Natural Hazards Research Australia

Summary report: Community experiences of the 2022-2023 Australian floods - South Australia, Victoria and south-western New South Wales

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We acknowledge the Traditional Custodians across all the lands on which we live and work, and we pay our respects to Elders both past, present and emerging. We recognise that these lands and waters have always been places of teaching, research and learning.

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Cover: October 2022 Flooding - Image via Greater Shepparton City Council

RMIT University, Macquarie University, Monash University and Natural Hazards Research Australia

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End-user statement

"Before this project began, Victoria State Emergency Service already had anecdotal insights from the 2022 floods. We knew that our warnings weren't fully hitting the mark- they needed to be more timely, more tailored, more relevant and more accessible. Victoria State Emergency Service received Disaster Ready funding to deliver *Consequence-based Intelligence Driven Warnings*, directly informed by the findings of this research. This project aims to ensure flood warnings are provided for defined areas based on impact and potential consequences more tailored and relevant to communities.

When I was asked, when looking at a problem statement, 'do we actually have evidence to support this?' I could confidently say that we did."

Melanie Gill, Senior Advisor Warnings and Information – Victoria State Emergency Service

Introduction

The 2022-2023 floods were among the most devastating natural hazards in recent history, causing widespread destruction and significantly impacting communities across different states in Eastern Australia. Building upon seminal research previously conducted in New South Wales (NSW) and Queensland (QLD) (Taylor et al., 2023), and Tasmania (TAS), this project examines the experiences of communities affected by the 2022-2023 floods in Victoria (VIC), South Australia (SA) and south-western NSW[1]. In these locations, the flood manifested in two distinct patterns: slower-onset riverine flooding characterised by gradual water level rises over weeks that predominantly affected SA, and (relatively) rapid-onset[2] flooding where intense rainfall led to much faster water level rises within a few days and severe impacts in VIC and NSW. In response to these events, Natural Hazards Research Australia (NHRA), in collaboration with key stakeholders, initiated a comprehensive research project to better understand the diverse experiences of communities affected by the floods.

The purpose of this document is to present the detailed research implications from this research. Therefore, only a summary of the findings is presented in this report. The reader is encouraged to see the final report for this project (Kuligowski et al. 2025), which provides details pertaining to the findings from each work package and the findings within cross-cutting themes (across all three work packages). The final report also provides additional context on the flooding event and details on the research methods for each work package.

Three distinct but complementary Work Packages (WPs) were formulated to achieve the goals of this project. Work Package One (WP1), led by Macquarie University, employed a large-scale survey to capture the perspectives of individuals and communities directly impacted by the floods in VIC, SA and south-western NSW. This quantitative approach provided a broad overview of the flood impacts, documenting the varied experiences of residents across these regions. The survey sought to understand how different demographic groups experienced the floods, including their prior flood exposure; impacts and losses; information, warnings and communication; risk; actions taken during the floods; clean-up and recovery efforts; support received; current living conditions; and future plans.

Work Package Two (WP2), led by Monash University, focused specifically on the experiences of Aboriginal communities, including residents, organisations, and Traditional Owner groups. The primary objectives of WP2 were to: 1) understand the experiences of Aboriginal people, as residents, Traditional Owners, and Aboriginal community-controlled organisations, during and after the 2022-2023 floods; 2) identify Aboriginal priorities in post-flood recovery efforts; and 3) determine if, and in what ways, the experiences of Aboriginal people differed from those of non-Indigenous residents. To address these objectives, the research team selected the following study areas across central and northern VIC, north-western VIC, southern NSW, and SA: Greater Shepparton, Barmah Forest, Swan Hill, Robinvale, and Mildura in VIC; the Aboriginal reserve of Cummeragunja in NSW; and Berri-Barmera in SA. The study areas encompassed regions where Traditional Ownership has been formally recognised through state mechanisms, such as the *Native Title Act 1993* (Cth), *Traditional Owner Settlement Act* 2010 (Vic), *Aboriginal Heritage Act 2006* (Vic) or *Aboriginal Land Rights Act 1983* (NSW), as well as areas where formal recognition is still pending, such as regions south-east of Mildura. This diversity allowed the research team to explore how varying levels of legal and cultural recognition influenced community responses and recovery efforts.

Work Package Three (WP3), led by RMIT University, investigated the experiences of culturally and linguistically diverse (CALD[3]) communities, as well as communities affected by either rapid-onset or slower-onset flooding events in VIC and SA, respectively. The primary objectives of this WP were to: 1) explore how communities in VIC and SA experienced and responded to the 2022-2023 floods; 2) investigate community perceptions of communication strategies and their influence on individuals' risk perceptions and responses to floods; 3) examine the unique

1 For increased readability, the following abbreviations are used throughout this document: Victoria (VIC), South Australia (SA), and New South Wales (NSW).
2 Throughout this report, we use the term 'rapid-onset flooding' to distinguish the flooding patterns experienced in Victoria and New South Wales from the slower-onset riverine flooding in SA. We acknowledge that 'rapid-onset' in flood terminology often refers to flash flooding (occurring within minutes to hours). In our context, 'rapid-onset' refers to flooding that developed over a few days rather than the weeks to months of gradual water level rises experienced in South Australia. This distinction is important for understanding the different warning timeframes and preparation opportunities available to affected communities across the study regions.
3 This report uses the term CALD (Culturally and Linguistically Diverse) communities while acknowledging that terminology in this area is evolving. Alternative terms such as "migrants and refugee communities", "multicultural communities," or "minority ethnic groups" may be preferred in different contexts.

challenges that communities faced in slower-onset flooding conditions; 4) explore the unique challenges faced by CALD communities in accessing flood-related information and support; and 5) provide insights into recovery processes and community resilience following the floods. The selected study areas included Rochester and Echuca, which experienced relatively rapid-onset flooding; Shepparton, VIC to capture the specific challenges experienced by CALD communities; and Mannum, Mypolonga, Berri and Blanchetown in SA, which were impacted by slow-onset flooding.

The research methods differed by work package, as they were tailored to their unique focus and research aim. WP1 utilised a large-scale online survey from 6 March to 19 September 2024 to gather quantitative data from a total of 452 flood-impacted residents. Between August 2024 and February 2025, WP2 employed qualitative oral interviews with 32 individuals to explore Aboriginal communities' experiences. WP3 conducted 88 semi-structured interviews with 96 individuals from May to October 2024 to investigate the impacts of different types of floods on various communities.

Summary of research findings

This section presents a summary of the findings from each of the three work packages followed by a summary of the findings within the cross-cutting research themes from across the multiple work packages.

WP 1: Survey findings

The online survey employed in WP1 collected quantitative data on the experiences of 452 flood-impacted residents across Victoria (VIC), SA and south-western NSW, with the majority from VIC.

Demographic profile: The demographic profile of the survey sample was broadly representative of the target population, although it was skewed slightly older and predominantly female. Most respondents lived in single-storey homes, primarily owned or mortgaged, and many properties were used as primary residences.[4]

There were no significant demographic differences across states, but notable distinctions included SA residents having more time to prepare due to the slow-onset nature of the flooding, NSW residents being less likely to have flood insurance for their house/building, and VIC residents experiencing more severe impacts due to rapid-onset flooding.

Across the sample, just under half of respondents had experienced flood damage at their homes from the 2022-2023 floods.

Preparedness: Preparedness levels varied, with over half of respondents feeling well-prepared. SA residents, those with prior flood experience, and those who perceived having more time to prepare reported higher levels of preparedness. Barriers to preparation included conflicting advice, early information underestimating flood levels, and caregiving responsibilities.

Trust in information sources was highest for friends, family, and neighbours, although official sources like frontline emergency services, ABC radio, and local SES volunteers were also valued. SMS and online platforms were preferred for receiving warnings, though power outages disrupted access. Decisions to stay or evacuate were split, with those staying often facing challenges due to the loss of vital services (e.g., electricity, water, sewer, and communications).

Housing modifications prior to the floods were common among those with previous flood experience, including raised homes, elevated power points or air conditioner units, and tiled or cement floors. Other pre-flood adaptations were levee construction and planting for ground stabilisation.

Looking ahead, a large percentage of respondents (72%) expect floods or flooding to happen again. Post-flood modifications to reduce this risk focused on more minor modifications – i.e., raising power points, replacing carpeted areas, and using water-resistant building materials. Also, over half of respondents indicated their plans to stay and repair their properties, with a smaller proportion (15%) wishing to leave.

Recovery: Recovery was slow and challenging, with many homes still unrepaired over a year later. Respondents reported health, financial, and bureaucratic difficulties during recovery. Support from informal networks—e.g., family, friends, neighbours, and community groups—was rated highly, while formal organisations like recovery centres and the Australian Red Cross were also regarded positively. Despite the hardships, many respondents felt their communities became more cohesive and connected due to the shared experience of the flood event.

In conclusion, the survey highlights both the severe impacts of the floods across the three surveyed states, differences in people's level of preparedness and types of responses to flood information, the challenges that people faced during recovery, and the resilience, social connections and solidarity within affected communities.

[4] It is worth noting that a number of properties affected by the floods in SA were 'shack' or holiday homes.

WP 2: Aboriginal communities' experiences of the floods

WP2 focused on Aboriginal communities' experiences with the 2022-2023 floods. Notably, all researchers involved in this research were trained in trauma-informed approaches and are committed to sensitive, safe and restorative research with Indigenous people.

While many of the findings from WP2 align with those from WP1 and WP3, there were several significant issues that arose in WP2 that reflect the unique impacts of the 2022-2023 floods on Indigenous people. A summary of each is included below, and the reader is encouraged to review the final report for additional details (Kuligowski et al. 2025).

Conceptualising the 'Disaster': Many of the Traditional Owners who participated in this research did not view the flood itself as the disaster. Many participants contextualised the flood within a history of colonial interventions in river systems- environmental degradation caused by locks, weirs, and agricultural modifications; noting that these interventions disrupted natural flows and the biodiversity of the river system, which were discussed by some as the true disaster. Many also celebrated the flood for its ecological and cultural benefits, such as the watering of lagoons and the rejuvenation of fish and bird populations.

Impacts on Cultural Heritage: Emergency preparedness and response activities, particularly the construction of levees, caused significant damage to cultural heritage sites. Traditional Owners reported that these activities often disregarded the presence of ancestral remains and sacred sites along riverbanks.

The legal framework in Victoria[5] allowed emergency services to alter levees without consulting Traditional Owners or conducting Cultural Heritage Management Plans (CHMPs), exacerbating the destruction of heritage. Participants called for greater protection and consultation regarding cultural heritage during disasters. VICSES has acknowledged the potential for cultural harm associated with levee works and have since completed a review of the power's application in this flood event, which identified the need to strengthen procedures and processes for Traditional Owner engagement in future floods.

The floods also physically eroded scar trees and middens, making some heritage sites unrecognisable or lost. In SA, mismanagement of water flows had already exposed specific heritage sites through drought, and the floods intensified this erosion.

The critical role of Aboriginal Community Controlled Organisations (ACCOs): ACCOs played a vital role in supporting Aboriginal communities during the floods. These organisations were trusted more than traditional emergency management agencies and acted swiftly to provide communication, food, medical support, and financial guidance and aid in response to the floods.

For example, an ACCO in Shepparton, VIC quickly restored phone lines and coordinated relief efforts, demonstrating agility and the capacity to meet the immediate needs of residents. In Mildura, Indigenous organisations supported children and youth, offering safety information and psychosocial support. These efforts were crucial in bridging gaps left by mainstream services. ACCOs also helped residents access government relief and provided direct financial assistance.

Caring for Country as disaster resilience: Participants from Traditional Owner organisations emphasised that Caring for Country is central to disaster resilience. Practices like cultural burning were described as beneficial not only for bushfire prevention but also for flood preparation and recovery. Rangers acted as first responders, often without funding or formal support, driven by community commitment.

Participants advocated for greater involvement in preparedness activities, suggesting that training and inclusion of Traditional Owners reduces disaster impacts. In SA, for example, pre-flood restoration efforts led to biodiversity booms post-flood. These insights reinforce the value of Indigenous knowledge and practices in building environmental and social resilience.

[5] Section 32 of the *Victoria State Emergency Service Act 2005* (VICSES Act).

WP 3: Experiences of communities impacted by slow-onset and rapid-onset floods and CALD communities

This section summarises the findings of WP3 organised into four sections, including rapid-onset flooding experiences in VIC, slow-onset flooding experiences in SA, CALD communities' experiences and stakeholders' perspectives.

Rapid-onset flooding experiences in VIC: In Rochester and Echuca (VIC), residents experienced severe flooding that developed over a shorter period of time (i.e., days). Residents relied on various official sources for information (e.g., community meetings, SES Facebook pages, and the VicEmergency app); however, many found communication to be late, unclear and lacking in detail, eroding trust in official sources.

Community-led platforms, especially local Facebook pages, became vital for timely updates, though concerns about data reliability and accuracy persisted. The lack of timely and locally specific information as well as initial communication that downplayed the risk and the frequent changes in water level predictions led to an underestimation of risk and delayed preparation and evacuations.

The physical and emotional impacts of the flooding were severe. Homes and infrastructure were heavily damaged, and many residents remained displaced long after the floods. Insurance processes were described as stressful and inadequate, with poor-quality rebuilds adding to the burden. Survivor guilt and grief over the loss of homes, community spaces and a sense of normalcy were common. Despite these challenges, residents showed resilience and a strong sense of community, with many planning to evacuate earlier and prepare more thoroughly for future events.

Slow-onset flooding experiences in SA: Slow-onset flooding in SA was characterised by gradual water level rises over extended periods (i.e., months). In Mannum, Mypolonga, Berri, and Blanchetown (SA), slow-onset floods allowed more time for preparation but created prolonged uncertainty about the flood's impacts, causing severe anxiety and stress.

Residents accessed information through various official channels (e.g., community meetings, SASES Facebook page, SES newsletters, weekly updates from water and power agencies, local council updates, and doorknocking). However, technical data such as water volume measurements were difficult to interpret, and communication was often perceived as inaccessible to older residents and farmers. As a result, trust in official sources declined, and informal networks became essential for updates. Additionally, risk perception was significantly influenced by the slow-onset nature of the floods, inconsistent official communication, and prolonged uncertainty about flood timing and impacts.

Preparation efforts were extensive, including sandbagging and moving entire house contents, and often physically and mentally exhausting. Despite these efforts, many protective measures were rendered futile. The prolonged inundation of the floods caused widespread damage to homes, infrastructure, agricultural land, businesses, and tourism.

Despite these challenges, some positive outcomes emerged, such as strengthened community bonds and enhanced biodiversity and natural beauty in water-transformed landscapes. Recovery was perceived as slow, with delays in damage assessments and resource allocation and rising insurance costs. Similar to the residents in VIC, SA residents expressed frustration with government inaction and emphasised the importance of community support and self-reliance for future preparedness.

CALD communities' experiences: CALD communities in Shepparton (VIC) faced unique challenges due to limited English proficiencies and language barriers. Misunderstandings about specific terminology and the nature of floods led to confusion and inadequate preparedness. Residents reported that sandbagging was rare, and access to resources was limited. Innovative strategies, such as using WhatsApp and social media, became key tools for sharing information in native languages, with children often acting as interpreters.

In addition, evacuation centres were perceived as overcrowded and culturally inappropriate, e.g., lacking privacy and Halal food options. As a result, many families chose alternative accommodations or stayed behind.

Recovery support was described as minimal among CALD participants, with insufficient insurance payouts and inadequate housing repairs leading to health issues. Also, some cultural events funded during recovery were seen as

irrelevant, and residents felt excluded from decision-making on effective recovery for their community. Across the sample in Shepparton, anxiety about future floods remains high, especially during rain events.

Stakeholders' Perspectives: Stakeholders from emergency response agencies, local councils, and recovery organisations highlighted systemic challenges in flood response and recovery. Common themes included difficulties with communication, a shortage of resources, media misrepresentation, and the immense strain on local councils and their staff. Communication with the public proved difficult, with rapidly changing flood modelling results and media misinformation causing confusion and distress during a critical time. Some councils found success in supplementing more traditional communication methods with the "grapevine strategy"; i.e., disseminating information via trusted community groups, but overall, better communication strategies were needed. Also, resource shortages and staff burnout strained emergency efforts.

Recovery timelines were perceived as underestimated, and short-term contracts (e.g., for funded recovery roles) hindered long-term planning. Stakeholders called for enhanced local flood rescue capabilities, improved insurance policies, better pre-flood planning, and more investment in both immediate and long-term recovery, among other improvements. Creative community initiatives were praised, but sustained funding was noted as essential to support communities and frontline workers more effectively.

Cross-cutting themes

This section summarises the research findings within key cross-cutting themes across all three work packages.

1. Information and communication issues/challenges: During the 2022-2023 floods, residents received flood information from diverse sources, including broadcast media, digital platforms, government websites, and community meetings. While broadcast media was the most common channel through which residents from all three states *first* found out about the floods; regional differences were evident in other commonly reported sources: SA residents relied more on state government reports and personal networks due to slow-onset flooding, and VIC and NSW residents were often first made aware via environmental cues, official government websites (e.g., BOM and VicEmergency), and official social media accounts (e.g., SES and BOM). Despite multiple channels, many felt the information was vague, delayed, or lacking locally relevant specifics. Significant communication gaps were also reported, especially among Aboriginal communities and CALD groups. Participants described exclusion from official messaging and reliance on community networks for accurate updates. Flood level predictions perceived as inaccurate and inconsistent further eroded trust in official sources. Many residents preferred practical data like water heights over technical water volume measurements to assess their flood risks, and trusted friends, family, and frontline personnel and local emergency volunteers more than print media, local council representatives and television.

2. Risk perception: Lower risk perceptions among affected community members were shaped by underestimated flood water levels and shifting flood height predictions. Many residents compared the 2022 floods to previous events and felt unprepared for the greater impacts the 2022-2023 floods brought. Official designations of 'dry zones', particularly in VIC, led to complacency and inadequate levels of preparation for homes that were subsequently inundated. Conflicting predictions and advice from various sources added to the confusion. Residents reported receiving mixed messages from local, state, and cross-border agencies, undermining their ability to respond effectively. CALD communities also faced additional barriers due to language and cultural disconnects in emergency messaging, often misinterpreting flood warnings as mere heavy rainfall events. Whilst Aboriginal residents acknowledged flood impacts, rather they emphasised the ecological benefits of floods and highlighted the risks and harm associated with the colonial impacts of river management as the true disaster.

3. **Slow vs rapid onset flooding:** Slow-onset flooding in SA allowed more preparation time but caused prolonged stress and physical exhaustion to residents. Some residents built large levees or protective walls around their homes and others, who had the capacity and access to resources, moved entire household contents to higher ground over weeks; however, the anticipation of the flood event was psychologically taxing, with some describing the anticipation as more traumatic than the flood itself. The prolonged uncertainty created anxiety that affected participants' abilities to accurately assess their risks. Also, the nature of the flooding influenced both physical impacts and recovery. Affected residents in VIC experienced higher losses in household contents and home damage, while SA residents faced prolonged inundation and as a result, extensive damage to homes, agricultural lands and local infrastructure. Recovery timing was critical; SA residents often perceived support services as arriving too early, before damage could be assessed due to the long inundation period.

4. **Physical impacts of the floods:** The physical toll of the 2022-2023 floods varied by region but was universally disruptive. The survey results found that VIC had the highest percentage of seriously damaged or destroyed homes (i.e., 42.1% in VIC reporting that their home was seriously damaged or completely destroyed, compared to 29.8% in SA, and 23.3% in NSW). However, in SA, agricultural losses were severe, with destroyed crops and livestock affecting livelihoods, exacerbating preceding economic hardships. Participants across the three states described long-term economic impacts and displacement. Additionally, WP2 highlighted riverbank erosion and cultural heritage loss due to the rapid speed and volume of water, and emergency levee construction.

5. **Environmental impacts of the floods:** Despite the physical impacts discussed in the previous theme, the floods were also seen by many as ecologically beneficial, especially in SA and VIC. Residents and Traditional Owners described the floods as a "flush-out" that revitalised ecosystems, improved water quality, and restored biodiversity, especially of birds and fish. The opening of the Murray Mouth and the return of wildlife were noted as positive outcomes. However, negative environmental consequences also emerged. As a result of the floods, soil chemistry was altered, leading to toxic conditions and agricultural challenges. Blackwater events depleted oxygen, causing mass die-offs of fish and other species. Extensive flood impacts to homes also generated massive waste, as people discarded damaged goods.

6. **Recovery process:** Recovery was described as a slow, prolonged, and frustrating process across all regions. WP1's survey data showed that 76.5% of respondents across the three states felt that recovery was taking longer than expected. Insurance delays, a lack of available tradespeople, and financial constraints were major barriers. WP2 participants also expressed frustration over restricted access to Country and cultural sites. Insurance issues were particularly problematic, with residents facing unclear communication, pressure to accept lower settlements, and delayed claim processing. Renters were especially vulnerable, often left in unsafe or unrepaired homes. The emotional toll of displacement and uncertainty was significant, with many reporting anxiety and negative impacts to their mental health.

7. **Housing/Displacement:** Housing insecurity was a major issue during recovery. Residents faced long-term displacement, frequent relocations to temporary housing, and difficulty maintaining connections or reconnecting with their community. Renters described their struggles with exploitative landlords and inadequate repairs, particularly in Aboriginal and CALD communities. Temporary accommodation was unstable, with some residents moving every few days. The lack of permanent housing disrupted routines and

support networks and contributed to mental health decline. These challenges were compounded by reportedly slow damage assessments and insurance processes and limited support for renters.

8. **Added challenges of recovery for communities exposed to slow-onset flooding:** Regarding slower-onset flooding, SA communities experienced prolonged displacement due to the flooding event. Recovery was delayed as properties remained submerged for months, preventing damage assessments and rebuilding. Also, farmers faced ongoing agricultural losses and reduced income, as did those in the tourism industry. The extended uncertainty created emotional fatigue and diminished hope, with residents describing feelings of being stuck in limbo and unable to resume normal life. The "long tail" of recovery was evident, with community resilience tested over time.

9. **The role of community in disaster preparedness, response and recovery:** Community networks played a vital role in all phases of disaster management. Residents relied on informal channels like Facebook groups and WhatsApp and their local networks to fill perceived gaps left by official (or formal) agencies. Additionally, Indigenous community members placed their trust in ACCOs for timely, locally relevant, and culturally appropriate information during the floods. During emergency response, community members also led rescue efforts and in the recovery process, they provided temporary housing, assisted with cleanup efforts, shared resources, and offered emotional support. Additionally, some formal support services were also highly rated by participants, including community groups/charities (e.g., the Lion's Club and community/neighbourhood houses), recovery centres, the fire service and the Red Cross. Overall, personal networks were the most trusted and valued sources of support during recovery.

10. **Important role of local knowledge:** Residents frequently advocated for integrating local expertise into emergency management. They seek to be acknowledged as active contributors rather than passive recipients, and desire engagement that genuinely respects and incorporates their local knowledge, experience, and expertise. Those with extensive knowledge of the landscape, such as Traditional Owners and farmers, expressed frustration at not being appropriately included in planning and response efforts. Their cultural, historical and environmental knowledge was seen as essential for effective flood management, and residents expressed concern that ignoring local insights could lead to inefficient and costly decisions. Moving forward, participants called for collaborative approaches that respect community experience; and despite past frustration, many remained hopeful about future partnerships with government agencies.

11. **A resilient future – the likelihood of flooding and the need for adaptation and mitigation:** Most residents believe that future flooding is likely, with 72% across all states expressing concern. Many have made or plan to make minor home modifications, but cost and lack of support hinder more substantial changes. Some residents were more fatalistic in their perspectives, questioning the value of investing in flood-prone areas or expensive flood proof house modifications or rebuilds if they were simply going to flood again in the future. Water management emerged as a key mitigation strategy. Participants discussed the need for better coordination between upstream and downstream areas, maintenance of levees, clear and accurate flood monitoring and warnings, and adherence to floodplain sensitive building regulations. Aboriginal communities framed water management within broader historical and ecological contexts, emphasising its importance for both flood mitigation, environmental health and recognition of Aboriginal knowledge of Country.

Policy-relevant implications

This section presents key implications of the research (adapted and summarised from Kuligowski et al. [2025]), focusing on strategies to improve flood preparedness, response, and recovery. Drawing on community experiences during the 2022-2023 flood events, the research team identified critical areas requiring attention by policy makers and response agencies.

The policy-relevant implications outlined in this section originate directly from participants' lived experiences captured via surveys and interviews, and from workshops conducted within the research team. It is important to note that the research team did not conduct a formal review of existing policies or programs currently in place but rather these implications emerged from our analysis of community experiences. These implications require careful adaptation to jurisdictional contexts, as operational frameworks and State Emergency Service (SES) protocols vary significantly across states.

While these implications are high-level in nature, their full potential can only be realised through careful consideration and collaborative development with relevant agencies and stakeholders, translating our findings into comprehensive policy frameworks, existing governance structures and operational realities. We acknowledge that disaster resilience is a shared responsibility involving complex consideration of feasibility, financial and personnel resources, and risk assessment across multiple organisations with varying jurisdictional responsibilities.

While our findings reflect the 2022-2023 flood context, we recognise the dynamic nature of emergency management systems and their capacity for change. We acknowledge that progress has been achieved since this flooding event in NSW, VIC and SA, via the conduct and review of state- and federal-level inquiries, industry reviews and other studies (e.g., Taylor et al. 2023), and in turn, emergency services agencies, councils and community organisations have begun addressing many of the identified implications. Just within this study alone, improvements in warning systems and coordination were documented in the WP3 case study of Rochester and Echuca, where Rochester participants reported better communication and coordination in the 2024 flood compared to the 2022 flood (for more detail, see the WP3's summary report).

1. Developing more effective communications strategies and messages during floods
    - Translate flood-related information, including water level heights and time-based warnings and/or water flows into practical, location-specific implications for residents' homes and neighbourhoods, incorporating practical advice on how to act.
    - Revisit flood maps and modelling methodologies to identify potential improvements to address concerns raised by community members that changes in the floodplain have altered flood behaviour, and flood predictions did not adequately take account of these changes.
    - Develop flood information that is timely, accurate, localised, consistent, and relevant and disseminate this information via trusted sources.
    - For emergency communications with CALD communities: incorporate systematic cultural competency frameworks within emergency management systems to ensure these communities can effectively understand and respond to natural hazards. This includes using clear, context-specific language that acknowledges varying interpretations of terms like 'flood'.
    - Consider the following specific communication methods that proved effective for CALD communities:
        - Disseminating warnings and information in communities' origin languages
        - Utilising voice messaging in appropriate languages to address literacy barriers
        - Working directly with CALD community leaders as trusted intermediaries
        - Incorporating visual aids that transcend language barriers

2. Facilitating greater collaboration between emergency agencies and communities
    - Establish relationships with communities before flood events to facilitate communication, cooperation, and locally appropriate responses.
    - Create more effective and inclusive planning processes to build and nurture collaborative relationships with Aboriginal Community Controlled Organisations (ACCOs).
    - Integrate local expertise into flood planning, response, and recovery efforts; in turn, creating opportunities for genuine community involvement in adaptation strategies.
    - Provide opportunities for genuine community engagement during key moments for change- such as after a flood event- to enhance community support and ensure that adaptation measures are locally relevant and sustainable.
    - Engage in transparent decision-making on flood measures to reduce the likelihood of future damage and restore a sense of security among residents.
    - Provide training for community members and develop contingency plans for when official volunteers are unavailable to enhance local capacity in emergency response.
    - Foster collaboration between communities, emergency agencies, and recovery organisations to reduce the prolonged duration of recovery periods.
    - Align recovery timelines with community realities and provide ongoing, long-term support for mental health, rebuilding, and future mitigation efforts.

3. Acknowledging and preparing for different flood types
    - Increase awareness, within response agencies and the wider community, on the different impacts and challenges of rapid- and slow-onset/slow-retreat flooding to improve preparedness and more appropriate support for recovery.
    - Adopt standardised vulnerability and capacity assessment tools to identify opportunities for investment in and collaboration with communities to reduce vulnerability and enhance capacities as part of future disaster and adaptation planning.
    - Establish formal mechanisms to support residents' long-term preparation efforts, such as equipment loan programs for extended periods and a volunteer rotation system to prevent burnout.
    - Provide clear, actionable guidance to the public on how to prepare over extended periods, including breaking down complex preparation tasks into manageable steps and providing regular updates to keep residents informed without overwhelming them.
    - Allocate funding for mental health interventions during extended warning periods and develop clear referral pathways for accessing psychological support services throughout all phases of flood events.
    - Prioritise flexibility and adaptability in recovery assistance in slow-onset flooding; e.g., replacing fixed end dates with criteria that reflect actual community needs and designing modular recovery programs that can be deployed sequentially, aligning with the pace of water recession.
    - Develop specific policy provisions for prolonged flood scenarios, such as phased damage assessments triggered by water recession milestones, medium-term housing solutions for extended displacement, and specialised case management systems for households facing prolonged uncertainty.

4. Reforming the insurance process for flood-affected communities
    - Improve insurance processes by providing clear, accessible information about policy coverage and the claims process before a flood occurs; e.g., developing materials that explain policy details, coverage limits, and steps to file a claim in simple, non-technical language.
    - Prioritise transparency in funding allocations and claim decisions.
    - Create robust oversight mechanisms, including implementing independent monitoring of insurance companies, assessors and contractors to ensure fair and accurate damage assessments and repairs.
    - Develop a dedicated complaint resolution body where residents can lodge complaints about delays, unfair practices, or poor-quality work.

- Provide guidelines for mould assessments, specialist reports, and other required tasks, as well as ensure that experts involved in analysing expert reports are properly trained.
- Establish programs to increase access to skilled tradespeople; e.g., providing incentives for tradespeople to work in flood-affected areas.
- Require insurance companies to assign case managers to all residents engaged in insurance claims or buy-outs.

5. Addressing the disruptive nature of temporary housing
   - Formalise agreements with hotels, motels, caravan parks and other housing providers before a flood occurs to ensure more stable and reliable temporary housing options post-flood.
   - Provide temporary accommodation as close to displaced people's homes and communities as possible to assist with recovery, as people are then better able to maintain established information and support networks.
   - Consider local context and resident preferences (e.g., longer-term housing vs. remaining on or near properties) when planning temporary accommodation during/after floods.

6. Improving emergency accommodation and relief centres
   - Improve evacuation centres by ensuring access to nutritious food, reliable transportation, appropriate clothing, and adequate sleeping quarters and toilet facilities.
   - Consider the needs of vulnerable groups, such as children, the elderly, people with disabilities, gender diverse and LGBTQI+ people when planning for accommodation and relief centres.
   - Design relief centres with a culturally sensitive lens, providing private spaces for families and accommodating specific cultural practices.

7. Addressing the tension between adaptation and affordability
   - Prioritise the development and promotion of affordable building solutions that meet flood-resilient standards without imposing excessive financial burdens (e.g., subsidised building materials, low-interest loans, or grants for homeowners in high-risk areas).
   - Consider buy-backs and planned retreat as part of adaptation planning to reduce the long-term humanitarian, financial and environmental impacts of extreme flood events.

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