However in many agencies, this seemed to be hindered by a reluctance by the operational arms of the organisations to let go of the command and control way of operating. Tensions were evidenced in a number of areas including messaging, resourcing, attitudes towards community and these are clear cause for concern in the ongoing mission to get Australians to prepare for natural hazards.

The practical implications of this research show that communities need to be brought on board in the effort to develop a shared responsibility culture through preparation, but that this requires agencies to jump into the deep end, relinquish control, and trust the community, as much as the community trusts them.

7. WORKSHOPS

Two workshops were built into the project program as part of an effort to connect the research with end users. A total of 20 front line practitioners from 11 agencies participated in the workshops. The workshops were held in Melbourne and Brisbane, and provided an opportunity for the research team to refine the presentation of the framework and to ensure that this presentation allowed practitioners to make a connection from the framework to their own practice.

7.1 WORKSHOP AIMS

The workshops had three aims:

- To ensure agencies were able to review the research results and, where they felt practical, to apply findings to their own practice

- To get feedback from practitioners on how the developed framework reflected their own practice and where there was disconnect between the framework and practice

- To test a method of mapping community engagement programs that enabled front line practitioners to determine their own target communities' contexts and determine appropriate engagement techniques for that context

Details

Two full day workshops were held. The first in Melbourne on Tuesday, June 11, 2019 and the second in Brisbane on Thursday, June 13, 2019.

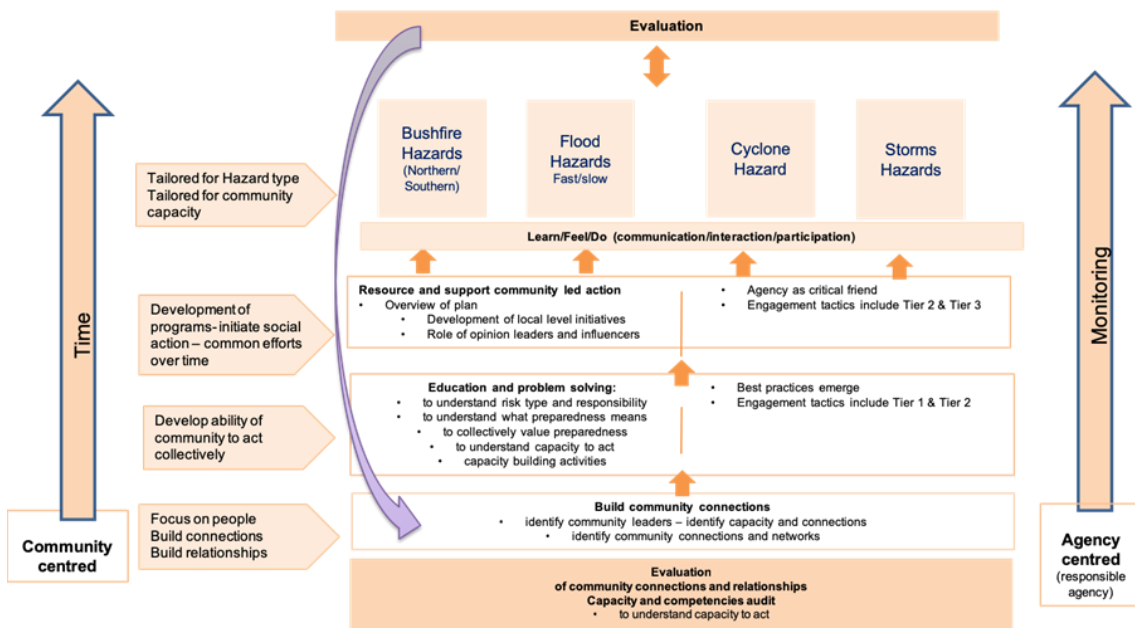|	**Melbourne**	**Brisbane**
Location	AFAC Foster Room 340 Albert Street, East Melbourne	J201 QUT, Gardens Point Campus Brisbane
Attendees	7	13
Represented	Frontline engagement officers Community engagement program managers Evaluation and policy adviser	Local government engagement practitioners Policy advisers Agency community development officers Community engagement program managers Not for profit community development officers Entry level community engagement officer
Agencies	Emergency agencies	Emergency agencies Not for profit agency Local governments Recovery agency Emergency oversight agency

7.2 PROCESS

The workshops were included in the project proposal to ensure the research results were extended to industry in a more interactive and applicable form than just posting a report on a website. However, we still wanted the workshops to be a two-way learning experience for both the research team and the participants, so we followed the interactive workshop theme.

In addition, we developed the workshop materials with the participants in mind – the majority of Melbourne participants were regional and grass-roots level practitioners, so this indicated to us that there would be interest in techniques as well as the overall model, so we allocated a section to discuss techniques that emerged from our research.
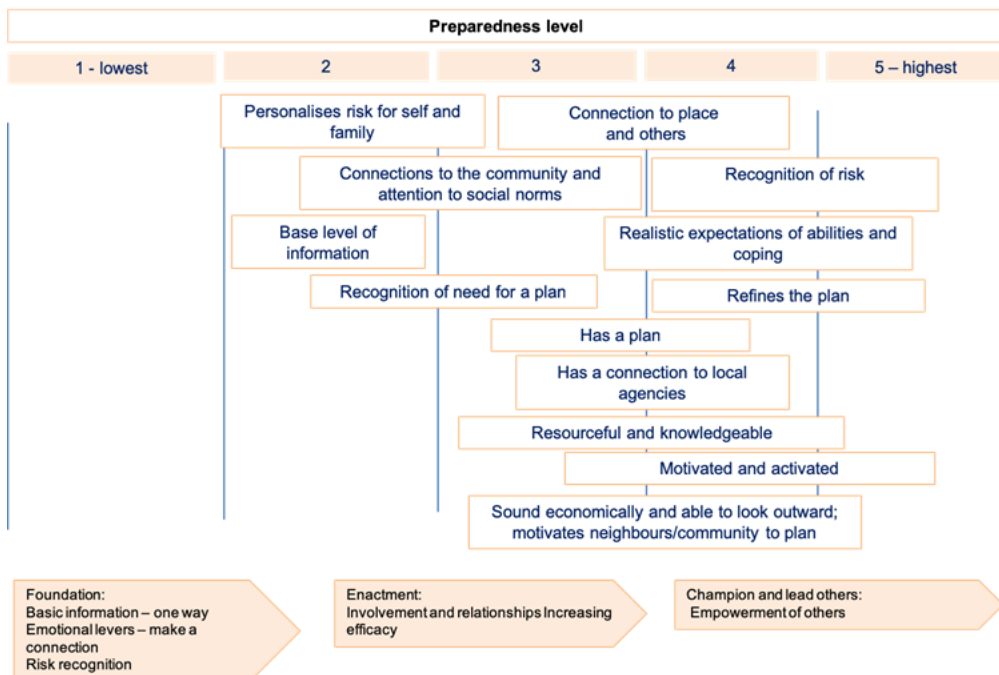
A number of insights emerged from the Melbourne workshop that we felt needed to be included in the Brisbane workshop so we could get feedback on these insights.

7.3 MELBOURNE INSIGHTS

This was the framework presented to the Melbourne participants.

Participants recommended these changes to this iteration of the model:

- That the benchmarking phase of the model (bottom set of evaluation) become more of a community profiling exercise

- Evaluation should occur at all phases of the process of community engagement as 'monitoring' – this needed to be indicated somehow as an ongoing process

- That a mechanism be installed to show both progress and regress – as people's circumstances change, the seasons change etc and they move between the phases of capacity (left hand column)

- Existing knowledge and programs already operating in the specific community needed to be taken into account at the community profiling phase of the program

- That the phases were more about aims of each phase than the techniques of undertaking each phase (which appear in the left hand column)

- Clearer connection to techniques to achieve each level of preparedness

- Clarification of the agency's role in projects where the community is taking the reins – movement from tangible support to critical friend

- That the competency index be altered to reflect practice of plans at the higher levels of preparedness, as well acknowledgement of those oblivious to risk

The learnings from the workshop included:

- It was necessary to better align the language of the model with the language of industry – for instance, the term 'community profile' will be used to describe the initial measurement information that is collected before practitioners approach a community

- The presentation of the model be simplified – perhaps by leaving out presentation of the competency index in the next iteration

- The report of the literature review and the interview findings be condensed even further, and that the motivation-opportunity-action table (see Appendix 1) be used as a simplified means of reporting at least the literature review insights

- Definitions of key concepts needed to be provided so participants could understand this context of the model

- The relational mapping exercise was an important part of the workshop

- The measurement and evaluation component needed to be more focused on techniques – workshop participants were quite advanced in their understanding of M & E, but were grappling with how to build it into their practice

These insights were built into the model and materials for the Brisbane workshop, and further feedback sought from Brisbane participants and reported in the next section.

At the end of the workshop, we provided attendees with a means of providing anonymous feedback.
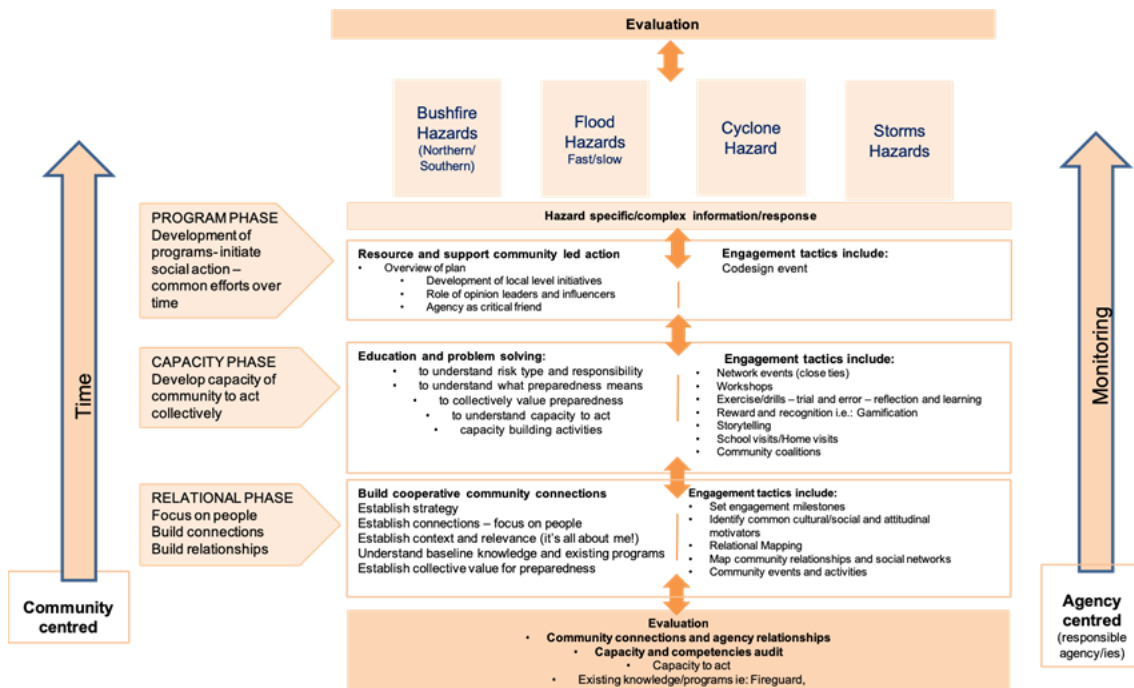
7.4 BRISBANE INSIGHTS

After adjusting the model to accommodate the insights from Melbourne, it was presented to the Brisbane workshop this way:

Insights from the Brisbane attendees were:

- The model needed to be clearer and easier to follow – perhaps by separating the explanation and the concepts, and colour code the stages; a circular model was suggested

- The terms "community profile/profiling" was confirmed as the preferred name for the first evaluation stage – and should more overtly include in the explanation vulnerable communities and levels of risk personalisation

- The natural hazards identified were not reflective of the breadth of hazards Australia faces, so it was recommended that these be replaced by a more generic term – perhaps 'local hazard'

- The phases should be named

- Add in follow-up and check-in mechanisms

- A toolkit and case study demonstrations of applications is needed

- Capacity phase needs to accommodate lack of resources

- Community-centred and Agency-centred names could be changed: The time column could be more specific – instead of 'time', reflecting 'community context' and the changes over time

- The definitions (from AIDR's glossary) did not align well in some cases. For instance, one community development practitioner explained:

"…community development was defined as running activities – and only in the recovery space. While there is some activities, the way we are framing our CD responses for disaster are in line with wider CD approaches. CD is about identifying gaps, building capacity of the community to respond, increasing wellbeing and social participation in society. Therefore in the preparation space we are identifying vulnerable groups, working on strengths based approaches to build a capacity to respond and address issues of power. We will build champions and leaders and provide information that allows people to make informed decisions to respond. Therefore we look at disability access, preparedness plans for seniors, or people who use drugs, or people with English as a second language and work out ways to enhance those communities ability to respond themselves. During a disaster, we are all trained to deliver psychological first aid and have had trauma response education. Most council's CD teams run the evacuation centres. Then eventually we get to recovery. Recovery is not just activities. It is identifying where social bonds may be weak and helping communities to repair and rebuild and hopefully creating programs that a CD officer can step away from and can be self-sustaining within the community."

- Practitioners also shared their own tools and techniques, which mostly reflected the tools that we presented in the workshop and the materials, but we added some to the toolkit after the workshops. For instance:

  o school programs should include more features than seminars (ie built into curriculum, school holiday programs etc), so school programs were added to the toolkit

  o gamification that was outside the scope of the workshop version, including competitions, so we added a specific gamification tool explanation to the toolkit

- Addition of the term 'case studies' to the storytelling technique, and explanation that suited written applications of storytelling

- Addition of the community-driven/child-driven aspect of storytelling (where the community/class/group develops its own stories and/or the vehicle for telling those stories

- Get-togethers for particular segments, such as seasonal workers, older people, mums' groups

The learnings from the Brisbane workshop included:

- There was no definition of community engagement in the AIDR glossary – we drew a definition from the wider community engagement field

- There needed to be more connection between the model and the application – the Melbourne attendees were able to make this connection because the competency index was included, and the Foundation/Enactment/Champions classification of tools was clearly marked in the model and well explained

- Participants represented a wide range of sophistication in terms of measurement and evaluation and budgets for this, but all understood the need and how it works. However, most seemed to need more depth, even down to how to evaluate each tool. In addition, simplicity in measurement and evaluation was a goal of practitioners at the Brisbane workshop

- There was a recognition that tools for MEL exist through the CRC and on other fora but they are not organized in an easy to use format

7.5 SUMMARY

The workshops were successful in that they achieved the following aims, in that participants were able to:

- Review the research results and in survey feedback after the workshop, strongly agreed or agreed that the workshop material would help them in practice

- Give feedback on the model and have their feedback incorporated to improve the model of community engagement proposed by the team

- Discuss areas where the model reflected, improved, or was disconnected from their own practice, compared the model with practitioners' experience, and make adjustments to reflect this experience and knowledge

The workshops also:

- Provided participants valuable networking opportunities for practitioners in community engagement to share their experiences and provide input into engagement tool development

- Provided a "truth test" for the systematic literature review findings

- Allowed us to demonstrate the method of mapping a community engagement program to a specific community's context

- Showed that there is significant interest in "off the shelf" monitoring and evaluation tools for common engagement activities

Overall the workshops were a highly useful way of ensuring the framework, already developed from agency community engagement practice and was drawn in such a way that it faithfully reflected that practice.

8. AUSTRALIAN GENERATIVE MODEL OF COMMUNITY ENGAGEMENT FOR PREPAREDNESS

The results from the study provided four key considerations for a community engagement for preparedness framework – including:

- The need to empower local communities to initiate, lead, and tailor preparedness action

- The importance of community networks

- The importance of a community-led effort; and finally

- The importance of a networked, relational approach that better links the agency, the CE practitioners and the community to motivate Australians to prepare for natural hazards

Further, the research from current community engagement for preparedness practice found that many experienced CE practitioners found the following characteristics of a CE approach were more successful.

1. The approach should adopt more of a community development method – incorporating education and capacity building activities (see section 3.2.1)

2. For CE to produce outcomes aligned with preparedness, members of a community needed to have opportunities to both tailor and take ownership of their own preparedness activities (see codesign approaches in section 3.2.2)

3. Agencies needed to have an understanding of "where" the community was at in terms of risk awareness and accuracy of risk perception, capacity to prepare, and other conditions that Paton (2003) has identified

4. There needs to be more evaluation and monitoring built into any framework, but currently practitioners either are under resourced or do not have the skills or resources to undertake such evaluation at either local or agency jurisdiction levels

5. One size cannot fit all communities. There are many variations for hazards at a local level, a framework needed to be flexible to suit the needs of a local community

In addition to these characteristics, sharing of resources and knowledge across agencies was identified as both an enabler and a barrier to practice, suggesting that a more universal approach to practice was needed, with a range of benefits emerging from a common community-led practice.

The following model – titled *The Australian generative model of community engagement for preparedness*, reflects and represents a synthesis from current Australian community engagement for preparedness practice (interview data and document analysis) and responds to the principles of practice that prefaced successful community engagement. The model is presented to first

detail aims of each step (Figure 15), followed by the tactics (see Figure 16) and then the evaluation tools (see Figure 17) aligned to each step.

Figure 15: The Australian Generative Model of Community Engagement for Preparedness – AIMS
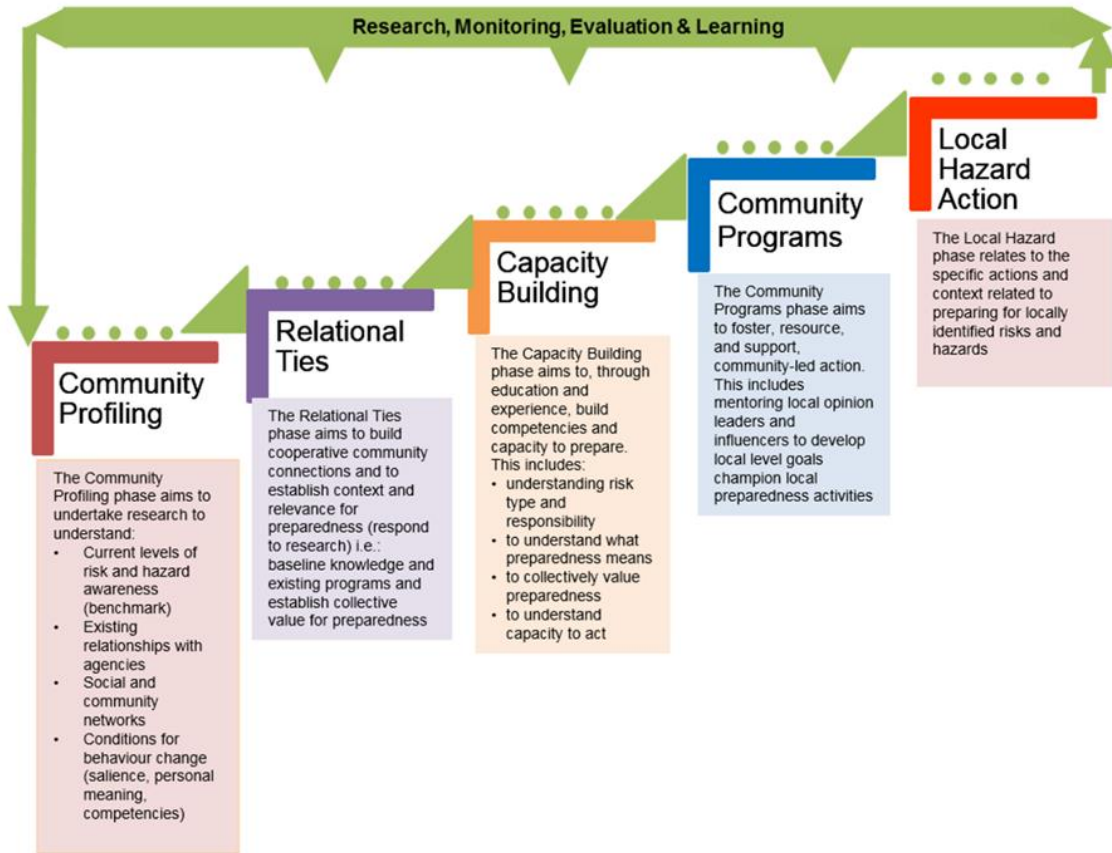
8.1 DESIGN AND VISUALISATION OF THE MODEL

The model is designed as a generative model, in that each step contributes a foundational component to the next step/phase. The green dots above each step symbolise opportunities for evaluation/monitoring/measurement – to understand the current status of that community relating to the aims of the step. The triangles symbolise movement between the steps – and also suggest that a community may move between steps (progress or regress) depending on environmental influences or disaster experiences. The model is circular in nature, but the tracking of progress is not necessarily linear or equal. While the length of lines may suggest that equal time and effort is dedicated to each step, a step can be missed (for example, if a community has evidence of strong relational ties or high levels of capacity), or may not progress due to evaluation suggesting that a community has not achieved a level.

8.1.1 All hazards

The model is also designed as an all hazards model for community engagement for preparedness. It is only at the final step of the model – Local Hazard Action - that very specific contextual knowledge/action in response to specific local risks differentiates, for example, flood preparation (slow moving/fast moving), to fire (northern/southern), to cyclone, storm, tsunami, earthquake etc. A key premise

of this model is that the first four steps can be applied to any community and the specific actions relate to the specific hazard risks faced by a particular community.

8.1.2 Steps as generative for competencies and capacity to act

There are six steps or phases in the model, each featuring specific aims, tools and monitoring and evaluation methods (see Figures 16, 17 and 18).

Step 1: Community Profiling

The Community Profiling phase aims to undertake research to understand:

- Current levels of risk and hazard awareness (benchmark)

- Existing relationships with agencies

- Social and community networks

- Conditions for behaviour change (salience, personal meaning, competencies)

Benchmarking to understand these levels is a critical part of evaluation and informs programming. A number of tactics and tools are useful for community profiling, including:

- Research tools: **Primary Data**

    o Survey (social/cognitive constructs)

    o Focus Groups

    o Key interviews

- Research tools: **Secondary Data**

    o ABS data

    o Media analysis

    o Social networking (media)

    o Agency (other) and government reports

Evaluation of the community profiling phase includes:

- Baseline/benchmarks – have these been established

- Demographics of local community ie: ABS data (Quick Stats – locality level data)

- Completion of survey for measures of knowledge/awareness/capacity/ability/risk awareness

- Reports, debriefs and reviews of past hazards experienced in the local area and stored either with the relevant agency or the inspector-general/oversight agency. These benchmark previous hazards that have occurred – loss and level of preparedness

- Identification of opinion leaders from media/editorial analysis

- Identification of existing social networks, groups and connections (from social media analysis

- Articulation of timely and measurable agency objectives relating to community preparedness levels

Step 2: Relational Ties

The Relational Ties phase aims to build cooperative community connections and to establish context and relevance for preparedness (respond to research) i.e.: baseline knowledge and existing programs and establish collective value for preparedness

A number of tactics and tools are useful for understanding and building relational ties, including:

- Set engagement milestones

- Obtaining demographics and facts (secondary data) relating to current groups

- Identifying common cultural, social and attitudinal motivators

- Relational mapping

- Piggybacking on other community committees and their events and activities

- Networking events (weak and strong ties)

- Storytelling (key messages and media coverage)

Evaluation of the relational ties phase includes:

- Diagnosing community relationships and social networks (see evaluation)

- Relational mapping (seeking change/stronger ties)

- Focus groups (looking at connectedness) or key informant interviews

- Influencers and opinion leaders mapping (level of influence and connection – strong/weak ties)

More detail on application and use of these ideas is available in the Monitoring and Evaluation Toolkit on the BNHCRC website.

Step 3: Capacity Building

The Capacity Building phase aims to, through education and experience, build competencies and capacity to prepare. This includes:

- Understanding risk type and responsibility

- Applying interpretation of this risk to what it means personally and for family, own property and neighbours

- To understand what preparedness means and looks like from own viewpoint

- To collectively value preparedness

- To understand capacity to act

A number of tactics and tools are useful for capacity building, including:

- Network events (close ties)
- Workshops
- Exercise/drills – trial and error – reflection and learning
- Reward and recognition i.e.: Gamification
- Storytelling
- School visits/home visits
- Community coalitions
- Community articulating timely and measurable objectives related to preparedness levels and recovery expectations

Evaluation of the capacity building phase include:

- Checklists of physical preparedness and actions (self and summative)
- Survey evaluation of psychological preparedness
- Focus groups – participant reporting on capacity
- Community objectives related to preparedness levels are measured (survey/focus group/interviews)
- Measurement of specific objectives related to preparedness levels and recovery expectations (various methods)
- Measurements of each tactic used
- Observation and feedback (survey and open ended) from participants from exercises/drills/school and home visits

Step 4: Community Programs

The Community Programs phase aims to foster, resource, and support, community-led action. This includes mentoring local opinion leaders and influencers to develop local level goals champion local preparedness activities, and a range of community-identified initiatives that identify, plan and act to address preparedness (capacity and actions) in the local community.

A number of tactics and tools are useful for the community programs phase, including:

- Co-design events – these are community-led and involve:
  - Risk identification, planning and programming for preparedness at individual and community levels
  - Leadership by key opinion leaders and influencers – to champion/promote/inspire/motivate others/establish social norms
- Mentoring role by agency

o Role of agency to support and guide, reward and recognise, community efforts and initiatives – as a 'critical friend'

Evaluation of the community program phase includes:

- Milestone planning - local program initiatives

- Co-design of high level objectives and plans for outcomes and impacts

- Measurement of the objectives– (knowledge/action)

- Community development of local initiatives – number/type/volume/ indices

- Evidence from:

    o Preparedness capacity index tool (in the Community Engagement Toolkit on the BNHCRC website)

    o Counts and organisational records, such as of requests for information and support from agency

    o Agency reporting of guided action (agency as the critical friend)

Step 5: Local Hazard Action

The Local Hazard Action phase relates to the specific actions and context related to preparing for specific locally identified risks and hazards. Tactics and tools useful for local hazard action phase include specific risk type communication, messaging and action – relevant to the local risk/hazard type. Because the previous four phases incorporated generic hazard messaging, this phase is very focused on specific messaging rather than techniques used.

Evaluation of the local hazard action phase include:

- Community-based evaluation - compare with benchmarking (community profile), which can be done by repeating the benchmarking research tools i.e.: survey, focus groups etc

- Agency-based evaluation – how well teams performed, mapped against their objectives

Step 6: Overarching RMEL

The research, monitoring, evaluation and learning (RMEL) phase envelopes all phases of the model and has potential to dip in and out of each phase as needed. The sheltering of the steps under evaluation and monitoring symbolises the importance of RMEL to inform, guide and measure community engagement actions by both community members and agencies responsible for community preparedness. RMEL also plays a key role in community understanding of self-efficacy and capacity building through the diagnostic and regulation function. This means that community members can understand where they are at in terms of their levels of preparedness.

The following Figures 16-17, map the tactics and evaluation (discussed above) to the Australian Generative Model of Community Engagement for Preparedness. Further information about tools and tactics is detailed in the

Community Engagement Toolkit (see Appendix 2), and further information about evaluation tools is detailed in the Monitoring and Evaluation Toolkit (see Appendix 3).

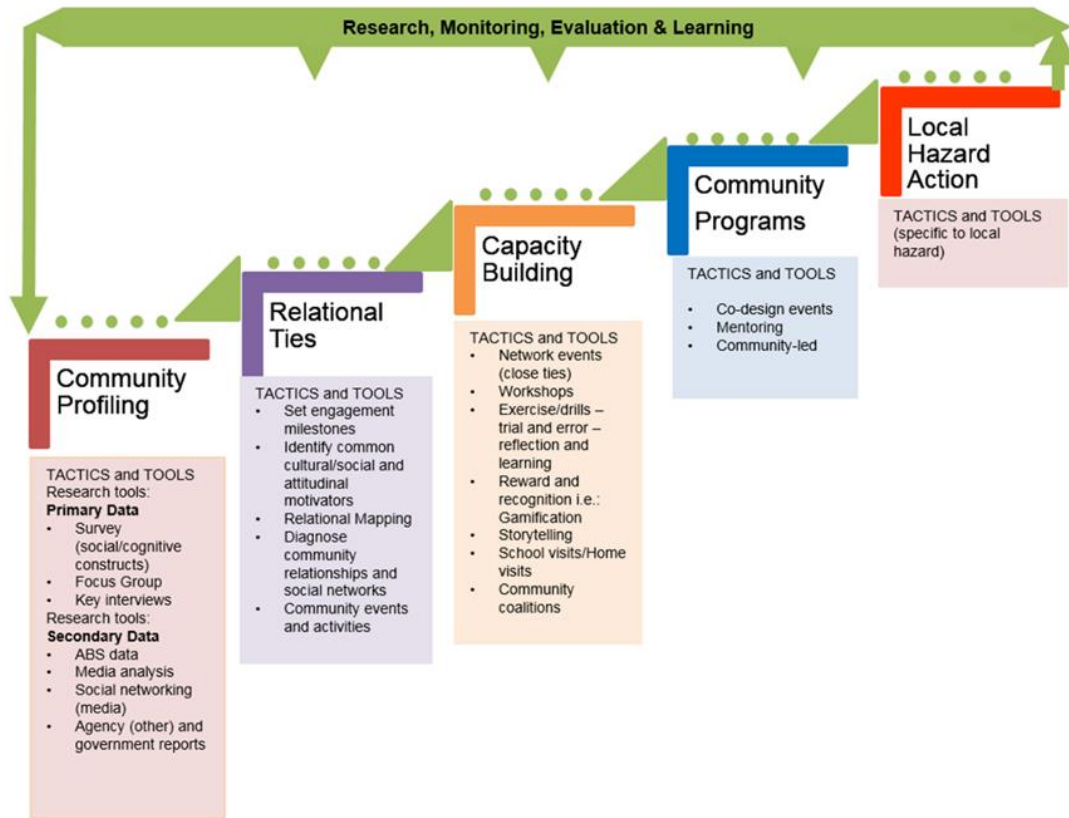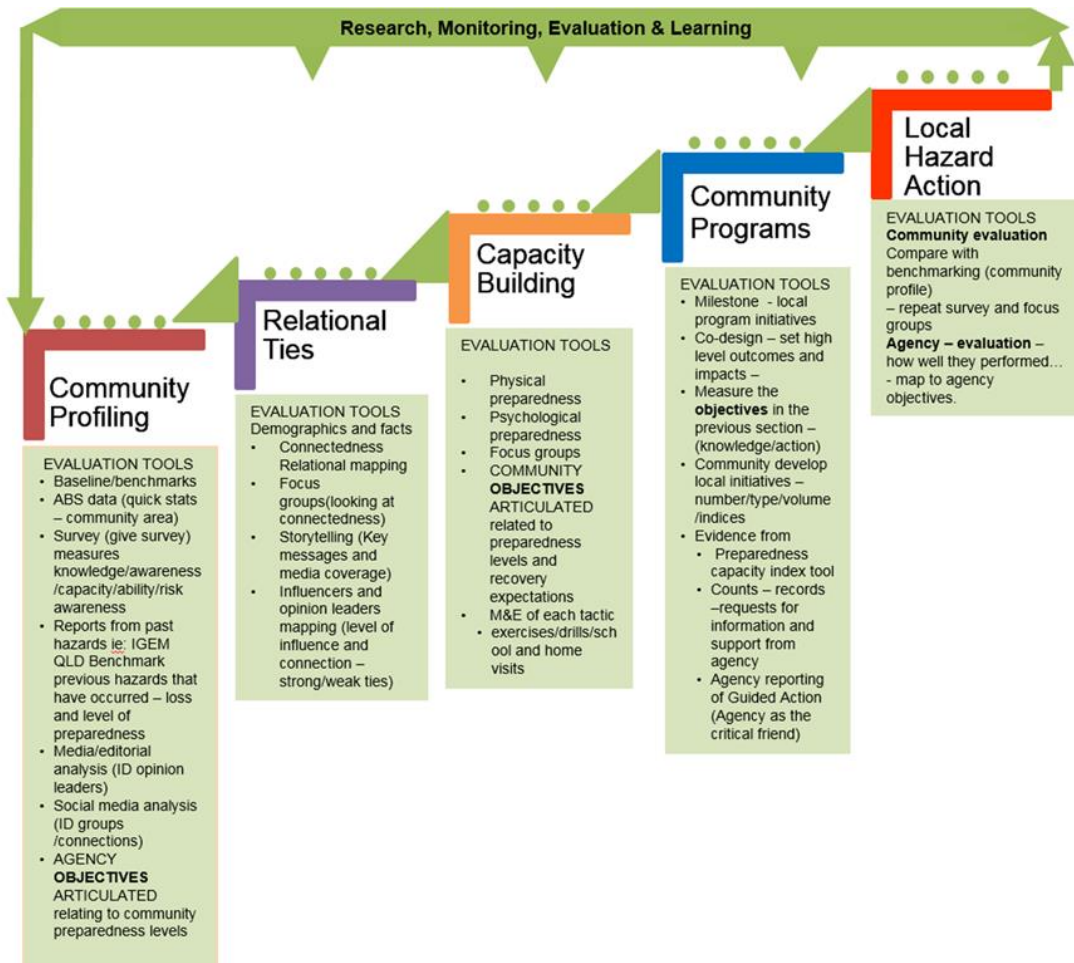*Figure 16: The Australian Generative Model of Community Engagement for Preparedness- TOOLS*

Figure 17: The Australian Generative Model of Community Engagement for Preparedness – EVALUATION

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9. TOOLKITS

A toolkit was identified as a key support mechanism for community engagement practitioners to operationalize and implement methods of community engagement communication that align with the framework and an emergency management context.

Two toolkits were developed as an outcome from this research:

- The Community Engagement Toolkit which presents a suite of tactics that have mostly been tested in an emergency management environment

- The Monitoring, Evaluation and Learning (MEL) Toolkit

The toolkits build on National Strategy for Disaster Resilience: Community Engagement Framework Handbook 6 (Australian Institute for Disaster Resilience, 2013) by providing details of:

- The Australian generative model of community engagement, a framework developed in 2019 based on current community engagement for preparedness approaches used by Australian agencies

- A series of emergency management-tested community engagement techniques ranging from information campaigns through to community development and community led approaches

> Both toolkits are a companion document to this report and
>
> are available on the Bushfire and Natural Hazards CRC website
> www.bnhcrc.com.au/research/engagementframework

9.1 TACTICS FOR ENGAGEMENT TOOLKIT

Tactics as tools have been drawn from the Systematic Literature Review and are described in detail. Included in the description are:

- The aim of the tool in application

- Whether it has been tested in emergency management

- What it looks like when it is used

- Outcomes others have achieved in using the tool

- Which step of the model it is most effective in

- When it is most effective

- When it might not be effective

- What to watch out for in using the tool in certain situations

- Resource requirements

- Evaluation methods to use around the tool

- Where to go for more information on the tool

//

These recommendations are informed by the Australian generative framework for community engagement for preparedness developed in this research. The toolkit also aligns to the Monitoring and Evaluation Toolkit.

9.2 MONITORING, EVALUATION AND LEARNING TOOLKIT

The Monitoring, Evaluation and Learning Toolkit (MEL) (which can be found on the BNHCRC website) provides a rationale and instructions on how to monitor and evaluate each engagement tool. Each monitoring and evaluation section includes a sample objective with suggestions for collecting and reporting outputs, outcomes and impacts.

The model travels through a series of levels of community engagement planning and implementation, which helps practitioners to map and undertake the best community engagement approach for a specific community.

The base articles used to build the suite of techniques were found during a systematic literature review of preparedness activity. A systematic literature review is a rigorous, procedural approach to drawing out all available literature on a topic. The value of a systematic literature review was that it provided a wide ranging view of the accessible knowledge around a topic and identified measurement tools used on each of the community engagement techniques.

This Toolkit aims to provide an understanding of MEL for practitioners of all levels and experience. It contains:

- Guidelines for understanding and setting objectives – a critical component of any measurement

- Benchmarking MEL for each step of the model

- Information on how MEL ties in with and drives the guiding constructs of the Australian Generative Model of Community Engagement for Preparedness

- What to look out for in undertaking research at different steps of the CE process

- Indicators of timing and programming

- A glossary of MEL terms

- Practical tips on techniques

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10. PROJECT CONCLUSIONS AND IMPLICATIONS

Implications from this research project fall into a number of clusters that include ideas on improved approaches to community engagement generally, suggestions for improved community engagement practice at an agency level, propositions for advancements at a national level, and ideas for further research.

10.1 GENERAL APPROACHES TO COMMUNITY ENGAGEMENT

Overall, the emergency agency community engagement picture in Australia is heartening, with commitment at high levels to engaging with the community in order to save lives and property. While skills development was a topic of significance for our interviewees, many practitioners are highly experienced, skilled in either communication or engagement with acute awareness of their own shortcomings relating to the community development/co-design level of community support. Most agencies have either formalised or are in the process of formalising community engagement, and most seem to be working from the same hymn sheet by working to either the AIDR model or a form of the IAP2 model. This means that the practice of community engagement across the country is quite advanced, with a few obstacles to the practice reaching its full potential (which we work through in the next section).

Our key recommendation is:

The Australian generative model of community engagement for preparedness be adopted as a model that brings together the core features and benefits of a common understanding, language and practices used for communication engagement in Australia and around the world.

Insights and implications of the findings of this study is discussed in the following section.

10.1.1 Systematised cross-agency sharing of knowledge

Practitioners are inspired by success stories and case studies of good practice and in particular, practitioners in smaller states need such case studies to improve practice and retain motivation for their roles. During our research we came across many such case studies that we would love to have shared, but had not been documented or published. In addition, the workshops and interviews revealed a desire by practitioners to be part of a community of practice.

We recommend:

- That agencies share good practice as part of the evaluation process. We recognise that resourcing of this information sharing can be a problem and suggest that where this is a problem, partnerships with universities be established to facilitate writing up and publication of good practice

- Establishment of practitioner-led communities of practice. The aim of these groups is to support community-based community engagement practitioners and to provide opportunities to share knowledge, build professional community engagement for preparedness networks and improve practice

10.1.2 Localised approach

Our research showed us that state-level agencies appreciate and aim for engagement that is as localised as possible, but on the whole cannot resource such an approach across their entire state. We also realised that in most communities, local government and agencies, while working closely at operational level, do not yet effectively share resources and knowledge in the community engagement space. We saw examples of where these relationships are well established, and the level of community engagement that results when these relationships work well.

Therefore, key recommendation include:

- Local government be more included or that relationships across agency and local government work collaborative with the view to establishing sustained capacity-building in communities at a locality level

- Also, that agency volunteers are more actively included in this process so that localised relationships between local government and agencies stay firm, and do not fall victim to perceptions of cost shifting onto local government

- Greater levels of cross-agency collaboration be undertaken on standardised presentation of case studies and knowledge or resource sharing

10.2 AGENCY-LEVEL INSIGHTS

10.2.1 Systematising evaluation

Before we started this project, our consultation revealed that evaluation of community engagement practice and outcomes was a concern for agencies generally. It was confirmed during the research, with a very small number of agencies describing an organised and sustained system of evaluation that included a feedback loop into practice. We found that most evaluation methods measured individual tactics or occasionally whole projects and were generally adhoc with unreliable reporting methods. Many practitioners were unsure how to go about research. Our recommendations relating to community engagement evaluation are that agencies:

- Ensure that community profiling practices are funded and embedded into every community program

- Systematise a population-wide program of evaluation so that improvements year on year can be measured across the general community and across hazard types

- Incorporate engagement team key performance indicators that are outcomes focused, and reduce KPIs that are output focused

- Ensure that delivery, measurement and analysis of the KPIs are resourced and incorporated into all engagement programs

10.2.2 The problem of shared responsibility

In addition, the command and control approach in some agencies or departments present conflicts with community engagement teams, particularly in those agencies that are moving into more of a collaborative/co-design relationship with some communities. The shared responsibility concept does not match with command and control. Related to this was the tension between the messaging of ministers' offices, agency corporate communication and media relations departments and community engagement programs, in which the CE teams' concept and messaging around shared responsibility is undermined by "making the community safer" messaging of spending and resourcing media and messaging. We noted that often the media relations and community engagement team's work in separate departments, making co-ordinated messaging difficult. Our recommendations here are that:

- The best outcomes are achieved when the community engagement and media relations teams work more closely together to prioritise key messages around shared responsibility

- In agencies where senior management incorporates shared responsibility messaging into corporate communications and what this means in an operational sense – it needs to also be embedded into organisational strategy rather than assigned as an education/engagement responsibility

10.2.3 Skills and training

A number of practitioners commented during the interviews that they came from a communication background and indicated that they were not confident when it came to facilitating the more collaborative models of community engagement. In addition, we encountered some practitioners who had been handed the role with no communications or engagement training, qualifications or experience and have learned on the job.   Information campaign planning is a highly complex activity, and community engagement techniques, from consultation to co-design, require advanced communication, facilitation and negotiation skills. Community development is a third practitioner skill-set required in this field, but this is the one that practitioners felt was most often missing from engagement efforts. In addition, across organisations there were expectations of quick results, juxtaposed with concern by operational and engagement staff for 'hard to reach communities". Overall, this indicated a lack of understanding of the long-term nature of community engagement in all its forms.

We recommend:

- In successful organisations, the skills and experience of those responsible for developing and delivering community engagement programs have skills and experience that is highly developed. These skills can be achieved through recruitment, staff development and placements with more experienced colleagues in similar organisations. For instance social marketing and behaviour-change information campaigns, and their evaluation require specialised knowledge of research, segmentation, channel selection and messaging to be successful

- Community development skills be incorporated into engagement teams, or community development capabilities of local government be drawn upon for CE for preparedness

- Communication and engagement teams are upskilled in research and collection and use of data to expand capability in evaluation

- That agencies acknowledge the long-term nature of community engagement and relationship building in their strategic planning and in their support of staff and programs, as well as development of KPIs for engagement teams

10.2.4 Further research and development of the field

This project was centred on developing an agency-based framework for community engagement for preparedness from current practice in Australia. This model has been developed and refined during the project, but now requires testing in a holistic way and over reasonable period of time that accounts for the year on year preparedness levels of communities. Such research should include control and intervention communities that have similar features.

The systematic literature review also revealed that the efficacy of preparedness checklist activities aimed at personal safety and coping in a disaster had not been tested. This is a gap in the knowledge, and agency activity based on the checklist approach has slipped through as accepted practice without the empirical base that most other activities have.

In addition, one of the key insights from both the literature review and the interviews was the need for psychological preparedness as much as physical preparedness. While physical preparedness is promoted by the checklist approach, a second method of determining preparedness was Penman et al's (2013) capability approach, originally proposed for bushfire preparation. Preparation under this method is geared toward different levels of severity of a hazard, rather than a list of things to be done. It means that householders not only prepared for different levels of effect, but the point at which evacuation is necessary becomes evident – which may be a foil to the 'wait and see' approach. We think the capability approach has the potential to better incorporate psychological preparedness into the preparedness process.

Our recommendations for further research are:

- Application of the Australian generative framework for community engagement for preparedness be tested and measured, including examination of control and intervention communities

- Testing of preparedness checklist activities to see what effect these have on personal/householder safety and coping in a disaster

- Further testing of the capability approach to measuring preparedness

Overall, the outcomes of this project have the potential to support progression of community engagement for preparedness in Australia to a more organised, integrated, and sustainable level that sees more people prepared for natural hazards, and more lives saved. Australians are generally world leaders in community engagement, both in emergency management, and in general

government and corporate applications. With extreme events now occurring in countries that previously had been able to prioritise occasional response over sustained mitigation and preparation, we will now become the beacon that guides other nations on the preparedness path to protecting their communities.

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APPENDICES

APPENDIX 1 – SYSTEMATIC LITERATURE REVIEW REFERENCE LIST

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