GAUGING COMMUNITY RESILIENCE

an analysis of the lived experiences of community members before, during, and after the November 2021 flood event in Gunnedah

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Supported by the NSW GOVERNMENT

GUNNEDAH FAMILY SUPPORT
Strengthening and Supporting Families and Our Community

THE UNIVERSITY OF NEWCASTLE AUSTRALIA

Gauging community resilience: an analysis of the lived experiences of community members before, during, and after the November 2021 flood event in Gunnedah

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Dr Graham Brewer is Associate Professor of Disaster Resilience and Sustainable Development in the School of Architecture and Built Environment at the University of Newcastle (UoN), where his doctoral research and much of his subsequent research has investigated attitudes, behaviour, and culture variously in the construction and disaster sectors. In 2015 he used this expertise to negotiate with the United Nations for the formation of CIFAL Newcastle, an international training centre devoted to Disaster Risk Reduction and the UN Sustainable Development Goals. Subsequently, the University of Newcastle was named #1 in the world for partnering for a more sustainable future in the 2021 Times Higher Education Impact Rankings. In his spare time, Graham is also a volunteer with Port Stephens State Emergency Service, where his particular interest lies in flood planning, and developing the flood resilience of his community.

Kruthika Nagananda is an architect whose design interests intersect with waste, water, climate change, and disaster resilience. A recent graduate of the Master of Disaster Resilience and Disaster Resilience program (UoN), she previously worked with UN-Habitat in Myanmar. Kruthika intends to apply her knowledge in the field of disasters and their social impact, developing the resilience of the communities with whom she works.

Teresa Tratz is an urban planner who graduated with an Honours Degree in Urban Planning in 2020 and latterly the Master of Disaster Resilience and Sustainable Development degree, both from UoN. She currently works full time in Town Planning and intends to specialise in the field of urban resilience.

Helena Malinowska has qualifications in Science BSc (UNSW Hons) and Innovation Management (UNSW) and is a graduate of the Master of Disaster Resilience and Sustainable Development (UoN). Professionally, she has focused innovative technologies and solutions across multiple industries, working in partnership with impact-driven organisations to deliver bespoke technology solutions that drive positive social change. Helena is interested in evidence-based approaches to disaster risk reduction that will drive transformational systemic change to building resilience across society and within communities. In her spare time Helena is an active community volunteer with several roles spanning disability support, social care and specialist bush search and rescue operations.

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1 GAUGING COMMUNITY RESILIENCE: PROJECT SUMMARY AND FINDINGS

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1.1 Overview

The 2021-2022 flood "season" was traumatic for the community of Gunnedah, with the Namoi River peaking above the Bureau of Meteorology major flood level, resulting in significant inundation of businesses and dwellings. In response to its experiences in dealing with disadvantaged sections of the community, Gunnedah Family Support distributed a survey instrument to develop a sense of community expectations and experiences before, during, and after the November 2021 flood event.

In May 2022, Gunnedah Family Support gave permission for postgraduate coursework students from the University of Newcastle's Master of Disaster Resilience and Sustainable Development (MDRSD) program to access and analyse de-identified data from their survey for the students' Professional Practice Research project. Two of the students took up the opportunity, whilst a third student chose to look at a closely related topic. This report, together with its annexures provide both a digest of their findings together with the underlying detail that informs them.

1.2 Background

Gunnedah family support Inc (GFSI) is a non-government, not-for-profit organisation that assists all community members experiencing difficulties. They provide both information and practical assistance to adults, youths, children, and families in the Gunnedah local government area. Their remit is broad and deep, extending to support, advocacy, advice, information, and referrals to other appropriate services in the local area and beyond. They engage with supporting families, those who are homeless, children's services, victims of domestic and family violence, and provide courses and parenting programs. Demand for their services is heightened during extreme weather events. Their prominent role within the community also made them uniquely aware of the challenges being faced by the community after the flood event.

Accordingly, in early February 2022 GFSI circulated a five-question survey with the overt intention that all community feedback would*, "…be combined into a report and*

shared (without personal contact information) with the Local Emergency Management Committee to ensure that the experiences of the community are understood and to inform future planning activities".

The survey contained both targeted and open-ended questions relating to personal circumstances, preparedness (before the flood), response (during the flood), and recovery (after the flood), together with an open-ended "other comments" question. It probed residents' expectations and experiences across and extended period. All the collected data was in the form of "free response" i.e., respondents were free to say as much or as little as they wished and were not guided towards specific issues.

Thereafter, 30 usable responses were received by GFSI, who then de-identified the responses and collated them, question by question. A suitable invitation letter was then drafted, inviting students undertaking the course ARBE6408 Professional Practice Research Project as part of the MDRSD program at the University of Newcastle to provide their unique analysis of it. Two students, Kruthika Nagananda and Teresa Tratz, accepted the invitation. A third student, Helena Malinowska, recognising the likelihood of widespread distress, addressed the issue of mental health service design independently of the survey: her work is included because of its relevance to the Gunnedah community.

Normally, research begins with a problem to be solved, a question to be answered, followed by a detailed review of relevant literature to understand where the cutting-edge of current know-how lies. A research protocol is then designed – for instance, a questionnaire survey and its analysis – and hopefully the answer is thereafter found. In this case, given the survey had already been circulated and data collected, it was necessary to start the research process by asking what questions could usefully be answered by the data. To do this, researchers had to look at the data and match elements of the responses to pre-existing theory. It was determined that the two areas of "community resilience" and "trust" could be investigated, and potential insights developed by doing so.

Each piece of research was underpinned by a qualitative systematic scoping review of the literature, pragmatically limited in scope to about 50 papers (when listed and

evaluated in order of relevance). These were then thematically analysed, and a conceptual framework created. This framework became the tool with which the survey data itself was analysed, generally identifying issues that had been mentioned by survey respondents, and then reporting them in a similarly structured way. These findings were then discussed, and conclusions drawn.

The following section provides an overview of each of the three studies. These are then reproduced in full within the three annexures at the end of this report.

1.3 PROJECT OUTCOMES

1.3.1 Evaluating levels of community resilience using psychological constructs.

A community is a complex adaptive system consisting of government services, citizens, community groups, organisations, businesses, volunteer groups, and families: individuals within each of these groupings tend to respond to the actions of each other, generating a level of resilience as a response to the attitudes and behaviours of the rest of the community. Whilst resilience is a characteristic that may be demonstrated by a group of people forming a community, it is also the case that community resilience will not be reported unless the individuals within that system perceive it to be resilient.

Resilient social systems display three capacities – adaptive, coping, and participatory – which generate outcomes for individuals. These can produce varying perceptions of control, coherence, and connectivity, which may be thought of as the "outcomes" of a community's resilience capacities as perceived by its members. A detailed review of the literature relating to community resilience reveals that each of these outcomes can be indirectly detected through the presence or absence of relevant capacities reported by individuals. These theoretical facets of community resilience and their relationship to each other have been assembled in a conceptual framework (Figure 1) which underpins this analysis of the Gunnedah survey data.

Application of this framework to the survey data reveals complex relationships between individuals, their neighbours, formal organisations, and the social system within Gunnedah. Some of these are positive and beneficial, whilst others are problematic, displaying varying levels of dysfunction and disintegration. In general, many of the results from Gunnedah confirm previous research, particularly in relation to the importance of timely and accurate information, and the post-disaster impact on personal and group thinking in relation to mitigation and preparation for future events.

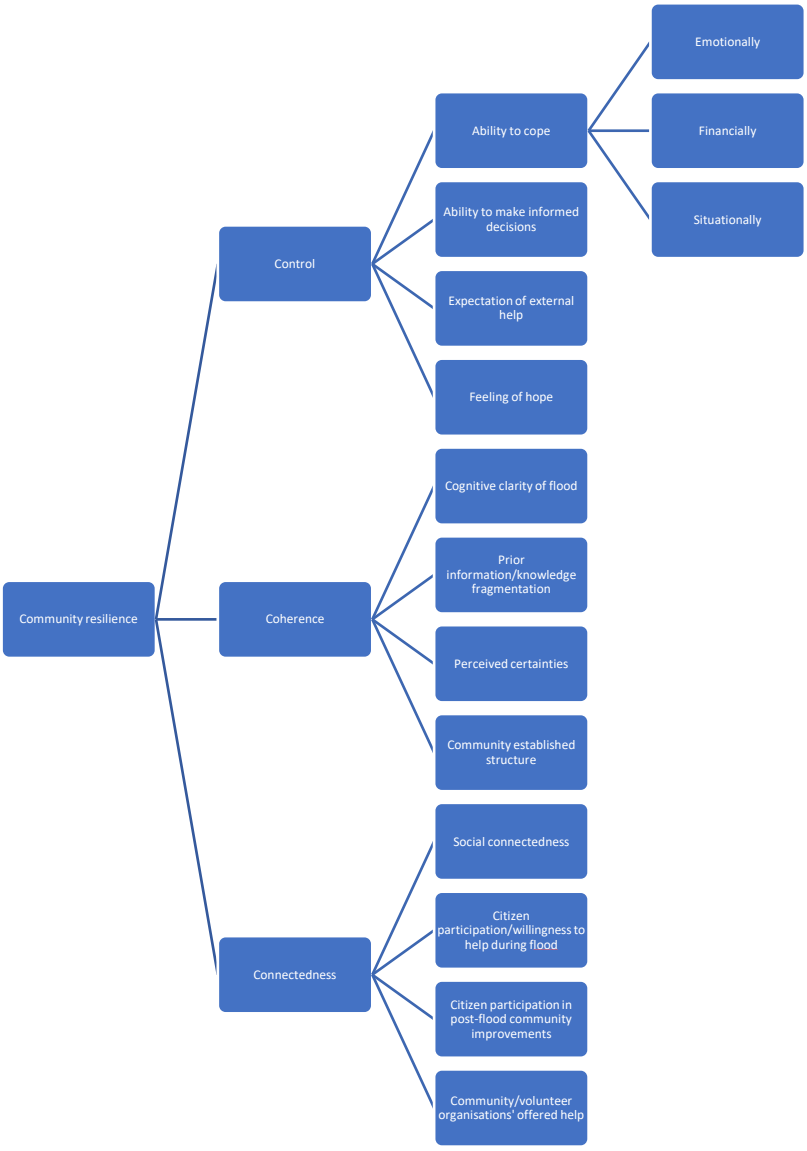

Figure 1. Psychological framework of community resilience: "3Cs Model"

These are the salient points arising from the data analysis:

Strengths include:

- Evidence of community coherence in some sections of the community, both through formal organisations and groupings, and informal networks.
- An apparent strength through connectedness to community, willingness to help one another, and the willingness of some community-based volunteer organisations to render assistance when requested.
- The maintenance of hope throughout the crisis.

Weaknesses include:

- Community members having little influence or control over the situation.
- A higher reliance on formal (i.e., government and community-based) organisations for assistance.
- Low perceptions of coherence in some sections of the community e.g., lack of cognitive clarity regarding impending event and consequences.
- Poor communication of information from "authorities".

The full text of this research paper can be found in Annexure 1.

1.3.2 Trust: its creation and loss.

Community resilience is, in part, dependent upon the level of trust that those who are in a vulnerable relationship place in others who are in a relatively powerful position. This may occur horizontally, between community members, where the trustor/trustee relationship is a consequence of personal circumstances, actions, geographical location, or access to resources (including information). However, it most frequently occurs vertically, between those community members exposed to hazards and those (individuals and the agencies they represent) who control access to relevant useful information, resources, and personnel, before, during and after extreme events.

Trust can be thought of as the expectation of benevolence from the more powerful agent in a formal or informal relationship. By analogy, contracts are sometimes

thought to remove the need for trust, though these arrangements (both formal and informal, written, and implied) are only as reliable as anyone's ability to enforce their terms. Such contracts do not formally exist within communities facing extreme events (though they may be implicit in the governance of government agencies), so the existence of trust is often the result of a long process of its creation. Moreover, when times are challenging, it is much easier to lose that trust than it is to repair it after the event; in many cases lost trust may never be recovered.

This research begins with the desire to understand the creation and loss of trust before, during and after the 2021 Gunnedah flood event, through glimpses into the lived experience of community members captured through the questionnaire survey data. It starts by establishing the desirability of trusting relationships within the community as a key component of disaster risk reduction (particularly in relation to information imbalance between vulnerable community members and government authorities), identifying fluctuating trends in community expectations in this regard. The role of volunteer emergency and relief agencies, together with disaster NGOs is found to be especially important in the Australian context, reinforcing the social compact between them and the communities they serve, and the trust upon which this is based.

Within this context a conceptual framework of relevant trust concepts is developed from the literature (Figure 2), set within a community context of vulnerability. Three key trust-related components underpin this framework: competence; honesty; benevolence. This is then used to thematically analyse the survey data.

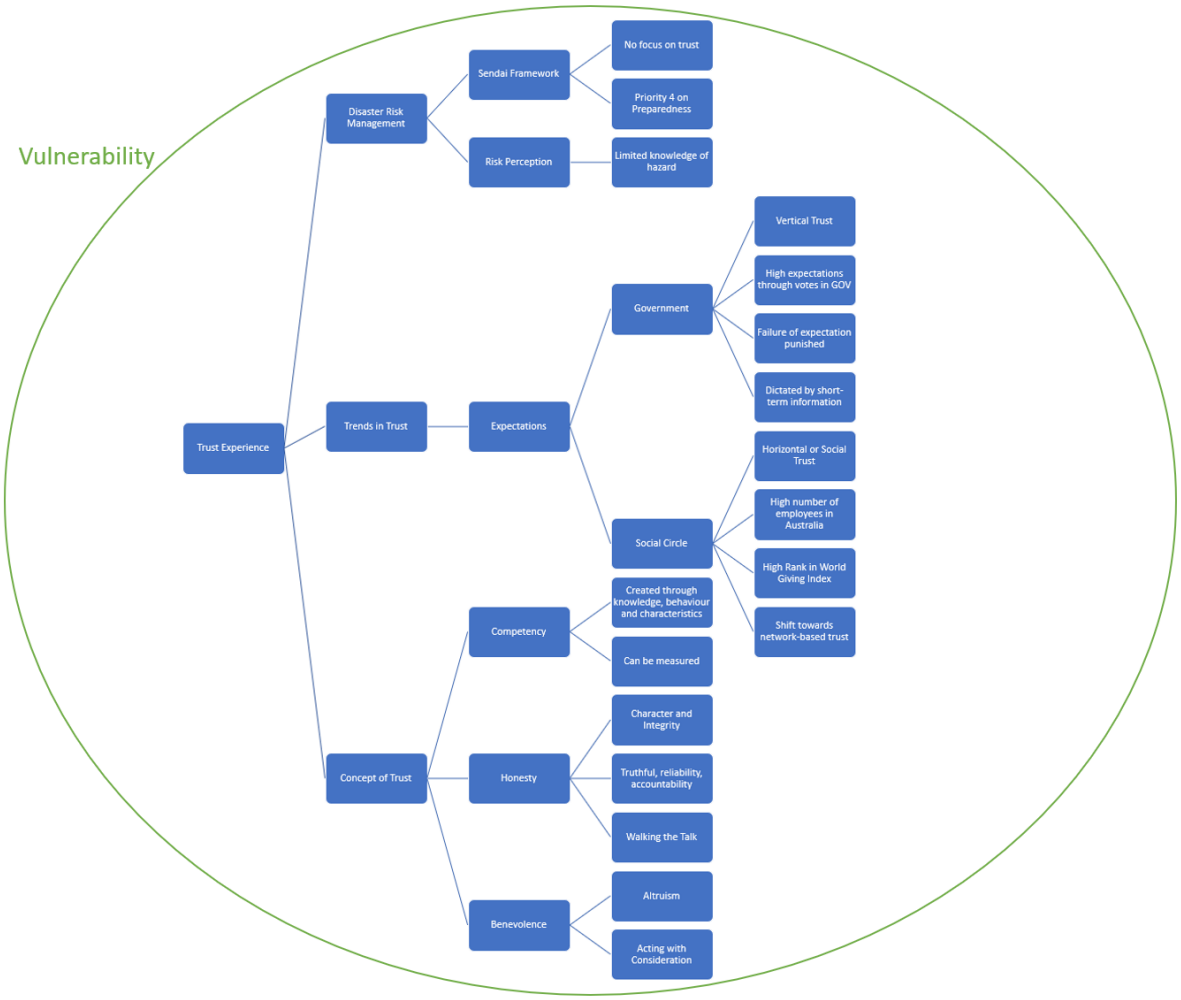

Figure 2. Trust concepts as applied to Gunnedah data.

The analysis of the data using these concepts allowed three overarching themes to be synthesised from the respondents' comments:

- Risk perception – proactive behaviour versus personal knowledge: The need for community members to tenaciously seek information from a variety of sources during times of high stress, particularly during preparedness activities, but also during the response phase of the emergency.
- Loss of trust during preparedness: In relation to emergency response and aid agencies, the perception of low levels of competence, accompanied by distrust of information that was plainly wrong. The perception of a lack of helpfulness and altruism, accompanied by misinformation or lack of knowledge.

- Use of social circle during response: This was the main source of aid and assistance during the event (far less so during preparedness phase). Notably, this could extend to personal contacts within volunteer response agencies.

The full text of this research paper can be found in Annexure 2.

1.3.3 Effective post-disaster mental health: design considerations

Rises in the incidence and severity of extreme weather events have resulted in an increase in the exposure of communities and their members to traumatic incidents, many of whom will experience disaster-related health problems that include harm to their mental health. Post-traumatic stress disorders and depression often outlast any physical consequences, frequently for periods of years, and although their impact is most keenly felt by the individuals themselves, they also affect family and loved ones, and the broader community, both directly and indirectly (through social and economic consequences). These effects of disasters can be mitigated and managed through programs of prevention and treatment, though in the aftermath of a disaster event their importance can be overlooked in favour of urgent, response-related matters. This research scopes an effective mental health response that is fully functional in the aftermath of the disaster.

A qualitative systematic scoping study was conducted, identifying several design considerations for an effective disaster mental health response, revealing that key design considerations are related to the mental health service delivery requirements, and administration of the disaster mental health response. These are summarised in a conceptual framework (Figure 3).

Key messages.

- There appears to be a symbiotic relationship between effective mental health services and disaster preparedness, in that the former may encourage the latter i.e., people in a better headspace appear more likely to engage in

disaster preparedness activities, which in turn foster good mental health by reducing feelings of anxiety and helplessness.

- Effective disaster mental health services are invariably built upon adequate access to, and availability of mental health care under normal conditions: surge capacity must be factored into all disaster planning *before the event*. This will probably be sourced – at least in part – from the community and broader clinical workforce (including not-for-profits and NGOs).

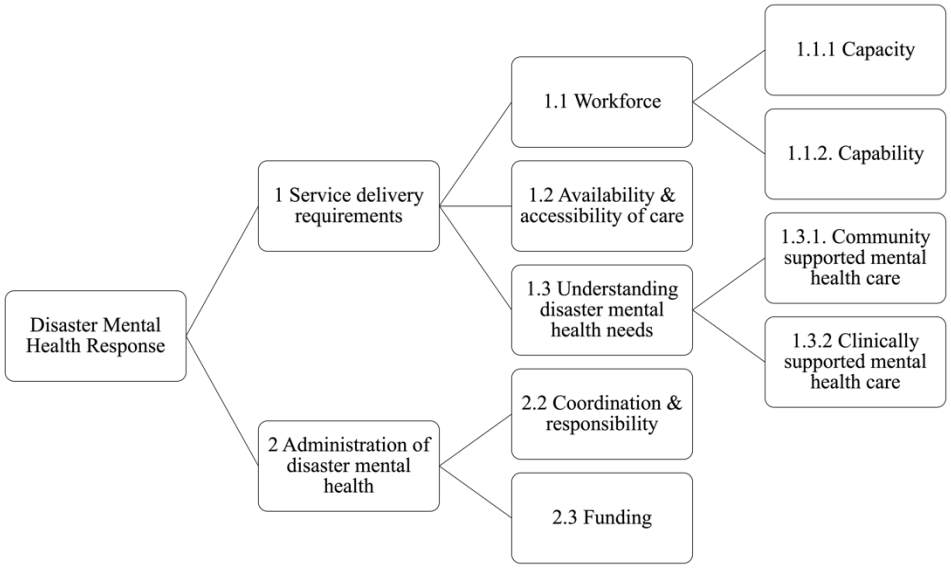

Figure 3. A conceptual framework of design considerations for an effective disaster mental health response.

- Understanding disaster mental health needs and having knowledge of risk factors and vulnerable groups *prior to* disasters can support the allocation and organisation of resources *following* disasters.
- Disaster resilience needs to be inclusive and address critical vulnerabilities within societies – including marginalised/minority sections within the community – to be both effective and mitigate disaster risk.
- Comprehensive service mapping is a key component in effective provision of mental health response in the aftermath of the disaster.

The full text of this research paper can be found in Annexure 3.

1.4 In Conclusion

Taken together, these three pieces of research – while by no means representing a comprehensive investigation of the November 2021 flood event in Gunnedah – do fulfil two important functions. Firstly, they present a locally relevant reading of contemporary research literature, providing theoretical insights into three important issues affecting community resilience, namely, the nature and observable dimensions of community resilience, the role of trust in community resilience, and the dimensions of an effective mental health response throughout the resilience-building cycle. Secondly, they either directly or indirectly allow a detailed understanding of the lived experience of flood-affected Gunnedah residents, their expectations prior to the event, experiences during and after it, and their hopes for the future.

There is evidence of significant resilience within sections of the community of Gunnedah, matched by commensurate levels of response and recovery assistance, both through official and unofficial/voluntary channels. Social networks – in the analogue sense – have been revealed to be as effective as formal processes for obtaining assistance at various times during the preparation, response, and – arguably – early recovery phases of the flood event. However, response levels largely reflected the quality and extent of the survey respondents' own connections. These in turn were largely dependent upon pre-existing relationships and communication channels.

Within this context, there is also evidence of significant confusion in terms of flood information, and its communication to the public. It is to be hoped that the former is consolidated, and the latter improved as a matter of priority, because frequently it is the same agencies that are regarded as both saviours and villains: this research simply reinforces earlier work that demonstrates a) how easy it is to lose a hard-won reputation for service to the community, and b) how difficult it is to repair community trust once it is lost.

Whilst self-reporting of mental distress during the flood emergency was not frequent within the survey data, the issue is known to be significantly underreported. Evidence from other disasters indicates the breadth and depth of this distress and its devastating and enduring consequences. Unprocessed trauma represents a major threat to personal and community resilience and must be addressed as a matter of priority. This research has established that it is never too early to commence this work, and the foundations must be laid under normal conditions, whilst being fully aware of, and prepared for surges during times of emergency (Figure 4).

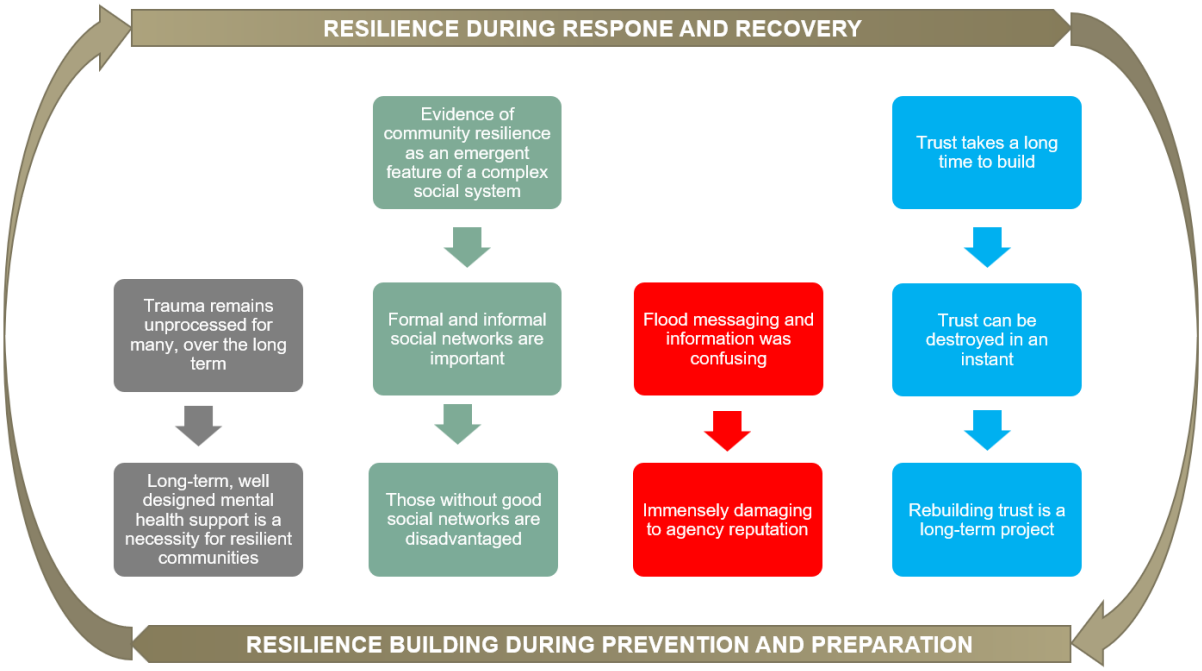

Figure 4. Implications of research for the DRR cycle in the Gunnedah community

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2 ANNEXURE 1

Determining Resilience using Psychological Principles in Gunnedah (Floods 2021)

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Contents

2.1 ABSTRACT

There are various ways of understanding resilience in Disaster Reduction. The ability to adapt and even grow in the face of survival hazards is referred to as resilience. The psychological resilience of people, when faced with disasters, has always been less explored. Although resilience is frequently shown, optimum responding goes beyond biological survival. The research is to determine the resilience of the community using three psychological principles of Reich, J. W. 2006; Control, Coherence, and Connectedness of the Gunnedah community. The rationale for this approach is that the resilience of the community is often reflected in the Social Behaviour and Responses of the community during disasters, hence, Disaster Planning should include Social and Psychological Principles in the Resilience plans of the community to reduce the impact of the Disasters during the phase of Response and Recovery. Using the three principles, the community's responses were analysed to understand the community's resilience to face the disaster for being resilient using various social cues of their responses.

The analysis disclosed that the community lacked Resilience in Gunnedah by revealing that the community had no Control, and no Coherence in the situation, while there have been circumstances where few families did have Control and Coherence during the Flood. However, the community has high Social Connectedness, which could be utilised as a strength while working on the other two; Control and Coherence in the Disaster Resilience Plans of the Gunnedah community (see Appendix).

Keywords: Resilience, Disaster Plan, Psychological Principles, Control, Coherence, Connectedness, Gunnedah.

2.2 INTRODUCTION

With the increase in Disasters, the importance of resilience has been a focus for a couple of decades. There have been various disciplines that are included in resilience; geography, climate change, ecology, infrastructure, Urban Planning, Emergency Management, and Social Sciences. Because the nature of current and growing Disaster challenges cannot be understood by a single field, current research on resilience has focused on the systemic interplay of social systems and ecological systems with non-linear feedback (Lorenz, D. F., 2013). In my opinion, Resilience is a relational notion that highlights the significance of a healthy relationship between Social Systems and their environment, which reflects prominently during Disasters and is reflected predominantly through Community voices.

Social systems are built upon the Psychological responses of the community. Current research demonstrates that resilient reaction to disaster is a frequent, if not dominant, response pattern. Building more formally on this knowledge would be beneficial for Disaster preparedness, and an empirically-based model of human resilience that is used in this report (Reich, J. W. 2006). Social systems in a

community are an amalgamation of Government services, citizens, Community groups, Organisations, Businesses, Volunteer groups, and Families. Each element's response to the disaster leads to determining resilience, and vice versa.

Australia is one of the most vulnerable countries with frequent Disasters occurring in place, one of which is Gunnedah. With established systems like in Australia, the communities in Australia are still working on Disaster Resilience. Certain structures of expectation within the community, interactions, and communication between the organisations and individuals for Disaster Response, preparedness of community, organisations, and government; through the community's perspective, are directly linked to Resilience, and often are the missing gaps in Resilience Planning. This report exposes fundamental missing pieces in Disaster Planning to achieve Resilience using Gunnedah as an example.

2.2.1 Problem Context and Statement

Today's complicated globalised, industrialised, and civilised society makes disasters an inescapable fact of life that we cannot avoid but can only be prevented. Floods have always been part of human life from the beginning (Math SB, et al., 2015), how is it then we as humans still been unable to deal with it with minimum losses? According to Miller, people are naturally able to bounce back from difficult situations and even improve their adaptive skills (Miller., 2006). Perhaps we lack understanding human mind and how it functions amidst floods. Climate change is only expected to be unpredictable (Crawford, K., 2018). A change in the processes of the earth's system, such as climate change, may be reflected in the rising impact of natural disasters (Davies, T, et. al., 2015). Nevertheless, this report argues that by adopting a fresh perspective on how to describe what we can know about future disasters, more can be done to lessen the effects of disasters at the community level. The existing disaster risk reduction (DRR) approaches fall short in their ability to help those who could be impacted by disasters by preparing them for action to lessen their effects (Davies, T, et. al., 2015).

Resilience-building strives to lessen the effects of upcoming Disasters on the inhabitants who live there permanently or temporarily. However, it is uncommon for these interest groups to be directly involved in the creation of Disaster prevention or Preparedness strategies. Even though there is frequently some level of consultation with local interest group representatives, as well as public meetings and focus groups, in many instances local community knowledge of societal and natural processes and their responses towards Disasters are not taken into account during the disaster reduction planning process (Davies, T, et. al., 2015).

How organisations and governments at the national and local levels should interact with one another has received significant attention in planning. There are, however, notably fewer discussions on how these should relate to individuals and communities (Reich, J. W. 2006). This report contends that incorporating support for people's

resilience within Disaster Preparedness is essential for its true effectiveness. The intersection of people and the social structures set up to support them should serve as the crucial point of contact for planning. Our disaster preparedness may be ineffective if we ignore the psychological and social capital that underlies human resilience. In every resilience plan, there is the inclusion of many disciplines, but it lacks the individualistic and community structure and their behaviour towards it (Reich, J. W. 2006). By determining the way the community responds and reacts, the community structure and systems could be understood. Through that understanding, building the resilience plan pans out easier.

This report takes a multi-disciplinary approach to understand the community's response and reaction towards the entire situation during the Disasters; Preparedness, Response, and Recovery. Their recorded responses are analysed to bring out flaws in the community structure and behaviour, which needs excessive work to achieve resilience. The following is the section that delves into the conceptual model which walks through analysis and eventually results.

2.3 Literature Review –Psychological Principles to determine Human resilience in Disasters

2.3.1 Methodology literature review:

UNDRR explains Disaster resilience as "The ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk management". In terms of Social Sciences, Disasters are described as the failure of future expectations due to their symbolic nature, while social resilience is defined as the ability of a social structure to prevent or survive disasters (Lorenz, D. F. 2013). According to Allen Barton, a disaster is ''when many members of a social system fail to receive expected conditions of life'' and results in a situation of collective stress (Barton, A. H. 1970).

Three social system capacities—adaptive, coping, and participatory—that makeup resilience (Lorenz, D. F. 2013) are discussed and used in connection to this. According to social science research, the "3 Cs," or *control, coherence, and connectivity*, are three fundamental tenets of Disaster resilience (Reich, J. W. 2006). Both these concepts are consumed to create the template for determining Flood Resilience in Gunnedah.

Having a guide and being keen to explore principles of social sciences, the systematic review of qualitative research is designed to be executed. With the help of Google Scholar using the term "Social Resilience in Disasters" was conducted

with no restriction of time, since the social interactions of human beings have been studied since the beginning of civilization (Holling, Gunderson. 2002). Following the search, the articles were screened and filtered in understanding Social Resilience in Disasters that were deemed fit (Manu, E., & Akotia, J. 2021). The analysis used the framework of the five primary steps for systematic reviews in the built environment; Formulate the research question, Locate the literature, Select and evaluate the literature, Analyse and synthesise the studies and, Report the review results (Kitchenham. 2004; Denyer, D. and Tranfield, D. 2009). Guided by the principles and methods, using the 3Cs of the psychological principles; Control, Coherence, and Connectedness, the absolved data is analysed for the reviewed results.

2.3.2 Themes synthesised from the literature review:

2.3.2.1 Control

The need for personal control in life has been proven by studies that those who hold this concept have greater levels of life satisfaction (Rodin, J., Timko, C. and Harris, S. 1985), reduced levels of depression, and longer lives (Reich, J. W. 2006). They exhibit superior cellular immunity and competence, reduced physiological stress reactivity, and better cognitive and motivational performance when given control over experimental stressors (O'Leary, A., & Brown, S. 1995).

This part of the human is analysed in; Ability to cope, the ability to make informed decisions and, Expectation of external help.

2.3.2.1.1 Ability to cope- Financially

The psychological effects of disasters can be deadly. Disaster response and recovery efforts are impacted by one's capacity to cope (Guterman, P. S. 2005). People who have been affected by a disaster must focus on restoring their way of life following the fulfillment of their urgent humanitarian needs. Similarly to this, those who live in disaster-prone places would recover faster if they could plan. Financial resilience, or how people access, accumulate, and protect their financial assets while limiting their obligations, is linked to households' capacity to rebuild their standard of living. (Jacobsen, K., Marshak, A., & Griffith, M. 2009).

Similarly, people who are prepared for disasters usually remain less affected financially due to the disasters. Hence, it makes it easier for people to bounce back better (Kunreuther, H., & Michel-Kerjan, E. 2011).

2.3.2.1.2 Ability to cope- Emotionally

The ability to cope emotionally reflects an individual/community's capacity to respond well, and recover quickly during disasters (Guterman, P. S. 2005). Human adaptation refers to the coping mechanisms people employ when faced with disasters, knowing their power to cope emotionally reflects people's resilience. (Lim, J. R., et al. 2019).

Scholars have developed "resilience" as a new important idea to change the debate to more positive terms and encompass the coping mechanisms of diverse groups and people (Zaumseil, M., et. At. 2014). Thus, the ability to cope as an individual/community reflects in Disaster Resilience by demonstrating control of the situation.

Researchers are now concentrating on how people cope cognitively and emotionally with various circumstances. However, there is a lack of studies on the coping mechanisms people use in response to disasters compared to Disaster Recovery (Lim, J. R., et al. 2019).

2.3.2.1.3 Ability to cope- Situationally

Situational characteristics are essential tools for overcoming challenges and building resilience in people. It strengthens feelings of belongingness and encourages healthy coping mechanisms to deal with ongoing difficulties in the wake of a disaster. Support from neighbours, family, relatives and other important sources helps survivors cope with the changes brought on by a disaster. Individuals may coordinate and react to the effects of a disaster collectively when they have a high level of collective efficacy. By designing the healing process, it maximises community solidarity, cohesion, and cooperation. It makes it possible for people to meet situational demands and speeds up the resilience process. Community integration enables interdependence, teamwork, and collaborative action to reduce the effects of unfavourable events and increase resilience (Panigrahi, G. S., & Suar, D., 2021).

2.3.2.1.4 Ability to make informed decisions

Making decisions is one of the most intricate and individualised human actions. Intellectual aptitude, memory, attention, focus, conceptual organisation, and elements of "executive function" including the capacity to organise, solve problems, and determine probabilities are fundamental elements of decision-making capacity (Rosenstein, D. L. 2004). Communities/Individuals with the power of making informed decisions present resilience. They respond quickly and take informed actions to protect themselves. It gives them control over the situation. Most of the time, this is also due to knowledge and practices being passed down through generations who have experienced similar circumstances during disasters (Rahman, A., et.al. 2017).

2.3.2.1.5 Expectation of external help

Personal Control demonstrates people having control over their situation needing no external help. Although assistance from organisations can provide for basic needs like food, housing, and healthcare, this "external support" has the potential to endanger people's feelings of control. (Reich, J. W. 2006). Vulnerable Individuals, and communities during disasters have different needs including expectations of external help. The expectation that a professional would always be on hand during a

disaster to knock on doors and offer evacuation advice raised some questions about the degree of confidence and dependence on emergency services among participants in the current study (Howard, A., et. Al. 2017).

2.3.2.1.6 Feeling of Hope

People with resiliency have kept hope until the end which demonstrates their control. To every individual, helplessness is the last resort (Peterson, C., et. Al. 1993). During disasters being hopeful reflects Disaster Preparedness (Reich, J. W. 2006). When researching individuals and communities, people's resilience arose from the attitude of 'I can, we can, I have factors that give hope to face the adversities such as disasters (Grotberg, E. H. 2001).

2.3.2.1.7 Coherence

People make symbolic connections between their history and present to make sense of unexpected events such as disasters. Similar to how chronic disease stories may create meanings and identities amid disruption, disaster stories can deepen our understanding of disasters and their effects (Tuohy, R., & Stephens, C. 2012).

Disaster response and recovery should concentrate on assisting individuals in establishing structure and order in their life on a mental and behavioural level. There should be systems and procedures in place to lessen ambiguity and to disseminate information, understanding, and knowledge as quickly as feasible. Uncertainty weakens resilience and is detrimental to effective adaptation. Cognitive clarity should be the main objective (Reich, J. W. 2006).

2.3.2.1.8 Cognitive clarity of Flood

Understanding how individuals think about issues—and, more crucially, how those interconnected cognitions affect people's behaviour—is made possible by social cognitive models of human cognition (Maduz, L., et. al. 2019). Evidence indicates that knowledge and experience with disasters affect preparedness. Exposure to disasters and the potential for effects in the future decreases optimistic bias and increases preparedness for recurring disasters. People gain knowledge through their experiences and the instruction they get. These lessons aid people in preparing for upcoming disasters. A community who has cognitive clarity is likely to respond better to disasters (Mishra, S., & Suar, D. 2007).

2.3.2.1.9 Prior information/knowledge fragmentation

Risk perception is proven to be influenced by prior disaster experiences as well as knowledge linked to disasters. There is evidence that preparedness behaviour is influenced by education and experience with disasters (Mishra, S., & Suar, D. 2007). According to the study, persons who create emergency plans often exhibit better levels of readiness knowledge. A person's cognitive, emotional, and behavioural attitudes about risk can also be shaped by prior exposure to or awareness of a disaster, involvement with disaster management organisations, interactions with their surroundings, connections within the community, and media (Maduz, L., et. al.

2019). It is not just an individual’s responsibility, but also the social system’s. Planning is required for effective preparation; before a disaster arises, it is the responsibility of community-based voluntary evacuation systems and disaster-prevention networks should be established to inform locals about the disaster, which is termed an early warning system (Nakamura, H., et. al. 2017).

2.3.2.1.10 Perceived certainties

According to research, families can go forwards with choosing preventive measures during disasters provided they are convinced how the threat should be interpreted (for example, the impact of a disaster's location). Individuals' decision-making has been demonstrated to be influenced by their perceived certainty about the disaster impact during the disaster response (Adjei, E., et.al. 2022). The methods to be used for issuing community warnings during the disaster response should then be specified in community preparedness plans to perceive certainties within the community (Mileti, D. S., & Beck, E. M. 1975).

To enable people and communities to recover as rapidly as possible, it is crucial to have a strategy and perceived certainties for possible disasters. Alternative dispute resolution can give these victims some sense of security when their lives are otherwise uncertain (Rindenow, A. 2022).

2.3.2.1.11 Community Established Structure

Every community is made up of a variety of organisations, including big, small, public, and private ones, which are involved in ongoing responsibilities in preserving communal life. A large number of community groups take responsibility by their organisational charter to participate in responsibilities during emergencies. The design of tasks for communities and its established structure to solve realistically is one of the major challenges of any disaster. Particularly in circumstances of disasters, other groups may also get engaged that didn't have a predetermined role. While certain jobs related to disasters can be completed by one person, the majority of such duties can only be handled through community established structures (Dynes, R. R. 1970).

2.3.2.2 Connectedness

When a disaster strikes, a person's demand for social connection is often at its highest. Social connectedness shines the brightest in those times. The need to be closer to the social group or an individual often is reflected in times of hardship (Reich, J. W. 2006). During times of hardship, increasing the quantity and quality of Citizen participation relates to Social connectedness, which relates to resilience (Samuel, K., et.al. 2018). In addition to significantly increasing a community's social and economic capital, volunteering also enables volunteers to actively participate in society to increase social connectedness (Bittman, M., & Fisher, K. 2006).

2.3.2.2.1 Social Connectedness

Community resilience is important in analysing how well a community is connected to respond to adversity, such as disasters (Madsen, W., & O'Mullan, C. 2016). Social networks and a learning environment provide social connectedness for social groups; friends, family, co-workers, and acquaintances as well as a larger network that operates beyond the place that makes up the members of the social networks. These networks are known to form bonds, bridges, and links between relationships (Poortinga, W. 2012). Researchers frequently highlight social networks and the degree of connectivity inside and across the networks as crucial components of community resilience. The stronger the community bond, the closer is the community to Disaster Resilience (Madsen, W., & O'Mullan, C. 2016).

2.3.2.2.2 Citizen participation/willingness to help during the Floods

Functionally strong communities have a reserve of resilience (adaptive capacity) that protects them against disasters (Onstad, P.A., 2012). Real community involvement in crisis management is necessary for fostering community resilience. Local forms of community involvement entail established communication channels and more precise information for decision-making in the uncertainty of a disaster, where reliable facts are hard to come by. Community resilience requires genuine community involvement in crisis management, whether it takes the form of their willingness to help, a partnership, delegated authority, or substantive public influence over policy creation (Stark, A., & Taylor, M. 2014).

2.3.2.2.3 Citizen participation in the community improvements post Flood

The advantages of the community participating in Disaster recovery decisions echo broader participation arguments, which emphasise how public involvement may make policy designs more sensitive to local challenges. The community is the one that faces a crisis, hence their willingness to participate in the growth matters. A community should be better able to withstand threats and adjust to unexpected events with the help of local and governmental, which should eventually enable citizens to effectively support the government by giving their participating in crisis response and recovery dynamics. This is possible when the community is well connected (Stark, A., & Taylor, M. 2014).

2.3.2.2.4 Community/Volunteer Organisations' offered help during and post-disaster

When a disaster does strike, the social network such as volunteer organisations in which each person is embedded transforms into a ready resource for resilience, increasing the person's capabilities and providing the relationships they need to get through the difficult times (Reich, J. W. 2006).

Following disasters, community and political organisations help disaster victims. The local government acts as a leader during an emergency, oversees the delivery of aid, plans and coordinates evacuations, and distributes supplies. They also aid post-

disasters in the restoration of the communities. During the response and restoration periods, local economic groups often play a significant role. Their efforts at this time are one of the key elements in a successful post-disaster recovery. Organizations with a large national influence are the best at determining the need for delivering prompt emergency relief. Many international relief organisations have discovered that national organisations are efficient partners for directing disaster help, their readiness to help determines the social structure of the society connected as a community (Cuny, F. C. 1994).

2.4 Findings and Discussion

The major findings from the analysis from Table 1 (in Appendix) were:

- The community lacked Resilience in certain parts (not all). With the right effort put, this community can achieve resilience while working on its flaws (which are as follows)
- The community showed strong Connectedness in the communities in terms of social connectedness, their willingness to help one another, and the community organisations were willing to help.
- The community showed no control over the situation; with no ability to cope, expectations from the community and government organisations to help. However, the community never lost hope during the crisis.
- The community showed no Coherence; they had no cognitive clarity of the crisis, improper/or prior knowledge of the floods, and didn't perceive the uncertainty. However, the community did have a community structure, be it informal or formal, in place.

Being consistent with the literature, the community's language during the Floods 2021 was 'asking for assistance. The systemic structure in Gunnedah is presented in such a way that when the crisis arises, the community expects help from the Established Organisations. Their ability to cope is dependent on these structures; hence they depend on the Organisations to help the community during a crisis. This leaves the community vulnerable since the Disasters are faced by the community, not the established organisations in place. Hence, it is important to strengthen the community by assisting them in having control over the situation and enabling them to be coherent with the Floods.

It is interesting that in the responses of the community, few families didn't require any assistance during the phase of Disaster Recovery, one of which responded to the question of having any ongoing issues of the Flood, "No, we have had seven floods since we moved in." The cognitive clarity in the family is high since their previous experiences of floods aided in their response during the 2021 Floods. However, the majority of the community requested assistance as though it was their

first time experiencing a flood. This draws two conclusions, the community is either too dependent on the Established Structures to help them during the crisis, or the community lacked Preparedness. This response impacted the community for the ability to make an informed decision. However, in Gunnedah, due to strong Connectedness, few families made informed decisions to cope during the Floods. The community faced frequent floods (as claimed by one of the families), and their perceived uncertainty remained high during the flood preparedness and response due to their lack of prior knowledge and/or unclear understanding, insufficient early warning, and individual circumstances of unexpectedness.

With the analysis in Table 1, it is prominent that some families had prior knowledge of the Floods, some did not, and few received mixed information that confused them. It is the social system's (established Organisations') responsibility for the information to be communicated to the community (Nakamura, H., et. al. 2017). However, the community in Gunnedah received a different set of communications, which portrays the chaos and unstructured communications to the community. The structured organisations and community need to improve the communication channels prior to the Disasters as a part of Disaster Preparedness for effective communication during the time of Disasters.

Through the analysis in Table 1, it is noticeable that the community found it difficult to cope emotionally, and financially, the community found it especially hard to cope situationally. Perhaps it is due to the unawareness of the Gunnedah community of the Disasters in their immediate surroundings. Despite being in different situations, the community had a hard time coping, which reflected their lack of situational attributes. The households in Gunnedah were also unable to manage the items that could be purchased with money, demonstrating their need for financial assistance through material requests such as medicine, food, lodging, pet care, and fuel, which reflects their lack of Preparedness in families and the community.

With such societal complexity, resilience could only be designed through understanding societal structures. Understanding community behaviour as a manifestation of societal complexity during times of crisis (disasters) speaks volumes to measuring the resilience of the community. New features of the interplay of coupled social and ecological systems are revealed as a result of this conception, but—and this is even more crucial—there are still a lot of untapped potentials for conception and Disaster preparedness or disaster mitigation. The concept of social resilience offers a framework for analysing and even framing change processes in terms of their meaning (coping mechanisms, adaptive and participative capacity) (Reich, J. W. 2006). As a result, it is possible to think of these three ideas as broad resistance resources that have a strong sense of coherence. The latter can be viewed as an example of a social system that is resilient, but which can only be understood if the symbolic aspect of meaning is not ignored. This is because the symbolic aspect is crucial for understanding how disasters result from the collapse of fundamental expectations.

2.5 CONCLUSION AND FUTURE DIRECTIONS

Disaster preparedness hence should include social structures and the community's responses towards these structures for Disaster resilience in Gunnedah. The community voice in Gunnedah speaks aloud on the flaws in the structures established in the community through their psychological patterns (responses) that are portrayed in the analysis of Table 1. It reflects the lack of resilience that is portrayed through their responses.

Interconnectivity is a trait of a resilient community. It should have both official and informal ties, as well as parallel and hierarchical relationships. This is social capital, which, like all other forms of capital, must be wisely invested in and managed to build up for eventual use. Like how food, water, and shelter are natural resources, these items likewise merit complete planning and development for use in Disaster scenarios. A population of resilient individuals is the foundation of a resilient community. These three guidelines can help us think through the most efficient ways to improve people's ability to naturally respond under pressure.

Moving ahead, the following are the directions proposed:

- A conceptual foundation for understanding human resilience in the Resilience Plans must be provided by an integrative model proposed, which also highlights particular domains and pertinent classes of responses where both short- and long-term well-being are most likely to be optimised.
- The Analysis for Resilience needs to include Systemic Behaviour and Social capital towards the disaster for better resilience.
- The community needs to improve Control and Coherence abilities to be included in the resilience plans to improve the community resilience as Disaster Preparedness.

2.5.1 Appendix

Table 1 Analysis

Theme	Concepts	Synonyms	Relevance Criteria	Passages extracted from the Gunnedah Data coded	Explanation
Control	Ability to cope- Emotionally	Disaster coping, Emotional manage, survival.	Did the community have the capacity to cope emotionally during Flood Response and Recovery?	"Require ongoing emotional support." Family/Individual's request for emotional support means they are unable to cope emotionally "Was very stressful. Having to put everything up in the house yard and shed. Leaving my house. Thank God I had help from one friend and my son." The community experiences stress but is thankful for the support. Reflects that they were initially unable to cope up Q- Do you have any ongoing issues after the flood? "No. We have had seven floods since we moved in." Demonstrates a family able to cope emotionally	The community in Gunnedah did experience emotional stress during the disasters (response). It is widely accepted to face emotional distress during the response. However, prolonged one demonstrates the community's inability to cope emotionally. The community in Gunnedah has constantly asked for emotional help, apart from one family who claims their previous experiences with floods gave them the energy to be prepared for the floods.

Theme	Concepts	Synonyms	Relevance Criteria	Passages extracted from the Gunnedah Data coded	Explanation
					However, the majority of the families in the community are not able to cope emotionally during Flood response, and recovery

Theme	Concepts	Synonyms	Relevance Criteria	Passages extracted from the Gunnedah Data coded	Explanation
Control	Ability to cope- Financially	Disaster coping, Financial manage, survival.	Did the community have the capacity to cope financially during Flood Response and Recovery?	"Daughter is following up disaster relief grant process, money in bank is burial money, don't want debt for family." This family needs financial support, which means they are unable to cope financially. "Money to fix farm" "I am aware council workers guarding road closures were paid 24hrs were pay big money, why couldn't council pay for the disinfectant and lime, as I believe they got disaster funding" Expectations of financial support for the damage demonstrate their inability to cope financially "I am still trying to get back to the financial position I was at in order to move forward in becoming a contributing community member." The community is unable to focus on their financial position "Medicine, food we had no landline	The community in Gunnedah requested financial or derivative financial help during the Disaster Response and Recovery. Materialistic requests such as medicine, food, accommodation, pet care, and fuel demonstrate that the families in Gunnedah are unable to cope with the materials that could be bought with finances, hence they needed financial help. In most of their responses, they express their inability to cope financially during Flood Response and recovery

Theme	Concepts	Synonyms	Relevance Criteria	Passages extracted from the Gunnedah Data coded	Explanation
				for two months." "Accommodation, pet care accommodation, fuel, food and compassion."	

Theme	Concepts	Synonyms	Relevance Criteria	Passages extracted from the Gunnedah Data coded	Explanation
Control	Ability to cope- Situationally	Cope, situational, awareness, Situational Attributes	Did the community have the capacity to cope situationally during Flood Response and Recovery?	"Our premises was surrounded by water - we could not get to it, neither could customers. We could monitor it via the security cameras". "Assistance with lifting things up from Council, SES, RFS or disaster committee like 44galon drums, or pallets." "Assistance with physical evacuation" "Lifting my household stuff, catching my chooks." "Longer time gather flood rubbish before the council did a collection as it took 3 weeks to clean up due to having to work." "Debris removal from both footpaths and road around outside of store and in our carpark, silt removal, cleaning services to get flood debris and mud out of our store, rubbish removal from the roads around our store, lime to reduce smell. Also, would have	Communities in Gunnedah were not situationally aware of the Disasters. The community struggled to cope situationally, although they were in different circumstances. Each of the circumstances proves that in the situations, the families and individuals found it difficult to gauge the circumstance and to cope with the reality. The community asked for help which reflects the inability to cope situationally.

Theme	Concepts	Synonyms	Relevance Criteria	Passages extracted from the Gunnedah Data coded	Explanation
				been helpful to know how safe the tap-water was for drinking. The water had a smell, so we only used it for cleaning. We brought in tank water for drinking until after New Year." "Due to torrent of water down our road our driveway washed away - impassable to cars - although a big four-wheel drive OK. My husband had to get loads of gravel delivered. Such a mess in paddocks and fences needed repairing. We blew a pump trying to keep water out of our levee bank." "Yes. The Firies put all my chairs out when they hosed my home out, and after the yard had dried out, I bought one of the chairs back to my kitchen table, when I sat in it collapsed and I ended up in hospital twice, my knees cracked as I went down and are still very sore."	

Theme	Concepts	Synonyms	Relevance Criteria	Passages extracted from the Gunnedah Data coded	Explanation
				“We are waiting for tradesmen to commence work to re surface our carpark, loading area to make it safe for forklifts and customers unloading and loading machines. We still need walls cleaned repaired and repainted and are awaiting quotes from tradesman for this. We are also likely to need to replace store fixtures - but watching to see if swelling in wood increases or stays as minor damage only.” “Having to replant my veggies and other garden all over. I lost a lot of plants and lots of stuff out of my shed.”	

Theme	Concepts	Synonyms	Relevance Criteria	Passages extracted from the Gunnedah Data coded	Explanation
Control	Ability to make informed decisions	Disaster decision, Community decision to Disasters, Quick thinking during disasters.	Were communities/individuals able to make informed decisions in Flood Response and Recovery	Q- Do you have any ongoing issues after the flood? "No. We have had seven floods since we moved in ." Demonstrates a family's ability to make informed decisions "Our own research from going through floods before. Had to help ourselves." Awareness and belief that they were able to help themselves reflect informed decisions "Friends assisted me greatly, lifting things up, contacted council on my behalf, assisted with my evacuation, welfare checks, passed on updates from the wireless, found second white goods." Reflects the community's ability to make informed decisions for reaching out to help during the time of crisis "Due to the fact that I had no knowledge as to how high the	Communities in Gunnedah have varied responses depending on their individualistic circumstances, Flood preparedness, and/or the cognitive clarity of the floods. Some had the ability and sources to make an informed decision to seek help, or evacuate on time, to respond to the flood to save their lives and/or with minimum damages. Hence, their ability to make informed decisions varied according to varied reasons and circumstances.

Theme	Concepts	Synonyms	Relevance Criteria	Passages extracted from the Gunnedah Data coded	Explanation
				flood peak could be I had been renovating my unit and got caught with a lot of equipment and material with no help to save it" A family's lack of information leads to making less informed decisions such as this. "Our Levee held through and we are thankful our house wasn't inundated with water. We stayed with a CWA lady for four days" The family had installed a levee to save their property reflecting their ability to make informed decisions by being prepared.	

Theme	Concepts	Synonyms	Relevance Criteria	Passages extracted from the Gunnedah Data coded	Explanation
Control	Expectation of external help	Expectation of External Help, Wanting of External support, Assistance.	Did the community/individual expect external help during the Flood Response and Recovery	"Assistance with physical evacuation" "I Still need help to get my fences up that were pushed over by the flood, I have not had any help or offers of help" "I live on my own. It would have been helpful to have had some help with Clean up. There was a lot of flood debris scattered around an under my unit and yard" "I am aware council workers guarding road closures were paid 24hrs were pay big money, why couldn't council pay for the disinfectant and lime, as I believe they got disaster funding." "More help would have been helpful" "A SES man told me it was not going to flood. I have access to BOM River heights and realised it would flood. I rang 132500 five	Gunnedah community expected the council, and established organisations to help them with Flood preparedness, response, and recovery. The expectations of the community are shown through their disappointment and anger towards the poor response and recovery of the Floods. It is also towards the poor knowledge and the poor early warnings of the floods.

Theme	Concepts	Synonyms	Relevance Criteria	Passages extracted from the Gunnedah Data coded	Explanation
				times asking for help email reply was “we don't do that!” "I would have liked to know what the Flood Height was going to be. And the SES at Wollongong when I asked for help to lift washing Machine etc told me that it wasn't their job to help lift my stuff" "The impact of the flood was increased and aided by the release of water from Kagail Dam. Surely now with the aid of modern technology the appropriate Government or state department would have been aware a long time prior to the giant covering of rain and weather forecast that heavy rains were possible and assertive action taken prior to this local widespread disaster taking place? I spoke to an SCS person who was monitoring the Namoi river height at Gunnedah prior to the river breaking its banks. I told him where I lived and asked to be updated in relation to proposed flood heights he said that it was	

Theme	Concepts	Synonyms	Relevance Criteria	Passages extracted from the Gunnedah Data coded	Explanation
				not their job to do that, I mean... Really?" "I am astounded Gunnedah Council didn't have in place a combined town emergency committee with community members on it. I called the Council, the lady said a committee is being formed not, that's a little too late. " "Assistance with lifting things up from Council, SES, RFS or disaster committee like 44galon drums, or pallets."	

Theme	Concepts	Synonyms	Relevance Criteria	Passages extracted from the Gunnedah Data coded	Explanation
Control	Feeling of Hope	I/We can, Hopeful, Helpfulness, not feeling lost.	Did the community retain the hope during 2001 Floods?	"Was very stressful. Having to put everything up in the house yard and shed. Leaving my house. Thank God I had help from one friend and my son." "I was cut off and isolated during the flood event. Vehicles and equipment had to be used and or moved out of flood reach. I had no idea as to how high or how devastating the flood would be." "Our own research from going through floods before. Had to help ourselves." "Lifting things and supplies. But we had to do everything by ourselves"	Although the community's responses to the floods were because they felt as though they have no choice, they never lost hope to survive the incident, and recover from it. They ensured to seek help when required, did their research to survive, and helped themselves. Hence, the community retained the feeling of hope during Flood Response and Recovery.

Theme	Concepts	Synonyms	Relevance Criteria	Passages extracted from the Gunnedah Data coded	Explanation
Coherence	Cognitive clarity of Flood	A clear picture of flood, well-prepared mind for floods, Clarity of Floods	Did the Gunnedah community have cognitive clarity of Floods during Preparedness, response, and recovery?	"I was cut off and isolated during the flood event. Vehicles and equipment had to be used and or moved out of flood reach. I had no idea as to how high or how devastating the flood would be." B) What information or assistance would have been helpful before the flood? "Any information would have been helpful." "Correct height and how fast it would rise." "An understanding of inundation areas at certain river heights would have allowed us the opportunity to plan our flood preparations better. Clear pathways/ phone numbers, agency contact details for assistance and advice would have been invaluable. We found SES to be unorganised, uncontactable mostly and not particularly helpful. They told us sandbags would be a complete waste of time - however sandbags would have saved our offices and staff lunchrooms"	The community in Gunnedah often felt they were not given enough information about the floods during Disaster Preparedness. They also felt isolated during the incident. They had no clarity on whom to contact and/or believe, confused communications during Disaster Response and Recovery except for one family that learned from their previous experience with Flood response and recovery. This demonstrates the rest of the families had no cognitive clarity through their previous experiences. This indicates the lack of cognitive clarity through Flood Preparedness,

Theme	Concepts	Synonyms	Relevance Criteria	Passages extracted from the Gunnedah Data coded	Explanation
				Q- Do you have any ongoing issues after the flood? "No. We have had seven floods since we moved in ." "On wireless, Rural Fire Service door knocked and advised to lift things up, Wallace said to prepare for 8 meters flood, lifted things up to 8m, then wireless advised 9m flood peak but was too late to lift things higher, council wouldn't permit road entry, was told it was too late and can't go down there." Confusion about which information to trust "Very little communication from SES, the left hand didn't know what the right hand was doing. RFS were far more visibly helping i.e. filling sandbagging for community to pick up an I believe some were dropped off to residents. " Confusion in the community to	Response, and recovery.

Theme	Concepts	Synonyms	Relevance Criteria	Passages extracted from the Gunnedah Data coded	Explanation
				seek help indicates their lack of cognitive clarity “None - there was a huge amount of conflicting advice coming from different agencies including Resilience NSW. Even staff within Resilience had different viewpoints and information. As a small business this is so frustrating. Eventually with assistance from [Local Member] we got some clear steerage to apply for grant assistance to help with repairs to our carpark/ loading area.” It is mentioned that they were conflicted as to which agency they ought to listen during the crisis.	

Theme	Concepts	Synonyms	Relevance Criteria	Passages extracted from the Gunnedah Data coded	Explanation
Coherence	Prior information/knowledge fragmentation	Information on floods, Flood preparedness, early warning systems.	Did the Gunnedah community have prior information and knowledge on Floods during Preparedness?	"Due to the fact that I had no knowledge as to how high the flood peak could be I had been renovating my unit and got caught with a lot of equipment and material with no help to save it." B) What information or assistance would have been helpful before the flood? "Knowing how much water was going to be released from the dam, and when, the effect on the already flooded river." "Height levels upstream? Peak times? Warnings of predictions" "An understanding of inundation areas at certain river heights would have allowed us the opportunity to plan our flood preparations better. Clear pathways/ phone numbers, agency contact details for assistance and advice would have been invaluable. We found SES to be unorganised, uncontactable mostly and not particularly helpful. They told us sandbags would be a complete waste of time - however	Flood preparedness in Gunnedah Community was poor since they had no proper prior warnings of the flood. The community was not Prepared since they had no knowledge to respond to the scale of Floods. They were also confused since the information from the various sources gave varied contrasting information. Hence, the community in Gunnedah didn't have clarity of the prior knowledge of the Floods during the Flood Preparedness

Theme	Concepts	Synonyms	Relevance Criteria	Passages extracted from the Gunnedah Data coded	Explanation
				sandbags would have saved our offices and staff lunchrooms" "We had to evacuate my son and myself on Saturday which could have been avoided if someone local had kept in touch. Every time we rang SES (five times that day) they kept saying there was no evacuation order for Gunnedah and wasn't predicted to be any higher than the week before." "On the Saturday night when major flood was approaching Gunnedah ABC TV was warning people in WA to prepare for a bushfire. Nothing in regard to a flood coming to Maitland and Gunnedah, river heights are essential info not minor flood or major flood. And it should be worked out who we can call for help."	

Theme	Concepts	Synonyms	Relevance Criteria	Passages extracted from the Gunnedah Data coded	Explanation
Coherence	Perceived certainties	No uncertainties, early warning systems.	Did the Gunnedah community have any uncertainties during Flood Preparedness, response, and recovery	"I was cut off and isolated during the flood event. Vehicles and equipment had to be used and or moved out of flood reach. I had no idea as to how high or how devastating the flood would be." "When I saw the flood water rising, I needed help to lift my Fridge Washing machine Mobility scooter Sit on mower my Bed and any other thing that the flood waters would wreck." "Due to the fact that I had no knowledge as to how high the flood peak could be I had been renovating my unit and got caught with a lot of equipment and material with no help to save it." "S.E.S. Blokes called and told me that it wouldn't flood." Confused information reflects their uncertainty during the Floods. Q- Do you have any ongoing issues after the flood?	The community in Gunnedah due to their lack of prior knowledge and/or confused knowledge, poor early warning, and individual circumstances of unexpectedness reflects the community's uncertainties during the Flood Preparedness, and Response. The community didn't know the extent of recovery help from the Local councils, Government, and Established organisations reflecting the community's uncertainness during Flood Recovery.

Theme	Concepts	Synonyms	Relevance Criteria	Passages extracted from the Gunnedah Data coded	Explanation
				"No. We have had seven floods since we moved in."	

Theme	Concepts	Synonyms	Relevance Criteria	Passages extracted from the Gunnedah Data coded	Explanation
Coherence	Community Established Structure	Organised Response and Recovery, Structured response, not isolated	Did the Gunnedah community feel the established community structure was in place for Disaster Response and Recovery?	"The community flood tips book that is being made now would have helped with numbers to call, knowing how others do things, use the showground facility for people to gather at a central point to see what was available i.e. lime, disinfectant." "I was cut off and isolated during the flood event. Vehicles and equipment had to be used and or moved out of flood reach. I had no idea as to how high or how devastating the flood would be." "I was separated from family and alone as a new town member. I lost electrical appliances including refrigerator, washer and laptop." "Friends assisted me greatly, lifting things up, contacted council on my behalf, assisted with my evacuation, welfare checks, passed on updates from the wireless, found second white goods."	The community in Gunnedah claimed to be confused as to which organisation to seek help from, but many of the families did receive help from structured organisations. This indicates the community had established structures. Most of the families in the community have sought help from their neighbours and friends during the flood response and recovery which indicates unestablished structures in place.

Theme	Concepts	Synonyms	Relevance Criteria	Passages extracted from the Gunnedah Data coded	Explanation
				"Fire and Rescue evacuated us. That's it - no one has contacted or been near us since (we are very thankful to them)." "RFS helped get our chickens out only after calling an assistance line." "Food, medicine And supplies from helicopter. Thanks to RFS and neighbours."	

Theme	Concepts	Synonyms	Relevance Criteria	Passages extracted from the Gunnedah Data coded	Explanation
Connectedness	Social connectedness	Social Network, Social connections, community connectedness.	Did the Gunnedah community have social connectedness?	"Friends assisted me greatly, lifting things up, contacted council on my behalf, assisted with my evacuation, welfare checks, passed on updates from the wireless, found second white goods." "Fire and Rescue evacuated us. That's it - no one has contacted or been near us since (we are very thankful to them)." "RFS helped get our chickens out only after calling an assistance line." "Food, medicine And supplies from helicopter. Thanks to RFS and neighbours." "I was separated from family and alone as a new town member. I lost electrical appliances including refrigerator, washer and laptop." "Support with essentials, knowledge of what was available in the community and community contacts."	Since the families in the community of Gunnedah were confused with the responsibilities of the structured organisations, they either helped themselves or seek help from their friends and neighbours for Flood response and recovery. Established structures also helped certain families with the Flood Response and Recovery. Hence, social connectedness in Gunnedah was a boon during the Floods.

Theme	Concepts	Synonyms	Relevance Criteria	Passages extracted from the Gunnedah Data coded	Explanation
				"A community meeting, I don’t listen to radio, letter box drop."	

Theme	Concepts	Synonyms	Relevance Criteria	Passages extracted from the Gunnedah Data coded	Explanation
Connectedness	Citizen participation/willingness to help during the Floods	Volunteering during floods	Did the Gunnedah community receive help from the community during Flood Preparedness, response, and recovery?	"Was very stressful. Having to put everything up in the house yard and shed. Leaving my house. Thank God I had help from one friend and my son." "Friends assisted me greatly, lifting things up, contacted council on my behalf, assisted with my evacuation, welfare checks, passed on updates from the wireless, found second white goods." "Council waste services – wasn't free for a few days, then was free. About 10 days later council announced they would collect flood waste kerbside. For hygiene and trauma impact, family and friends paid for waste in first two days, did not feel council was reliable and would help. " "Food, medicine And supplies from helicopter. Thanks to RFS and neighbours."	Families, friends, neighbours, and certain established organisations in the community helped each other during the Flood response and recovery, also early warnings of floods indicate the citizens in Gunnedah received help from the community during Flood Preparedness, response, and recovery.

Theme	Concepts	Synonyms	Relevance Criteria	Passages extracted from the Gunnedah Data coded	Explanation
				Q a) Where did you get information or advice the flood was going to happen and when it was happening? "Neighbours."	

Theme	Concepts	Synonyms	Relevance Criteria	Passages extracted from the Gunnedah Data coded	Explanation
Connectedness	Citizen participation in the community improvements post Flood	Showing interest post Flood for recovery.	Did the Gunnedah community participate during the community improvements post Flood?	"I am aware council workers guarding road closures were paid 24hrs were pay big money, why couldn't council pay for the disinfectant and lime, as I believe they got disaster funding." "I suggested to a Council Councillor, behalf of rate payers they should hold a public meeting in the park for debriefing to say thank you to emergency volunteers. " "If the SES is not interested in helping, who do you contact in an oncoming flood? I live alone and am 84 years old. Could there be a Gunnedah Flood Controller that will keep flood prone residents informed on what is happening where to go if they have to leave their homes, and certainly a Flood Recovery Help unit."	Citizens in the community seem concerned about the condition and visualize to improve. Citizens in the community's participation and suggestions to improve flood preparedness, response, and recovery indicate their willingness to participate in the improvements.

Theme	Concepts	Synonyms	Relevance Criteria	Passages extracted from the Gunnedah Data coded	Explanation
Connectedness	Community/Volunteer Organisations' offered help		Did the Gunnedah community receive help from the Local and/or Volunteer organisations during Flood Preparedness, response, and recovery?	"Fire and Rescue from Blue Mountains and Tamworth helped to wash away the flood on the property cement areas only, not allowed clean walls or yards." "Fire and Rescue evacuated us. That's it - no one has contacted or been near us since (we are very thankful to them) " "RFS helped get our chickens out only after calling an assistance line." "The Rural Fire Service crew were a big help, but not knowing how high the flood would come some things were not lifted high enough. My Mobility scooter." "Only my son and my SES buddies saying if I was OK. Thank you, guys, (I used to be in SES)." "A SES man told me it was not going to flood. I have access to BOM River heights and realised it	Citizens in the community of Gunnedah have contradicting thoughts about the community/volunteer organisations; such as RFS, SES, and Fire and Rescue. Some of the families expressed their gratitude to have received help from the organisations, however few others have expressed their anger and confusion towards organisations that have declined to help them during the flood response and recovery.

Theme	Concepts	Synonyms	Relevance Criteria	Passages extracted from the Gunnedah Data coded	Explanation
				would flood. I rang 132500 five times asking for help email reply was “we don't do that!” "The Volunteer Fire brigade were my guardian angels and hosed all the mud away. Big thank you." "Very little communication from SES, the left hand didn’t know what the right hand was doing. RFS were far more visibly helping i.e. filling sandbagging for community to pick up an I believe some were dropped off to residents. " "Council waste services – wasn’t free for a few days, then was free. About 10 days later council announced they would collect flood waste kerbside. For hygiene and trauma impact, family and friends paid for waste in first two days, did not feel council was reliable and would help."	

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3 ANNEXURE 2

Trust – the creation and loss during Disaster Preparedness and Response by Aid Organizations: A case study of the 2021 Floods in Gunnedah

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Abbreviations

NPOs – Not-for-Profit Organisation

NGOs – Non-Governmental Organisation

RFS – Rural Fire Service

SES – State Emergency Service

Figures and Tables

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3.1 Abstract

This research paper looks at how trust experiences were changed by the flood disaster in Gunnedah. The research question for this paper is how trust was created or lost during the disaster with focus on the preparedness and response phase. A literature review established the connection to disaster risk reduction and establishing the current trends in people's trust. Finally, trust was defined as being made up of competency, knowledge, intent, benevolence, and honesty. The research uses secondary data and thematic analysis to code and find themes in the data. This analysis resulted in three themes that could be found in the data which were the proactive behaviour of the affected, loss of trust during the preparedness phase and the use of social connections during the response phase. As a conclusion two recommendations are given based on the themes from Gunnedah. The first recommendation is to strengthen preparedness even more as the loss of trust was mostly during this phase and this will impact the rest of the disaster phases. The second recommendation is to focus more on training of staff in aid organisation as the trust was especially lost due to lack of knowledge and reliability. Further research suggestions are made to get a deeper understanding of trust experiences during disasters.

3.2 Introduction

3.2.1 Research Context

A basic level of trust is vital for human society to function with interpersonal trust being a precursor for better health, cognitive and social functions, and close relationships (Rotenberg, 2010). If this basic trust is lost or shaken by an event, people turn to blind trust. In this state leadership is not questioned and groups are easily manipulated and can in the worst case even lead to violence (Volkan, 2004). Trust always comes with an expectation between the two parties, trustee and trustor, and a certain understanding that the second party is necessary to achieve a goal. Social rules enforce these expectations and the creation of trust as they dictate how a certain person, group or agency should react, or rather what action they are supposed to undertake (Vallier, 2019). In a disaster situation this trust is placed in government, emergency organisation or other volunteers. This can lead to citizens relying on outside help more than necessary and wishful thinking of what the external actors can do to help. The trust is placed in them because the citizen understanding is that they are responsible for their protection (Seebauer & Babcicky, 2018).

Trust in Australia has increased across the board during the Covid pandemic unlike a lot of other countries. Government could increase its level by 25% while public services had an increase of more than 15% (Evans, Jennings, Stoker, & Valgarðsson, 2020). This shows that during disasters the level of trust can be highly

impacted, not always as positively as in Australia. Through this context of trust, it's impact and changes in Australia, the Gunnedah floods must be understood and studied.

3.2.2 Research Importance/Gap

Trust as a concept is important for the discipline of disaster risk management as the more trustful a community is the more resilient it is. This is also because trusting communities are better prepared as they follow official advice more often (Eisenman, et al., 2012). Trust also influences which communication channels are used which will have an important impact on how disaster risk is communicated (Williams, Valero, & Kim, 2018).

Previous research has established that different disasters have different impacts on human trust. Floods were part of this study but their impact on trust was seen as inconclusive (Toya & Skidmore, 2013). This research will proof further how multiple flood events impact people's perception of trust and how these have been altered by the experience with the use of Gunnedah as a case study. This will be done by providing more evidence of human experiences that have been sorted by sound research analysis. Most trust studies have focused on post-disaster situations and not the time before or during the event (examples of this are Nakayachi, 2015; Akbar, 2017) which this research will do. The established concept of trust within the disaster resilience field will be applicable to for further research in this field.

3.2.3 Research Question

How was trust created or lost during the Gunnedah flood preparedness and response phase?

This leads to the following sub questions:

- Is there a difference in people's experience of trust between the response and preparedness phases?
- Who were people relying on in the face of a disaster?

3.2.4 Aims and Objectives

The aim of this research is to identify shortcomings of governmental or NPOs to build trust before or during the disaster in Gunnedah to inform future preparedness and response schemes. This will impact the whole disaster cycle as more trusting communities are also more resilient.

Objectives

- To observe current trends in public trust towards GOV and NPOs and establish how these trends are linked to the creation of trust.
- To develop a clear understanding of what trust is and how it is created.
- To identify how trust was created or lost during the Gunnedah Flood

- To inform future preparedness and response strategies to increase trust.

3.2.5 Research overview and Limitations

This research project covers the impact on trust in the Gunnedah flood only during the preparation and response phase of the disaster. This limits the study to a particular place, time and disaster as experiences of people will vary. However, the concept of trust established within this paper will be applicable to other disaster research.

The project is limited by the size of this research paper. The outline for this paper defines the word count, time and research possibilities which all define the possibilities for research. The idea behind this project is therefore to provide a starting point for others and further research is suggested in the conclusion (Akanle, Olusola, & Shittu, 2020).

3.3 Literature Review

The literature review will be split into three sections. The first is on Disaster Risk management and how trust correlate while the second tries to establish trends in trust. The final section is on trust creation itself, how trust is defined and established and the different dimensions of it. A summary in the form of a diagram can be found at the end of this section (Figure 1).

3.3.1 Disaster Risk Management

Disaster Risk Reduction is on the global political agenda at least since the adoption of the Sendai Framework. Within it the cycle between preparedness, response, recovery and finally rehabilitation is highlighted however the only step of the way that has its own priority is preparedness. The framework recognizes that preparedness if done right will have positive impacts on the other three which is defined in Priority 4 (United Nations Office for Disaster Risk Reduction, 2015). While trust is not mentioned in the Sendai Framework, a review of trust and risk perception has resulted in the conclusion that there is a strong correlation between the two however it depends on specific situations. The correlation seems to be strongest when people have limited knowledge of the risk or hazard but having it would be valuable to them (Siegrist, 2019).

3.3.2 Trends in people's trust

Citizens have an expectation in what their government should do economically but also socially. High expectations that governments are unable to meet will lead to a decline in confidence which in turn lowers trust. A visible trend across the globe is the rising dissatisfaction with governments of at least 60% everywhere (Cheema, 2010). Other studies however find this much less certain, concluding that there is not enough data to state this decline definite but rather point to a constant fluctuation in trust levels especially across a longer time period. Public services have been understudied for trends in trust towards them to have a conclusive opinion (Van de

Walle, Van Roosbroek, & Bouckaert, 2008). As governments have received votes by their citizens the expectations are increased that they will behave in their best interest and failure is therefore punished harder than for non-elected agencies (Funnell, Jupe, & Andrew, 2009). On the other side we have non-Governmental organisations which can include charities, volunteer organisations and private organisations. All of them have in common that they provide services to help individuals, communities, or the environment. Australia takes fourth place in the ranking of the number of employees in this sector and ranks highly in the World Giving Index which measures how much citizen engage with this sector through donations or volunteering time (Levitt, 2012). In general, the loss of trust in the public sector is due to inefficiency and not keeping promises. This failure might be perceived rather than an actual governmental decline as citizens expectations standards and short-term information dictates a lot of their opinion of their elected leadership (Funnell, Jupe, & Andrew, 2009). A shift away from institutional trust to network-based trust was observed by another cross-discipline comparison of trust research (Rousseau, Sitkin, Burt, & Camerer, 1998). This shows how long trend in trust are already observed and the many different results that are presented within the field.

3.3.3 Trust

Trust is vital in all stages of disaster risk management. From who people choose as their source of communication (Williams, Valero, & Kim, 2018) to who we think deserves our disaster aid donations (Weng, Woo, Cheng, Ho, & Horowitz, 2015) or becoming a closer more trusting community due to frequent disaster exposure (Toya & Skidmore, 2013). Yet trust is not a tangible thing that can easily be understood. It's a dynamic experience which means it's not constant and can change. Trust is also multifaceted in the sense that many factors influence it simultaneously (Tschannen-Moran, 2014).

Trust is made up of different elements like competency, knowledge, intent, benevolence, or honesty (Gabarro, 1978; Butler, 1991; Tschannen-Moran, 2014; Hult, 2018; Arceneaux, 2022). To then understand trust, these terms must be understood first. Competency simply is the ability to do a certain task. Knowledge, behaviour, and a person's characteristic make up this ability. Competency can and should be measured to ensure people are in the right roles and provide targeted training (Kuruba, 2019).

Honesty is about character and integrity. Telling the truth, never breaking promises, accountability, all establish honesty. Honesty is about walking the talk which links to reliability and expectations being fulfilled (Tschannen-Moran, 2014).

Benevolence as defined by Krot & Lewicka (2012) is doing favours for others, altruism and acting with consideration. They also defined integrity as a final pillar for trust creation which is expressed through shared values and abiding by an agreed set of rules. Another differentiation this study makes is between vertical and horizontal trust (Krot & Lewicka, 2012). Vertical trust is also often called political trust

and is to someone with greater power, who is above oneself in the hierarchy. Horizontal or social trust is one the same hierarchical level to people and communities. They have been shown to have some causal relationship where loss in trust was felt much more across both trust dimension than gains (Eek & Rothstein, 2005). Vertical trust in this research can be found by government aid agencies and horizontal trust NPOs that are more associated with volunteers. Another dimension of trust often referred to is general trust which is the concept that people generally are trustworthy. While this has a positive effect on cooperation, it's impact on risk perception is negative (Siegrist, Gutscher, & Earle, 2005; Siegrist, Luchsinger, & Bearth, 2021).

Vulnerability is the connecting factor between the disaster risk management and the trust research. Trust is most important in situation where one is dependent on someone else which automatically brings with it a degree of vulnerability. The lack of control, risk and dependence on help mean that trust must be put into someone else, outside oneself, and give them the power for betrayal or otherwise not meeting expectations (Rousseau, Sitkin, Burt, & Camerer, 1998; Tschannen-Moran, 2014). However, if they fulfil the expectations, trust might increase (Tschannen-Moran, 2014).

3.4 METHODOLOGY

3.4.1 Conceptualisation of Research

This research project focuses on human experiences and therefore phenomena as lived through by the research participants. Phenomenology as a philosophy and research approach is a qualitative way of describing phenomena. It gives quotes and written statements to reduce the human experience to its core meaning as an objective (Sloan & Bowe, 2014).

There are two branches of phenomenology, but this research will follow the hermeneutic one as it accepts the fact that the situation cannot be ignored when looking at human experiences. They are formed by the lives and therefore an individual's ideas and background. This is important for this research as trust creation will highly depend on people's expectations of aid agencies, which will have been formed by their world views (fore-having, fore-sight and fore-conception) (Wojnar & Swanson, 2007).

3.4.2 Qualitative Research

Qualitative research aims to explain an outcome by studying what led up to it. Individual cases are studied to better understand them instead of prioritizing the average outcome. This combined with the use of observations and a small sample size, make qualitative research more appropriate in this case (Goertz & Mahoney, 2012).

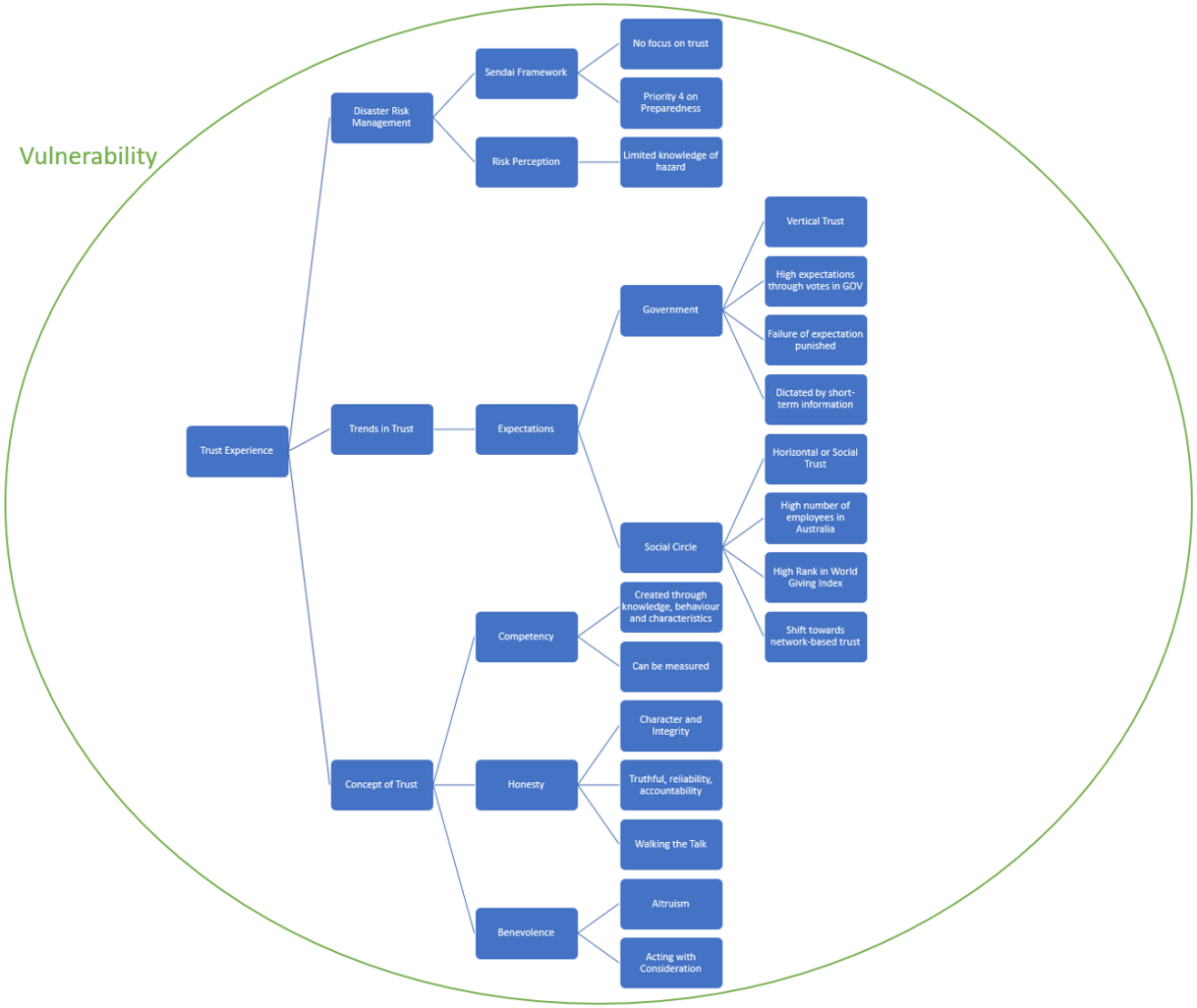

Figure 1: Summary of Concepts

3.4.3 Data Collection

3.4.3.1 Secondary Data

The articles used in this research were mainly sourced from the university library to ensure quality of the data. It is important to check authenticity when using secondary data, keeping in mind why it was produced and by who (Sahu, 2013). Secondary research can offer many benefits from being a quicker and cheaper research methods to avoiding that research participants get overwhelmed and tired by the number of questions (Manu & Akotia, 2021).

3.4.3.2 Secondary Data Analysis

To analyse the provided survey data by Gunnedah Family Support a thematic analysis was used. Thematic analysis gives structure to data but also allows for interpretation of meaning (Braun & Clarke, 2006). It is essential to find similarities and overarching concepts to establish the link to further research.

Thematic analysis is a very flexible tool that works well with a small sample size, like there is for the Gunnedah floods, but also different research methods. Together with a concept of trust creation, thematic analysis can be used to identify patterns and underlying, less tangible ideas within the data. The data is having high levels of subjectivity and personal experiences which thematic analysis work well with as it can find connections and links between the different responses but also the wider literature (Clarke & Braun, 2017). The thematic analysis is done by using a colour coding method. A code is a word or phrase that captures the essence of what has been said. Therefore, codes in this research were used to label and describe the statements made by the people participating in the Gunnedah Faily Support survey. The Table below shows a summary of the applied codes and the colour in which they have been coded in the data. This is to provide an overview of the analysis that can be compared and is a way to organise the data (Saldaña, 2013).

3.4.3.3 Limitations of Methodology

Limitations to this methodology can especially be found in the use of secondary data as that can present certain challenges. As the data is collected without this research in mind, it often doesn't come in the right format or answer the questions proposed for the secondary research. The use of other people's data also means the researcher has less context which might hinder the analysis. Another issue is that the limitations of the primary data collection are unknown to the secondary researcher (Manu & Akotia, 2021). In this case a survey questionnaire was used. In general, these can be difficult as people try to present a certain way to the researchers and might therefore alter their answers accordingly (Boyce & Neale, 2006). They also have a low response rate which means the study group needs to be bigger to mitigate this (Michaelidou & Dibb, 2006). The questions also need to be simple as once sent out they cannot be further explained to participants, so any misunderstandings need to be avoided. As they require written responses people

don’t elaborate as much as they would while talking (Gillham, 2007). As the collection or the primary data was not part of this research it is important to use trusted sources, as mentioned before.

3.4.3.4 Ethical Considerations

No primary research was done, and data was received already anonymized by Gunnedah Family Support, so no privacy was breached. Ethical considerations are therefore lower than in primary research, but the data was collected from human participants by Gunnedah Family Services which means some ethical considerations apply. These people have agreed to the flood survey but not directly to the data being used further for this research project (Hasan, 2021). The data was shared with the university specifically for the purpose of using it in research with explicit consent by Gunnedah Family Services. The de-identified data set will not be shared beyond the nominated people to protect the respondents further. It is important to give any stakeholders in this research (i.e., Gunnedah Family Support) the chance for a debriefing and enable contact to the researcher should they have any concerns about how their data is used in this research project (Barbour, 2008).

Table 1: Codes

Literature Review Concepts	Code		Explanation
Disaster Risk Management	1.1 Risk Perception	1.1.1 Limited knowledge of hazard	If knowledge is missing, people need to rely on trust (Siegrist, 2019) This could be trust in oneself, community, or organisations
Trends in Trust	2.1 Government	2.1.2 Vertical trust	Also called political trust, to someone with a greater power, higher ranked on a hierarchy (Eek & Rothstein, 2005)
	2.2 Social Circles	2.2.1 Horizontal/Social Trust Network based trust in disasters	Same hierarchical level, people and community (Eek & Rothstein, 2005; Rousseau, et al. 1998)
Concept of Trust	3.1 Competency		Can be measured, created through knowledge, behaviour and character (Kuruba, 2019)
	3.2 Honesty		Character/integrity, telling the truth, reliability, accountability (Tschannen-Moran, 2014)
	3.3 Benevolence		Altruism, doing favours and acting with consideration (Krot & Lewicka, 2012)

3.5 RESULTS

The thematic analysis of the data resulted in three overarching themes which will be discussed in more detail. Exemplary quotes from the data will be used to explain the themes further using the words and rhetoric as it was found in the data set.

3.5.1 Risk perception – proactive behaviour versus personal knowledge

The first theme that stood out in the Gunnedah Flood Survey data was the fact that a lot of affected people commented on how they had to become proactive to receive any information at all during the flood. The comments not only highlighted the behaviour the affected study participant found in themselves, namely trying to reach out for help, but also the unresponsiveness by the aid agencies they tried to call with one commentor stating, *"I rang 132500 five times asking for help email reply was "we don't do that!""*. (Gunnedah Family Support, 2021) The clear exaggeration in the statement is also a sign of the frustration people felt by their calls going nowhere. Another comment was, *"… we had no contact from anyone else until we contacted SES …"* (Gunnedah Family Support, 2021) which also expresses feeling of being left alone in their helplessness. This was grouped in with risk perception as the connection according to the literature between this and trust is the lack of knowledge. This theme was mostly found in responses during the preparedness phase of the flood but did appear during the response phase as well. They were used in this section to either comment on the lack of preparational information they received when calling or on the lack of proactive assistance like the following quote by one survey participant summarises who said, *"RFS helped get our chickens out only after calling an assistance line."* (Gunnedah Family Support, 2021). This behaviour was also countered by other respondents who clearly completely relied on themselves for help like the quote *"Our own research from going through floods before"* (Gunnedah Family Support, 2021) to the question of where they got information from shows. This shows there two distinct groups in the affected which first would be people that had previous experience and therefore personal knowledge to put trust into and the second group of people that had a lack of knowledge and therefore were proactive in reaching out for help.

3.5.2 Loss of trust during Preparedness

The previous theme links in with this second section of trust, as defined in the literature review, being negatively impacted especially in the preparedness phase of the flood. This was especially as competence and knowledge of the aid agencies, especially SES was found to be lacking during the disaster but also honestly as the information given was not the reality people experienced. Two comments from the survey that summarise this stated, *"S.E.S. Blokes called and told me that it wouldn't flood"* and *"A SES man told me it was not going to flood. I have access to BOM River heights and realised it would flood. …"* (Gunnedah Family Support, 2021). SES was not only criticised for not having the right information on the flood but as another commented *"no idea of even where we were and names of rivers etc. …"* (Gunnedah

Family Support, 2021). The aid agencies were described as “hopeless” or *“unorganised, uncontactable mostly and not particularly helpful”* (Gunnedah Family Support, 2021). Benevolence, as another pillar of trust, was also lacking during this process as people were only told by agencies that they weren’t responsible for the help they needed instead of trying to support them. This was summed up perfectly by a survey participant that stated that the reply they received was just *“we don’t do that”* (Gunnedah Family Support, 2021). In summary the trust experience was negative due to missing helpfulness and altruism from agencies and their misinformation or lack of knowledge.

3.5.3 Use of social circle during response

Unlike the influence the preparation stage had on trust, the results during the response phase produced the theme that was much more concerned with the dimension of trust. While respondents did mention their social networks during the preparation phase occasionally as sources of information, it was the main source of aid during the flood. While most people did not receive any help, the ones that did mentioned friends, neighbours and or family as this one quote sums up perfectly that says, *“Only my son and my SES buddies saying if I was OK.”* (Gunnedah Family Support, 2021). While they mentioned an agency, it is notable that it was only their friends that contacted them. But also wider social circles were mobilised with one stating *“We stayed with a CWA lady …”* (Gunnedah Family Support, 2021). The Rural Fire Service was the one agency that was found in positive responses during this disaster phase like people stating that *“Rural Fire Service crew was a big help, …”* or *“Thanks to RFS and neighbours.”* (Gunnedah Family Support, 2021). The others weren’t mentioned which shows the that vertical trust was basically not existent as this would be towards government aid agencies while the horizontal trust was shown through the expressed reliance on help by the RFS.

3.6 Discussion

The problem that disaster risk reduction has that trust is needed especially in situations of vulnerability. Disasters are only created through that vulnerability, as the definition of them shows (International Federation of Red Cross and Red Crescent Societies, 2021).

The trust research has identified some of the main pillars of trust experience which have been discussed in the literature review section. The ones that appeared in the research data in Gunnedah were capacity, knowledge, and honesty, especially in the form of reliability. If honesty is about walking the talk as Tschannen-Moran (2014) identified, then the SES or RFS are losing credibility and trust by not being prepared for a disaster. People expect them to be the emergency contact with resources so they have a heightened image of what these organisations can and should do during a disaster. As Funnel et al. (2009) said governmental organisations have a harder time fulfilling expectations from citizens and are punished much more for it by them

when it comes to believing in them. People tried to call multiple times a day to get answers, but this led nowhere which also impacts the perceived reliability of the service. Not only experienced people dishonesty about what the aid organisations could do (or what was expected to do but also in the form of unreliable information. Multiple commentors made a remark about getting wrong information from SES. This is shows that two further elements of trust, knowledge and capacity, were not demonstrated during the Gunnedah flood.

This leads to the next point of people's use of their social circle instead of emergency organisation for aid during the response phase of the disaster. Literature on disaster response shows that citizens are very effective first responders as think very rational during the disaster. It also slits the disaster response for citizens further into alarm stage where citizens make decisions based on information, they receive from expert sources but also further information from their social network. Afterwards is the acute stage and which is also shown to have a lot of altruism by citizen respondents that are all willing to help (Helsloot & Ruitenberg, 2004). There are two main question this raises, which firstly is whether this use of the social circle is just due to proximity. A next-door neighbour can provide help much quicker than any organisation ever could. The second question is however much more important for this research into the trust experience as it questions whether people rely on social trust because their institutional or vertical trust has already been damaged during the preparedness phase? As researched by Eek & Rothstein (2005) the causal relationship between horizontal and social trust means they are connected in their losses and to a lesser extend gains. To this extend it can be assumed that if vertical trust is lost during the preparedness phase the trust experience overall is eroded having a negative impact on social trust, yet people still reach out to their social network and not organisations. Maybe the explanations for this lies in the research of vulnerability and trust (Rousseau, Sitkin, Burt, & Camerer, 1998; Tschannen-Moran, 2014). This might not have been an active choice, but the lack of control and the imminent risk led to dependence on other people as the situation became unmanageable. It could also show support for Rousseau et al. (1998) theory that trends in trust are moving towards a network-based trust rather than an institutional one.

Which then leads to the final discussion point of whether the focus by Sendai to give preparedness the focus in its own priority was right all along (United Nations Office for Disaster Risk Reduction, 2015). This is also unlike most of the research into disaster and trust which has so far focused on the aftermath of disasters (see (Nakayachi, 2015; Akbar, 2017).

Sendai and Priority 4 focus on preparedness however never mention trust in their report they only recognize that good preparedness unsurprisingly has a positive effect on all other stages (United Nations Office for Disaster Risk Reduction, 2015). This research shows that experiences of trust are negatively influenced during the preparedness phase. According to the research review by Helsloot & Ruitenberg (2004) one of the reasons people have a lower risk perception is due to the

information coming from an unreliable source or a source they lack confidence in. This is in line with the research done by Siegrist (2019) who also found that trust and risk perception have a correlation. The issue of risk perception is also not discussed by the Sendai Framework which might be a shortcoming of the framework as the idea between risk perception and preparedness is well established (Helsloot & Ruitenberg, 2004) (for further research see Kuhlicke, 2010; Netzel, Heldt, Engler, & Denecke, 2021). People that have experienced disasters previously often have a lower risk perception as they have "managed" before so they assume this time is no different (Kuhlicke, 2010). Some people in Gunnedah showed tendencies for that as well when relying only on themselves as a source of help and information.

3.7 Conclusion

3.7.1 Overview

This paper has presented a concept of trust experience which was then used to thematically analyse data from the survey done by Gunnedah Family Support after the floods in 2021. Three overarching themes have been discovered through this process which were the proactive behaviour by the effected people during the preparedness stage of the disaster which was also were most negative impact on trust could be found which was explored more in the second theme. The last finding was that during the response phase people relied much more on their social circle than on aid agencies which was connected to the wider debate on citizen first aid and connected to previously lost vertical trust.

3.7.2 Recommendations

To limit the negative impacts of disaster on trust experience the first recommendation is to strengthen preparedness management even more as it impacts all other stages. The Sendai Framework already recognizes this connection, but this research shows that in Gunnedah the preparedness stage still lowered people's trust in aid agencies by them being unprepared and unreliable.

The second recommendation is linked to the previous one as the trust experience was especially harmed by the lack of knowledge and reliability from aid agencies. As defined in the literature review competency and knowledge are measurable guides. More effort and resources need to be put into the training of staff and volunteers which needs to be reviewed by regular measuring of the improvement in this field.

3.7.3 Further Research

In connection to the recommendation that can already be implemented more knowledge is needed in to understand the intersectionality of trust and disasters.

Possible further research includes the study of how people decide who they ask for help in a disaster. As this paper has shown the response phase saw a lot more reliance on social networks but it cannot definitely state whether this was due to lost

trust in the preparedness phase of due to proximity of social connections i.e., neighbours.

Another route for possible further research is people's expectations as they impact trust if they are fulfilled or not. As suggested by Funnell, et al. (2009), people expect more from elected institutions than from private organisations. Further research could explore whether that is also the case for governmental aid agencies versus volunteer-based groups.

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3.9 APPENDIX

Coded Data

a) Where did you get information or advice the flood was going to happen and when it was happening?

Facebook community pages

- S.E.S. Blokes called and told me that it wouldn't flood.
- BOM and my son who works on the council.
- Higgins Storm Chasers - they have the most accurate information. We have followed them for years. BOM and SES were hopeless.
- Other people.
- Neighbours.
- On wireless, Rural Fire Service door knocked and advised to lift things up, Wallace said to prepare for 8 meters flood, lifted things up to 8m, then wireless advised 9m flood peak but was too late to lift things higher, council wouldn't permit road entry, was told it was too late and can't go down there.
- Our own research from going through floods before. Had to help ourselves.
- On the Internet.
- A SES man told me it was not going to flood I have access to BOM River heights and realised it would flood. I rang 132500 five times asking for help email reply was "we don't do that!"
- Facebook - we had no contact from anyone else until we contacted SES - each time they had no idea of even where we were and names of rivers etc. we asked to speak to locals and they wouldn't allow it unless we put a distress call in.
- Internet or radio. I had no contact from the SES or council staff to advise me or to monitor the impact of this flood event
- Didn't get any. I was listening continuously on 2MO and ABC radio there was nothing.
- 2MO radio and the water in the big hole we have lived on the north side of the river for 38 years

B) What information or assistance would have been helpful before the flood?

- More information about supports that would be available.
- I would have liked to know what the Flood Height was going to be. And the SES at Wollongong when I asked for help to lift washing Machine etc told me that it wasn't their job to help lift my stuff.
- Correct height and how fast it would rise.
- Water level signs at end of each street, even use road signs to display water levels like a ruler 8m, 9m as a guide to know to what level to lift things up, different streets may have different levels.
- The community flood tips book that is being made now would have helped with numbers to call, knowing how others do things, use the showground facility for people to gather at a central point to see what was available i.e. lime, disinfectant.
- An understanding of inundation areas at certain river heights would have allowed us the opportunity to plan our flood preparations better. Clear pathways/ phone numbers, agency contact details for assistance and advice would have been

invaluable. We found SES to be unorganised, uncontactable mostly and not particularly helpful. They told us sandbags would be a complete waste of time - however sandbags would have saved our offices and staff lunchrooms.

- Knowing how much water was going to be released from the dam, and when, the effect on the already flooded river.
- Any information would have been helpful.
- SES and council assistance.
- More help would have been helpful.
- Flood heights. I received assistance from the RFS but that was because my daughter rang [name removed] They came and lifted my fridge, washing machine, mobility scooter, sit on lawn mower, caught my chooks, bed.
- Height levels upstream? Peak times? Warnings of predictions?
- Regular updates by SES or council staff either directly or indirectly as information becomes available. Perhaps a register of the affected could be set up so that up-to-date information could be distributed during these times.
- The anticipated height and time.

a) What help did you need during the flood?

Support with essentials knowledge of what was available in the community and community contacts

- Showground facility or information hub to open for people to gather as a central point, to see what was available i.e. lime, disinfectant, other services.
- Assistance with lifting things up from Council, SES, RFS or disaster committee like 44galon drums, or pallets.
- Assistance with physical evacuation.
- When I saw the flood water rising, I needed help to lift my Fridge Washing machine Mobility scooter Sit on mower my Bed and any other thing that the flood waters would wreck.
- Lifting things and supplies. But we had to do everything by ourselves.
- Our premises was surrounded by water - we could not get to it, neither could customers. We could monitor it via the security cameras.
- Up to date river information and flow expectations would have been helpful, also information about clean up services – i.e. road cleaning, debris cleaning up, lime availability, professional cleaners for flood clean up contact details all would have been fantastic as we could then have organised clean-up crews ahead of coming back in after water receded.
- No assistance.
- Food.
- Accommodation, pet care accommodation, fuel, food and compassion.
- It was a waiting game.
- Lifting my household stuff, catching my chooks.
- We had to evacuate my son and myself on Saturday which could have been avoided if someone local had kept in touch. Every time we rang SES (five times that day) they kept saying there was no evacuation order for Gunnedah and wasn't predicted to be any higher than the week before.

- Due to the fact that I had no knowledge as to how high the flood peak could be I had been renovating my unit and got caught with a lot of equipment and material with no help to save it.
- Didn't need help.
- Medicine, food we had no landline for two months..

b) What help did you receive during the flood?

- None
- The Rural Fire Service crew were a big help, but not knowing how high the flood would come some things were not lifted high enough My Mobility scooter.
- Nothing.
- None.
- Na.
- Nothing.
- Friends assisted me greatly lifting things up, contacted council on my behalf, assisted with my evacuation, welfare checks, passed on updates from the wireless, found second white goods.
  RFS helped get our chickens out only after calling an assistance line
- Only my son and my SES buddies saying if I was OK. Thank you, guys, (I used to be in SES).
- I was rescued from my home in a rubber ducky by SES the rural fire blokes lifted my household stuff up the fire brigade hosed the mud sludge out of my home.
- Fire and Rescue evacuated us. That's it - no one has contacted or been near us since (we are very thankful to them)
- Our Levee held through and we are thankful our house wasn't inundated with water. We stayed with a CWA lady for four days.
- None. Nil. Zip. Zero. After the event the fire brigade offered to wash down my driveway.
- Food, medicine And supplies from helicopter. Thanks to RFS and neighbours.

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4 ANNEXURE 3

What are the Design Considerations for Effective Mental Health Response in the Aftermath of Disaster?

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4.1 ABSTRACT

The increased incidence of disasters has resulted in an increased morbidity due to exposure to traumatic events. A significant proportion of disaster survivors will experience disaster-related health problems that include substantial physical and mental trauma with complex psychopathological sequalae, including post-traumatic stress disorder and depression. To provide adequate care for mental health issues, and support recovery and resilience in survivors, there needs to be an effective mental health response that is fully functional in the aftermath of disaster. This research identified several design considerations for an effective disaster mental health response. The data analysis revealed that the key design considerations are related to the mental health service delivery requirements and administration of the disaster mental health response.

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4.2 INTRODUCTION

The frequency and ferocity of disasters is rising extraordinarily, with often compounding events causing widespread and repeated devastation across both developed and developing nations (Rouhanizadeh, Kermanshachi, & Nipa, 2020). The increased incidence of disasters has resulted in an increase in morbidity caused by exposure to these traumatic and life altering events (Fergusson, Horwood, Boden, & Mulder, 2014). Beyond social, economic, and environmental consequences, exposure to disasters has significant implications on human health (Makwana, 2019). Disaster-related health problems can include substantial physical and mental trauma with complex psychopathological sequalae (Crompton, 2019).

Psychological distress, post-traumatic stress disorder (PTSD), depression and complex grief are commonly reported mental health issues following disasters (Fergusson et al., 2014; Palinkas, O'Donnell, Lau, & Wong, 2020). Mental health disorders and illnesses result in functional impairment affecting social and occupational functioning amongst disaster survivors and communities (Foa, Stein, & McFarlane, 2006).

The complexity of mental health issues makes diagnosis, referral, and treatment difficult, especially in the aftermath of disasters when there is a breakdown of business-as-usual services. This is further compounded by other barriers to care such as low mental health literacy and concerns about confidentiality (Kantor, Knefel, & Lueger-Schuster, 2017). The breakdown of services challenges the accessibility and availability of mental health services in times where there is a need to rapidly increase the capacity of services to cope with a surge in demand (Palinkas et al., 2020).

The provision of psychosocial support and early mental health screening, referral, and care is required to address the needs of people and communities exposed to disasters, support recovery and build resilience (Rosenberg, Errett, & Eisenman, 2022). There is no evidence of a comprehensive disaster mental health service or model of care that delivers effective, evidence-based mental health care in response and recovery from disasters in New South Wales. Therefore, many disaster survivors are not receiving timely and adequate interventions. This thematic analysis identified several design considerations for effective mental health response under disaster conditions. The aim of this research was to identify and describe the different characteristics and requirements of evidence-informed approaches to appropriate psychological and mental health care for individuals and communities impacted by disasters. This preliminary research is aimed to inform future implementation science research that will improve the quality and effectiveness of disaster mental health services and care.

4.3 METHODS

A qualitative scoping review was conducted on literature that has investigated the effectiveness and impacts of addressing mental health needs in disaster response. Literature searches of databases including Ovid MEDLINE and Emerald Insight were conducted using keywords in the title and/or abstract: “disaster mental health” OR “mental health” OR “mental health services” AND “disaster response”. Search results were limited to the following parameters: English language, journal article, full text availability. No strict date parameters were applied although resources published between 2012 through to 2022 were favoured. Additional resources were found from citations within article references.

General searches were conducted using Google Scholar using keywords “disaster mental health” OR “disaster psychiatry” with date parameters set between 2012-2022. Resources were filtered using abstracts followed by full text evaluation and included for analysis if they addressed mental health care responses during and in the aftermath of disasters.

A scan of publicly facing websites including NSW Health, all New South Wales Local Health Districts, and Primary Health Networks located within NSW was conducted to identify and review current policy and procedures for mental health referral and disaster mental health response. This scan informed the current standard of care and services available specifically in the context of disaster recovery.

The data analysis process was exploratory and followed an inductive approach which enabled meaning to emerge from the data as the analysis progressed (Burnard, Gill, Stewart, Treasure, & Chadwick, 2008). This analysis sought to identify thematic patterns across the data and was conducted following the methods described by Castleberry and Nolan (Castleberry & Nolen, 2018). An emergent coding scheme enabled the exploratory identification of descriptive themes. These descriptive themes were used to inform the analytical themes that identified the design considerations for the adoption and implementation of effective mental health responses in the aftermath of disaster, during response and recovery stages.

4.4 RESULTS

This study identified several design considerations for the development for an effective mental health response under disaster conditions. A total of 32 papers were included in the review. The key design considerations that emerged from the thematic analysis are shown in Table 1. A conceptual framework, demonstrating the relationships between the design considerations, is shown in Figure 1.

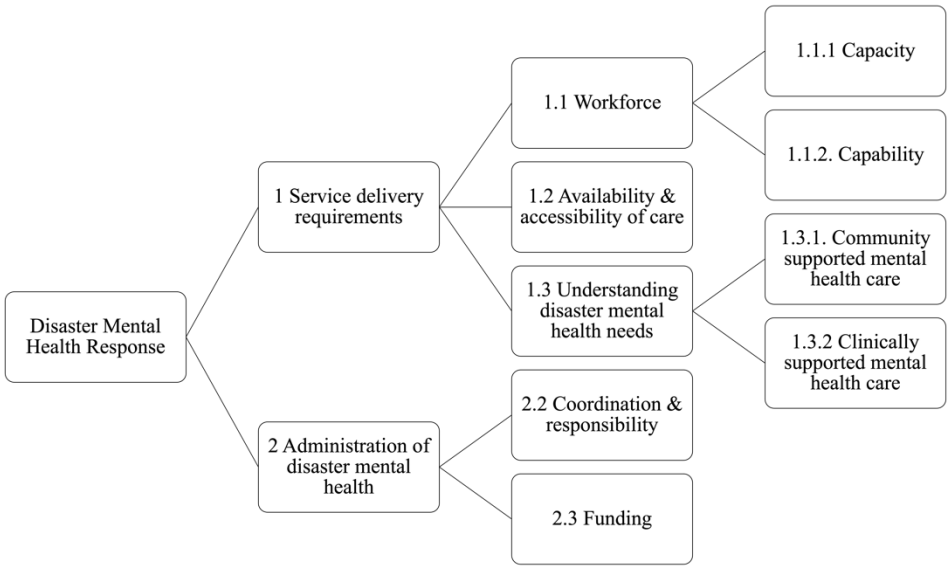

Figure 2 A conceptual framework of design considerations for an effective disaster mental health response

4.4.1 Service delivery requirements

Mental health services, that are publicly funded and administered by government departments of health, operate at capacity under steady state conditions. Existing services, which do not currently meet the existing burden of disease (Ciobanu et al., 2018), cannot be expected to meet the surge in demand in the aftermath of disasters. An effective disaster mental health response must consider the capacity and capability needs across the mental health workforce and establish disaster mental health as a unique clinical discipline (J. J. James, 2014). These actions will support planning and preparation for disaster mental health service delivery.

In addition to workforce considerations, service delivery must consider the models of health service delivery that are implemented to facilitate the efficient use of limited resources (McDermott & Cobham, 2014). A stepped care approach for mental health is based on a system of hierarchy interventions from the least to most intensive. This approach could be supported by multidisciplinary teams made up of community first responders, disaster mental health professionals, and mental health clinicians to increase availability and accessibility of services.

4.4.2 Workforce considerations

4.4.2.1 Workforce capacity

A responsive workforce is required to deliver an effective disaster mental health response, however there are significant challenges with resourcing unpredictable events such as disasters (Green, Spivack, Khaki, O'Donnell, & Bailey, 2018). Workforce planning for rapid surges in demand that overwhelm local capacity need to be developed by health administrators and include strategies for rapid redeployment and backfill of personnel (G. S. Everly, 2021; Green et al., 2018; Lurie & Carr, 2018).

On a number of occasions specialised disaster mental health teams have been established to screen, triage, and provide targeted outreach programs in response to disasters (Brewin et al., 2010; Petrsoric, Miller-Archie, Welch, Cone, & Farfel, 2018). For example, in Japan dedicated Disaster Psychiatric Assistance Teams have been established to provide mental health services in disaster affected communities. These teams have the capacity to respond to rapid surges in demand for mental health services in disaster affected areas (Kunii et al., 2022). Furthermore, following the Great East Japan Earthquake in 2011, Disaster Mental Health Care Centres were established to provide essential long-term mental health care for disaster affected communities (Fukuchi & Chiba, 2022).

Workforce capacity needs to consider responses to disseminated events whereby disaster impacted individuals return home following disaster exposure. In such events, centrally coordinated outreach programs may offer targeted support and care and referral to local services (Green et al., 2018). In certain circumstances telehealth could be enabled to strengthen workforce capacity without physical relocation of personnel (Lurie & Carr, 2018).

Lastly, there is an opportunity to build capacity within communities to respond to disaster mental health needs locally and immediately by facilitating community administered psychological first aid (Shultz & Forbes, 2014).

4.4.2.2 Workforce capability

Effective preparation, response and recovery from disasters requires a planned and coordinated effort that is resourced by experience personnel, with specialised knowledge and skills (G. S. Everly, 2021; Kunii et al., 2022). Disaster mental health trained personnel, with knowledge to understand the unique effects and comorbidities associated with disaster related trauma, are required to assess, and treat impacted individuals (Fukuchi & Chiba, 2022; Morganstein & Ursano, 2020; Norwood, Ursano, & Fullerton, 2000). There is a need to develop core disaster mental health competencies and continuous professional development programs that build workforce capability in disaster mental health response (G. S. Everly, Jr., Beaton, Pfefferbaum, & Parker, 2008; King, Burkle, Walsh, & North, 2015).

There is a defined need for both first responders and healthcare personnel, including mental health clinicians, to be involved in disaster mental health (Adelman, Fant, Wood, & Zak, 2019). First responders, such as paramedics, provide a frontline response to mental health care in the community and play a key role in assessing, treating and managing mental health conditions (Ford-Jones & Daly, 2022). Nurses also play a key role in disaster response, therefore there is a need to build their capabilities in disaster planning, preparedness, response, and post-disaster care within nursing (Adelman et al., 2019). Furthermore, first responder training in crisis intervention, such as psychological first aid, has demonstrated positive psychological outcomes for disaster survivors (G. S. Everly, Jr. et al., 2008; Shultz & Forbes, 2014). Lay mental health workers are broadly used in mental health care to deliver evidence-based treatments (L. E. James, Welton-Mitchell, Noel, & James, 2020).

Disaster mental health care needs to consider individual and community trauma be delivered using principles of trauma informed care. The delivery of trauma-informed care prevents re-traumatisation of survivors and can support recovery and resilience (Cherry, Gibson, & SpringerLink, 2021; Javakhishvili et al., 2020).

4.4.2.3 Availability and accessibility to disaster mental health care

Survivors of disasters need immediate access to specialist care that responds to both physical and mental health needs (Adshead, Canterbury, & Rose, 1995). Mental health is an essential service that delivers a wide range of community and clinical healthcare interventions. It is important to understand what types of mental health support, care and evidence-based interventions are required under disaster conditions. Furthermore, adequate prioritisation, planning and preparation of services and resources is required to ensure availability, accessibility, and continuity of care under disaster conditions. Assessments of clinical and community need must consider the broad scope of behavioural and psychological reactions to disasters and understand how mental health services are used by disaster-exposed individuals (Ghafoori, Barragan, & Palinkas, 2014). The availability and accessibility of appropriate interventions increases the likelihood of resilience and recovery (Forbes, Creamer, & Wade, 2012).

Disaster mental health responses must provide different services and interventions at different stages of response and recovery. Therefore, disaster mental health services must evolve over time as the community's needs change and services are restored or become available (Norris, Tracy, & Galea, 2009). For example, following disasters, survivors may seek out their own support networks but later they will require social, psychological, and mental health support. On this note, mental health services need to be flexible, well-coordinated and integrated into existing primary and secondary healthcare services (McFarlane & Williams, 2012; Petrsoric et al., 2018). Long-term service planning is required to facilitate continued care and follow up to support disaster recovery and resilience (Fulton, Drolet, Lalani, & Smith, 2020).

4.4.2.4 Understanding disaster mental health needs

Understanding disaster mental health needs at the individual and community level will facilitate the development of effective models of care that are socially and culturally appropriate, locally supported and accessed, and sustainable. Needs assessments can identify mental risk factors and vulnerabilities and prioritise strategies to reduce risk and build resilience prior to disasters happening. There is evidence from disaster recovery research that women, children, and elderly people are at high risk of experiencing mental health problems following disaster exposure (Fukuchi & Chiba, 2022; Goldmann & Galea, 2014; Le Roux & Cobham, 2022; Tang, Liu, Liu, Xue, & Zhang, 2014). Therefore, disaster mental health strategies should be developed to support these high-risk groups.

Individuals with a history of mental illness have a high risk of symptomatic relapse (Morganstein & Ursano, 2020) and those with existing mental illness have reported exacerbated symptoms under disaster conditions (Osborne & G. Sibley, 2013; Ruzek, Young, Cordova, & Flynn, 2004). Previous and repeated exposure to disasters was found to be associated with increased mental health symptom severity (L. E. James et al., 2020). Locations that experience frequent disasters need to plan and prepare for ongoing disaster mental health care. These findings highlight the importance of addressing mental health needs of individuals and communities as part of disaster preparedness and building resilience.

4.4.2.5 Community supported mental health care.

Primary disaster mental health responses should focus on establishing safety (Gunderson, Crepeau-Hobson, & Drennen, 2012), followed by interventions that promote sense of safety, calming, a sense of self- and community-efficacy, connectedness and hope (Hobfoll et al., 2007). There is evidence that these behavioural interventions have fostered community resilience within disaster affected communities (Fulton et al., 2020; Gunderson et al., 2012). Behavioural interventions can be delivered with psychological first aid within the community (Shultz & Forbes, 2014) by non-mental health trained responders (McFarlane & Williams, 2012).

Early support, care, and interventions need to address functional impairment and support the recovery of social and occupational functioning amongst disaster affected individuals (Forbes et al., 2012; Morganstein & Ursano, 2020). This level of community based mental health care is sufficient for most disaster survivors who experience temporary psychological distress however further, more specialised, mental health care is required for survivors with persistent psychological impairment that is resistant to early community-based interventions (Le Roux & Cobham, 2022).

4.4.2.6 Clinically supported mental health care

While community supported care is vital in providing early care, there is a need to deliver evidence-based clinically supported mental health care to disaster survivors who are not responsive to early community-led interventions such as psychological first aid. Disasters cause serious psychological harm to a minority of survivors. It is these survivors that require specialist mental health care and support delivered by trained mental health clinicians (Bonanno, Brewin, Kaniasty, & La Greca, 2010).

People with elevated levels of psychological distress may develop complex mental illnesses such a major depressive disorder, anxiety, complex grief, and post-traumatic stress disorder (Osborne & G. Sibley, 2013). Mental illness is a condition that seriously impairs a person's mental functioning, either temporarily or permanently (Norris et al., 2009; Townsend & Luck, 2009). Mental health patients have complex histories that can be difficult to treat and manage and require specialist mental health care to support recovery (Goldmann & Galea, 2014; Townsend & Luck, 2009).

Targeted outreach programs for disaster-specific mental health care have been facilitated by the formation of registries and screen and treat models. These programs have demonstrated success in ensuring that individuals with mental health issues such as PTSD and depression received evidence-based interventions (Brewin et al., 2008; Petrsoric et al., 2018). When screen and treat models have been implemented, they have appropriately triaged and referred patients to appropriate care (Brewin et al., 2010). Screen and treat models have also enabled care for individuals who would not otherwise seek out help for mental health problems after disasters (Fukuchi & Chiba, 2022; Green et al., 2018). In Japan it was identified that individuals who didn't self-refer or seek help had higher levels of psychological distress (Kunii et al., 2022). Furthermore, it has been identified that only a small proportion of people with PTSD will seek treatment (Goldmann & Galea, 2014). There is also a possibility that disaster survivors would judge their post-disaster reactions as normal and not requiring mental health support (G. S. Everly, 2021; Petrsoric et al., 2018). In some cases, individuals have developed psychological symptoms one year after exposure to disasters (Bonanno et al., 2010).

4.4.3 Administration of disaster mental health

An effective disaster mental health response requires robust administration, defined responsibility, coordinated deployment of resources and funding (Fulton et al., 2020).

4.4.3.1 Coordination and responsibility

Coordination and responsibility for disaster mental health responses is required for successful and sustainable implementation. In NSW legislation is currently in place

for both the management of emergencies (disasters) and mental health but there is limited information about how these two acts are implemented for disaster mental health management.

Disaster mental health coordination should be centralised and administered by the agency responsible for the delivery of health services and be integrated into existing infrastructure and networks. The coordination of disaster mental health needs to be comprehensive and adaptive to emergent and changing needs.

Coordinating agencies and actors who provide mental health care and psychosocial support is one of the biggest challenges following a disaster (Fulton et al., 2020). A recognised organisational and governance structure is critical in determining responsibility for coordination and administration of disaster mental health responses (Adshead et al., 1995).

Governance frameworks can guide interprofessional collaboration between institutions and agencies involved in disaster relief, response, and recovery by identifying key roles and responsibilities of individual actors.

4.4.3.2 Funding

Funding for mental health services and programs is required for a minimum of five to seven years post disaster to enable recovery with continued care. There is evidence that disaster survivors will continue to seek treatment for up to 14 years post disaster (Petrsoric et al., 2018). Funding often ends before recovery is achieved (Fulton et al., 2020). In Japan, disaster reconstruction budgets allocate funding for mental health care centres in disaster impacted communities (Kunii et al., 2022).

Table 2 *Key themes identified in thematic analysis of samples literature.*

Theme [example]	n[a]	Publication
Service delivery requirements		
Workforce capacity [*Workforce planning to meet surge in demand for mental health care*]	8	(Green et al., 2018), (G. S. Everly, 2021), (Lurie & Carr, 2018), (Brewin et al., 2010), (Petrsoric et al., 2018), (Kunii et al., 2022), (Fukuchi & Chiba, 2022), (Shultz & Forbes, 2014)
Workforce capability [*Specialised knowledge and skills in disaster mental health; competencies*]	11	(G. S. Everly, 2021), (Kunii et al., 2022), (Fukuchi & Chiba, 2022), (Morganstein & Ursano, 2020), (Norwood et al., 2000), (G. S. Everly, Jr. et al., 2008), (King et al., 2015), (Adelman et al., 2019), (Ford-Jones & Daly, 2022), (L. E. James et al., 2020), (Cherry et al., 2021)
Availability and accessibility to disaster mental health care [*Address barriers to care; timely and specialised*]	7	(Adshead et al., 1995), (Ghafoori et al., 2014), (Forbes et al., 2012), (Norris et al., 2009), (McFarlane & Williams, 2012), (Petrsoric et al., 2018), (Fulton et al., 2020)
Understanding disaster mental health needs [*Address risk factors and vulnerabilities prior to disaster and prioritise care in aftermath*]	8	(Fukuchi & Chiba, 2022), (Goldmann & Galea, 2014), (Le Roux & Cobham, 2022), (Tang et al., 2014), (Morganstein & Ursano, 2020), (Osborne & G. Sibley, 2013), (Ruzek et al., 2004), (L. E. James et al., 2020)
Community supported mental health care [*Considerations for immediately available mental health support and survivors with transient distress*]	8	(Gunderson et al., 2012), (Hobfoll et al., 2007), (Fulton et al., 2020), (Shultz & Forbes, 2014), (McFarlane & Williams, 2012), (Forbes et al., 2012), (Morganstein & Ursano, 2020), (Le Roux & Cobham, 2022)
Clinically supported mental health care [*Considerations for survivors with serious and persistent psychological illness]*	12	(Bonanno et al., 2010), (Osborne & G. Sibley, 2013), (Norris et al., 2009), (Townsend & Luck, 2009), (Goldmann & Galea, 2014), (Brewin et al., 2008), (Petrsoric et al., 2018), (Brewin et al., 2010), (Fukuchi & Chiba, 2022), (Green et al., 2018), (Kunii et al., 2022), (G. S. Everly, 2021)
Administration of disaster mental health		
Coordination and responsibility [*Organisational structure with clarify of coordination and responsibility; adaptive*]	2	(Fulton et al., 2020), (Adshead et al., 1995)
Funding [*Adequate funding to facilitate mental health care response in short and long term*]	3	(Petrsoric et al., 2018), (Kunii et al., 2022), (Fulton et al., 2020)

[a] *number of publications reporting the theme*

4.5 CONCLUSION AND IMPLICATIONS

This study assessed the importance of disaster mental health and identified several design considerations for the development for an effective mental health response under disaster conditions. An effective disaster mental health response that supports good mental health may encourage disaster preparedness, and in turn, preparedness may encourage good mental health by decreasing feelings of anxiety and helplessness (Welton-Mitchell, James, Khanal, & James, 2018).

To safeguard an effective mental health response under disaster conditions the health services need to ensure adequate access and availability of care is provided under normal, steady state conditions. There are many current challenges and pressures on the public health system to adequately respond to service demands for mental health care. Effective mental health services need to be available before the occurrence of disasters, with coordinated planning and preparedness to respond to surge demands in the aftermath of disasters. The demand for mental health services surges following disasters and therefore health systems need to be agile in disaster response and service delivery (Palinkas et al., 2020).

To meet escalating demands, there needs to be increased funding for services and additional training of mental health care professionals. Workforce capacity was identified as an important design consideration for effective disaster mental health response however there may be additional challenges to meeting surge demands if there is no workforce to deploy. Therefore, there is a need to build capacity and capability within the community and broader clinical workforce to develop skills to support disaster mental health response. Measures to facilitate increased capacity and capability need to focus on creating funded positions for specialist disaster mental health practitioners, including disaster mental health clinicians, including psychiatrists, psychologists, and nurses.

Understanding disaster mental health needs and having knowledge of risk factors and vulnerable groups prior to disasters can support the allocation and organisation of resources following disasters. In the case of mental health response this would result in prioritising care towards people who have an existing diagnosis of mental illness, a history of mental illness, women, children, and elderly people. Several approaches to screen, triage and treat disaster survivors have demonstrated positive health outcomes. These measures have overcome commonly perceived barriers to care and ensured access and referral to mental health care. Certain initiatives, such as disaster registries, have enabled long-term care and follow up of survivors which is critical to achieving recovery and building resilience.

Disaster resilience needs to be inclusive and address critical vulnerabilities within societies to be effective and mitigate disaster risk. There is an urgent need to empower and support resilience within people and communities by providing appropriate and effective mental health care to bounce back better and recover from disasters with enhanced capacity and preparedness for future hazard events. There

is an urgency to build resilience due to the increased frequency of sequential disasters leading to compounding social and economic losses and increased vulnerabilities. Therefore, an effective disaster mental health response is essential to achieving disaster resilience.

4.5.1 Limitations

Several limitations need to be considered for this study. Firstly, this research was conducted within strict time constraints. Due to time constraints the qualitative scoping review was not exhaustive and used broad search terms to identify as many papers as possible. No date limits were set on the publication year however articles published between 2012 and 2022 were preferentially selected for the review.

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