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# Towards Recovery: An Analysis of Post-Disaster Recovery Practices in Australia

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**Abstract:** The occurrence of disasters is increasing in frequency and magnitude in Australia as a result of climate change. According to projections, disasters related to climate change and also other types of disasters are expected to impose an increasing burden on Australian communities and will increasingly challenge the capabilities of governments and other agencies to manage the post-disaster response and recovery. This paper explores whether Australian post-disaster recovery practices can be augmented to support and empower those impacted by catastrophic disasters. The research used a case study methodology to explore examples of major recent disasters in Australia and suggests how disaster recovery can be augmented by extending existing practices and/or utilising alternative practices. Recovery practices were identified from the literature and the selected case studies, and were analysed for importance, effectiveness and future potential improvements. Community engagement has been identified as a key factor in assessing the appropriate disaster recovery decisions and actions. The research on the disaster context and practices coupled with a review of the current scholarly discourse has been used to propose an indicative community recovery support matrix as a way of assisting governments and agencies involved in disaster recovery to develop strategies in the initial stage of supporting impacted communities.

**Keywords:** Australia; Bushfires; Floods; Post-Disaster Recovery; Recovery Support Matrix

## 1. Introduction

The occurrence of disasters caused by natural and human-induced hazards is increasing in Australia. According to projections, climate-related and other disasters are expected to impose an increasing burden on communities in Australia and will increasingly challenge the capabilities of the government to manage post-disaster recovery [1]. It is already evident that current recovery practices face challenges, a gap this paper aims to address. This paper explores if Australian post-disaster recovery practices can be augmented to support and empower disaster-affected people. It is based on a case study research methodology to explore examples from the last 15 years and suggests how disaster recovery can be augmented by extending existing practices or utilising alternative practices. Australia is a large country with varying hazards, and environmental and climatic conditions, and it is beyond the scope of this paper to represent the entire national context. Nonetheless, focusing on some of the states that have recently experienced major disasters, namely New South Wales (NSW), Queensland (QLD) and Victoria (Vic), and some of the key hazards that affect the nation more widely, bushfires and floods, allows an understanding of the key challenges and opportunities. This research on the selected disaster contexts and practices coupled with a review of

the current scholarly discourse has been used to propose an indicative community recovery support matrix. This in the first instance is targeted for communities exposed to bushfires and floods in the three above-mentioned states, nonetheless, it can be adapted in the other states and territories that also have face risk from these hazards. Furthermore, it can also be adapted for the context of recovery after other types of disasters such as cyclones and earthquakes, which also affect Australia.

This paper draws on secondary sources to make its case, which is explained later in Section 2 on methodology. It provides the research inquiry framework, followed by an explanation of the methodological aspects. These two sections are closely related; hence they are grouped together. An overview of the key literature relating to the topic of the paper is then presented, serving as the entry point to a significant part of the paper, that is, the review of selected case studies of recovery after major recent disasters in Australia. The review of the literature and case studies allowed framing a disaster recovery matrix, which is flexible enough to be adapted to different disaster contexts in Australia.

## 2. Materials and Methods

The following question emerged in response to the extensive occurrence of disasters and corresponding post-disaster recovery programs, which guided the research investigations:

How can post-disaster recovery practices in Australia be augmented to better manage the impact of disasters on communities?

In relation to the above question, the aim of the research was to explore Australian post-disaster recovery practices with a view to analysing how those impacted by catastrophic disasters can be better supported to recover and thrive in the post-disaster period. It thus led the way to the development of a recovery matrix, a tool to guide disaster recovery support more effectively.

The following objectives operationalised the research aim to seek answers to the research question:

- Review the existing literature on disaster risk reduction and management in Australia to assess contemporary practices and their impact on and effectiveness for medium-long term disaster recovery.
- Examine Australian and international case studies to examine contemporary practices with a view to identify learnings which can be applied in the disaster recovery context.
- Consider ways that contemporary post-disaster recovery practices can be augmented to improve the speed and quality of reconstruction and renewal and to support the lives of Australians impacted by catastrophic disasters.

This paper provides data from a broad literature review and case studies documented in the literature, which inform the research findings, recommendations and the development of an indicative community recovery support matrix that is designed to initiate scholarly debate and fieldwork. It highlights the need for more contextualised and nuanced approaches to recovery protocols. This paper is derived from an Honours thesis, where collection of data from the field, interviews and surveys were restricted because of the time constraints involved in seeking approval for human research ethics. Therefore, the paper is based entirely on secondary sources.

The basis of the research methodology is an epistemological, mixed mode research study. The focus is on qualitative research with some quantitative analysis based on existing secondary sources such as population statistics from the Australian Bureau of Statistics. The research design uses a Case Study methodology to review contemporary approaches to disaster recovery with a view to informing future policy directions [2]. Academic journals, media sources and publications have been synthesised to inform the analysis. Central to the analysis of this study is qualitative analysis with a particular focus on case studies to consider responses to the research question.

As mentioned earlier in the introduction, bushfires and floods are two of the most widespread and frequent hazards in Australia, and the four case studies in this paper were selected from the most severe disaster events Australia during the last 15 years. Two of the case studies were from an earlier period, while the other two were more recent, with both time period sets including a bushfire and a flood. The reason for the time periods is explained below in the next paragraph.

The case study methodology generated an in-depth, multi-faceted understanding of complex issues. In the case studies under examination in this study, there is significant quantitative data available particularly for events that happened some time ago such as the Black Saturday bushfires (2009). For example, how many people lost their homes, how many people required medium-term temporary housing on average and how long did it take for

people to be living in new accommodation. This is viewed alongside the qualitative data available such as the views and opinions of the populations displaced, the review of the approaches and governance arrangements taken to reconstruction and an examination of the role that the various levels of government played in the recovery effort. Further, examining various case studies over different time periods provided an opportunity to explore a case study with a multi-phase approach [3]. In disaster recovery situations, there are phases which take place over many years, depending on the nature and extent of the disaster. A multi-phase approach draws out observations and findings that will not necessarily be present in an investigation on a more recent disaster response.

## 3. Overview of the Literature

A substantial body of academic literature and other sources such as media and government reports informed this study, including government policy statements, journal articles, expert reports, media reports, case studies and expert commentaries.

The McKinsey Group provide a useful report from the USA, which concludes that the recovery aspect of disaster management is very difficult [4]. It acknowledges that responsibilities often fall to governments at all levels to manage the recovery period in an environment of increasing natural hazards and that the recovery effort may take years. The report suggests that whilst governments everywhere are experiencing disasters, the "process of learning from these experiences has barely begun." Whilst written in a USA context, but with high applicability to the Australian setting, the report highlights the difficulties of managing disaster recovery across different tiers of government, that is, federal, state and local. It highlights four main challenges that make disaster recovery difficult:

1. The tension between getting funds and resources to the people who need it with the overall macro effort in response to the entire disaster.
2. In cases of serious hardship, the receipt and spending of money can take a long time, and this can create tension in terms of the perceived speed of the recovery effort.
3. Government leaders are often ill-equipped to manage the complex task of recovery, having had no or little experience in disaster management.
4. Government governance arrangements are not well-equipped to deal with unusual events such as disasters, that is, arrangements are often set up for a business-as-usual environment.

This is not a comprehensive list of the many and diverse challenges in disaster recovery, nonetheless, it does capture some of the key challenges, particularly in relation to government practices. Different communities face different challenges based on the scale and severity of a disaster, among other factors, thus this list is indicative and not specific to the diversity of contextual challenges. Extending the exploration of issues identified in the McKinsey report can be seen in a Sydney Morning Herald article on the bushfires which took place in various parts of Australia during the summer of 2019/2020 [5]. It discusses the gaps exposed during the recovery process. Locals are described as desperate to rebuild after the catastrophic fires that ravaged much of Australia's east coast. This article is written six months after the event of the fires with many victims in East Gippsland still living in temporary accommodation, such as tents, caravans and the like, after the fires left their homes and lives in ruins.

The article questions what is being done by the construction company who was awarded a $75 million State Government contract just to clear the debris of the almost 700 homes that were destroyed in the fire. This article highlights that the job of cleaning up after such an event as the 2019/2020 fires is a large one, thus, there are some members of the community who have fallen through the cracks and that there are major gaps in the state-run recovery. The findings of this article are that a community-led recovery can only be useful to a limited extent, the members of the community are limited in resources and access to the required infrastructure and materials. This highlights that a government-led, but community-supported recovery is key to the success and the long-term effectiveness of the strategies and support invested [5].

An important component of determining the approach to disaster recovery is to explore whether the relevant policies and frameworks apply evenly across all sectors of society. Levitt & Whitaker [6] focuses on the failures of social policy for the disadvantaged members of the community in the response to Hurricane Katrina, USA. They suggest that the speed and quality of the response to recovery after Hurricane Katrina was influenced by the level of socio-economic advantage in the community. That is, New Orleans is a community significantly composed of a disadvantaged black population, and it is suggested that this was an impactful element of the recovery effort [6].

This issue will later be explored further in the Australian context to see if there is evidence of socio-economic status affecting the post-disaster recovery and reconstruction operations.

How post-disaster recovery activities are coordinated across government levels and non-government organisations is critical to the success of the overall effort. Takemoto, Shibuya, & Sakoda [7] suggest that a holistic approach to disaster risk management rather than a single-sector approach is required and that an effective strategy is to bring diverse stakeholders together including government, community, not-for-profit and the private sector. The authors highlight that a planning framework that clearly involves all levels of government and gives control to local groups to the greatest extent possible is a key factor in determining success. The article is consistent with elements of the McKinsey report which also highlights broad representation as an important element of any disaster recovery.

One of the tensions in all disaster recovery is the understandable wish for impacted residents who have lost their homes, to have their living arrangements urgently sorted for the long-term versus the need to adopt a measured, considered approach to the recovery, taking account of the overall context in which the disaster has occurred. It is also acknowledged that for many reasons, what might be an acceptable timeframe for one individual, family or community, may be unacceptable for another [8]. The emotions, trauma and grief associated with the event will potentially result in a variety of responses to the disaster recovery process. This creates a potentially difficult situation for a government authority or organisation seeking to take an approach to disaster recovery which is in the best interests of the individuals' and communities' long-term interests. This is at the same time as ensuring that the short-term arrangements provide safety and a level of comfort that means that quick, knee-jerk decisions with potentially long-term consequences, are avoided, wherever possible.

Leadbeater [9] (p. 46) suggests that "(R)ecovery started badly is almost impossible to reclaim given its longer-term impacts on the structure, relationships and functioning of the community. Creating space and time for the community to come together and for the 'right' answers to emerge is an investment in meaningful, sustainable recovery". While this highlights the importance of a community-based recovery approach, support from the government is needed, not only in the recovery process, but to ensure mechanisms are in place to reduce future disaster risks.

Unfortunately, there have been many disasters in the last 15 years in Australia. These served as case studies to explore the effectiveness of the various frameworks which purport to support disaster recovery.

## 4. Results

The research objectives are explored by the analysis of several case studies which are used to describe approaches to disaster recovery in Australia in the last 15 years. Community engagement and the effectiveness of approaches is a key determinant of how responses to disasters are viewed [10]. As part of the review of disaster case studies, deliberate processes including deliberate democracy formed part of the analysis to determine relative effectiveness. The sharing of ideas and views are important components of a response to a disaster situation. Examples from Australian from the last 15 years were used including the documentary series, the People's Republic of Mallacoota, which adopted a particularly deliberative and participative approach to community engagement [11].

### 4.1. Black Saturday Bushfires, Victoria, 2009

The 2009 Black Saturday bushfires provide a striking example of a disaster with massive impacts including the loss of 173 lives and 2300 buildings [12]. Demographic and disaster context information is provided in Appendix A The devastation caused by the fires was widespread, 450,000 hectares of land were scorched and the Royal Society for the Prevention of Cruelty to Animals (RSPCA) at the time estimated that more than one million domesticated and wild animals were claimed by the flames [13].

The severity of the fires in South-Eastern Australia in 2009 were exacerbated by months of hot and dry weather prior. The weather leading up to the blaze was declared a heatwave and this created the conditions that resulted in the catastrophe that was Black Saturday. After the event, the Premier of Victoria at the time John Brumby called for a Royal Commission not only into the fires themselves, but the State's handling of them including the recovery response. Multiple findings and recommendations came out of this commission, including but not limited to: Overhaul of bushfire education, building codes to ban building in high-risk areas, updating the advice on preparing for bushfires and updating how buildings should be constructed in the codes [13, 14].

The Royal Commission is an example of a contemporary practice in response to a disaster. In severe and catastrophic disasters, a government response is appropriate and needed, irrespective of the standard of the immediate and medium-long term responses to the disaster. In the case of the Victoria bushfires, the significance of the event led to the government setting up the most formal and detailed investigation possible by way of a Royal Commission.

In the case of the Victorian bushfires, the Royal Commission made 66 recommendations including 15 related to planning and building. One of the important outcomes of a disaster as part of the recovery is looking for opportunities to reduce the chances of having a similar impact in the future, that is, building back better/safer. This is a common and important feature of disaster risk management, that is, in considering the most appropriate recovery framework in response to the disaster which just occurred, there is consideration of the prevention or limitation of impacts in any future disaster scenario. So, in responding to the present disaster recovery situation, the government often sets up improvements to the disaster planning and resilience for possible future disaster events. Importantly, the concepts of disaster preparedness and disaster recovery are linked. For example, in the case of recommendation 47 which suggested that Standards Australia amend two standards: Construction of Buildings in Bushfire-prone Areas and Tests on Elements of Construction For Buildings Exposed to Simulated Bushfire Attack. Recommendation 48 suggested that the Australian Building Codes be amended in several respects to improve the resilience of buildings in the event of bushfires [14]. So, in responding to the recovery before it at that time, led to decisions which improve individuals' and communities' abilities to withstand a future event during the current recovery process.

Another contemporary practice in disaster recovery is the establishment of a government authority or similar body. In the case of the response to the Victorian bushfires, this was in the form of the Victorian Bushfire Reconstruction and Recovery Authority (VBRRA). This agency was created in February 2009 in the wake of the catastrophic fires that had ravaged the state only three days before. This agency was originally formed to oversee and coordinate the rebuilding and recovery effort in the affected areas. As per evidence presented elsewhere in this paper, community involvement facilitates better disaster recovery [15]. As per the experience at Mallacoota when fires occurred on New Year's Eve 2019, discussed in detail later, having a response which is as specific and tailored to the community needs is likely to result in improved buy-in and ownership by the community and better outcomes than a generic, unspecified approach to the disaster recovery process.

A longitudinal study of those impacted by the Victorian Black Saturday bushfires indicated that in the worst-affected areas, about two-thirds of the people felt that personally they were "mostly" or "fully recovered" a decade after the disaster [16]. However, only about one-third felt that their community as a whole was "mostly" or "fully recovered" [17] (see **Table 1**). This clearly indicates that recovery has been a protracted process for a significant number of people, and it is a complex problem that requires significant resources and can only be accomplished over an extended timeframe. The findings are furthermore notable in that the recovery of the community is seen as much slower than the recovery of the individual. The 'Beyond the Fires' report [17] provides commentary on the importance of investing in disaster resilience as an appropriate strategy, particularly when a community is recovering from a disaster. The report encourages a long-term view of disaster recovery and preparedness.

**Table 1.** Perceptions of recovery among people affected by the Black Saturday bushfires (adapted from [17]).

|  | Low-Impact Communities | Medium-Impact Communities | High-Impact Communities |
| --- | --- | --- | --- |
| Personally feel 'mostly' or 'fully' recovered | 86.8% | 75.4% | 62.6% |
| Feel their community is 'mostly' or 'fully' recovered | 78.9% | 71.7% | 33.5% |

In summary the report found: life satisfaction lower three and five years after the bushfires, but improving at ten years; one-fifth of the impacted population had symptoms consistent with a mental health disorder; 10% of residents of high-impacted areas experienced anger management, considerably higher than those from low-impacted communities and more prominent in women, unemployed people and youth; higher rates of violence experienced by women, exacerbated by income loss and poorer mental health; community cohesion was lower in high-impact communities; and loss of income, property loss and relationship difficulties led to a higher rate of mental health impacts [16, 17].

The Report divided its recommendations according to the audience to which they were directed, that is, separate recommendations for Community Members, School Communities and Government and Services Providers [17]. As with reports of this nature, the recommendations deal with the disaster immediately after the aftermath, and recovery, reconstruction and preparedness for a future disaster should a similar event occur.

The recommendations in the Report are reasonably high level, but there is an emphasis on community engagement and involvement. Indeed, there is a clear finding that "Being involved in one or two community groups or organisations was associated with more positive outcomes in terms of mental health and wellbeing" [17] (p. 15).

In terms of the relevance of this report to the issue of disaster recovery is the long-term nature of the impacts. That is, even after a full decade after the Black Saturday disaster, the individuals and the communities to which they belonged were still impacted [16]. This adds weight to the argument that the recovery process for a major disaster must be planned and measured and not be done in haste. The tendency of individuals and indeed the community and government to just want to sort out issues as quickly as possible needs to be understood against the proven long-term impacts set out in the Gibbs et al. [17] report. Of course, it is important to provide those who have been significantly affected with safety, comfort and a sense of normalcy as soon as possible, the individual and community needs to recognise that, unfortunately, the impacts and recovery will be long-lasting and a poor decision to deliver short-term benefits, needs to be considered in a much longer timeframe [17]. This also points to the need for robust assessment processes to be able to target assistance to those who need it the most, which is addressed by the recovery matrix proposed in this paper in alignment with the research question mentioned above in Section 2.

## 4.2. Grantham Flood, Queensland, 2011

The Lockyer Valley region in southeast Queensland, Australia experienced extreme flash flooding in January 2011 that resulted in the loss of 19 lives including 12 in the township of Grantham. Demographic and disaster context information on Grantham is provided in Appendix B The flooding was highly unusual and resulted in what was called an "inland tsunami" which swept through the Valley including Grantham. In addition to 19 lives, the flooding destroyed 119 houses in the Valley with significant damage to roads and infrastructure, including 40 bridges [18]. The impacts of this disaster affected the whole of the Grantham community in some way whether it be the physical and emotional pain of losing a member of their family or a close friend in a small community; being injured themselves; the psychological trauma leading to conditions such as Post Traumatic Stress Disorders (PTSD) associated with such an event; and the financial loss of losing homes and other assets. This was one of the largest disasters to have hit Queensland at the time [19].

A feature of the recovery for Grantham was the initiative to move those living in low-lying housing to higher ground. The voluntary land-swap scheme was instigated by the Lockyer Valley Regional Council. A land-swap scheme has not been a regular feature of disaster recovery in Australia. Indeed, this resettlement was the first in response to a disaster since the early 20th century [18]. The planning process was fast-tracked by the Queensland Reconstruction Authority (QRA) and completed in just four months [20], an exercise that would normally take two to three years. This was during a period when Council resources were already stretched with flood relief demands. The framework under which it was delivered was unique in both a statutory and physical sense [21]. It is one of the most concentrated reconstruction projects associated with the January 2011 Queensland floods.

In assessing the options for recovery and reconstruction, residents had expressed an interest in wishing to stay in Grantham, but did not want to build properties that may be subject to future flooding. One of the interesting elements in the case of Grantham's was the quick response of the Lockyer Valley Regional Council, which moved fast to purchase a parcel of land next to the existing town. The plan was to enable flood victims to remain residents of Grantham, with the security of living on higher ground which would not be affected by floods. Alongside the planning for the move of residential properties was the plans to move community assets such as the showground. The 485-hectare site also had room for the town to grow and to build other community assets which could be enjoyed by the entire community [18].

The Grantham experience is notable for two major reasons: the decision to move a significant part of the town to higher ground was radical and unusual; and, most notably, the speed in which the move was carried out. The speed issue is interesting as there is a view that rushing a disaster recovery project can lead to sub-optimal outcomes. In the case of Grantham, a set of unusual circumstances were presented. This was a very small community

and whilst there were other areas which had been significantly damaged in the flood in nearby areas, the size and scale of Grantham was contained. Also, an alternative area of land existed very close to the area impacted by floods. It is unusual to have a suitable site available for a whole new sub-division so close to the original properties. So, the move by residents, whilst emotionally charged and difficult, was made a little easier by the fact that those who decided to move were moving, literally, just up the road.

Community relocation can only happen in small communities – a maximum of a few thousand people [22]. Grantham is so unique a response that it has become much cited in academic literature [22], but there is hardly any replication elsewhere of this experience.

## 4.3. Black Summer Bushfires, 2019/2020

Mallacoota, a small town in East Gippsland, in the Australian state of Victoria was ravaged by bushfires on 31 December 2019 [23]. Demographic and disaster context data is provided in Appendix C. More than 4000 people fled to the shores of the lake and ocean as the fire took hold of multiple properties in the small town and surrounding areas [23]. The fires affected a number of localities including Mallacoota, Genoa, Gipsy Point, Wangarabelle, Weeragua, Maramingo Creek, Wallagaraugh and Wroxham, known together as Mallacoota and District [23].

The fires surrounding Mallacoota in December 2019 and January 2020 were catastrophic. Although there were no fatalities attributed to the disaster, over 120 homes were destroyed and over 4000 people were displaced [24]. The largest employer in the town at the time, the Abalone Fisherman's Cooperative (now privatised and named Mallacoota Abalone Ltd.), lost its primary processing plant due to the fire [25]. Although many of the buildings that comprise the local Mallacoota P-12 College were saved, one building, fencing and equipment were lost, preventing the school from reopening in time for the start of the school year in 2020. The reopening was then further delayed by the COVID-19 Pandemic [23]. The sewerage treatment plant and considerable irrigation infrastructure were also damaged in the fire [26]. In addition to the destruction of 123 homes and other buildings, 83% of the surrounding land area was burned with significant devastation of wildlife, bushwalking boardwalks, access stairs and lookouts [23].

The Mallacoota community has chosen to take on the coordination of the recovery process post-bushfire. It is hoped that by bypassing the local council the recovery process will be faster and more likely to deliver the priorities chosen by the people [27]. Mallacoota township and surrounding districts have established their own decision-making body, which in the six months post-bushfire had attracted 800 members, around 80% of the community members eligible to join [27]. The community rejected a centralised model for decision-making as in past experience the town had felt neglected, and that the community voice had not been properly heard [27]. A 'Thinking Group' was formed in the days immediately following the fires to begin the collection of ideas and explore the option of a community-led recovery [27]. The Mallacoota and District Recovery Association (MADRA) was formed in February 2020 at a town meeting of over 500 residents [28]. The initial committee was elected in May 2020 and the second committee in August 2021 [28].

In the short term, recovery has been about safety for the community and re-establishing businesses, to generate an income, despite the grief and loss the community experienced [29]. Over the longer term there is an imperative to replace lost housing. The lack of affordable and rental housing is seen as a key inhibitor of the recovery process as it has the capacity to impact community viability [29]. Two years post-disaster only 15 houses had been rebuilt of over the 120 destroyed houses [30]. The recovery process has been hampered by the remote location of the community, which has meant that skilled labour and resources are in short supply [30].

Community-led recovery is not a completely new concept in Australia [31]. The Mallacoota and districts community took this concept to a new level of deliberate democratisation with their Victorian Electoral Commission managed election for the MADRA committee, the first of its kind in Victoria [27]. In fact, the Mallacoota response was so different from usual practice, the ABC made a six-part documentary about the process "The People's Republic of Mallacoota", which was broadcast from April to May 2022. The level of agency afforded to the Mallacoota and districts community following the establishment of MADRA using democratic processes has facilitated recovery [29]. The group were mentored through the process by a veteran of the Victorian Black Saturday bushfires [27]. Although the process has not been without its challenges, the intention of the creation of MADRA, to ensure transparent decision-making and that community preferences would be considered in the recovery process, has been achieved. Their recovery plan states, "Together, we have been able to influence our recovery in line with our

priorities, preferences, local knowledge and – most importantly – our values. As a community, we can be proud" [29] (p. 2).

MADRA has worked hard to prioritise spending on recovery in line with community preferences. The process of consultation has taken time, and the rebuilding projects have also been delayed in part by the COVID pandemic. The community is experiencing labour shortages and a scarcity of materials [30]. This has slowed the rebuilding process and raised the costs associated with building. In addition, many who lost their homes have used the funds they have received from their insurers to purchase existing properties which had previously been available to rent. This has exacerbated the issue of housing availability and affordability which has in turn reduced the labour force in the area [29]. One of the consequences of the slow rebuild has been that those without access to a house have been reduced to living in sheds or boats without access to running water or sanitation [30]. The lack of adequate emergency housing has been an ongoing issue [30].

## 4.4. Lismore Flood, New South Wales, 2022

On 28 February 2022, a major flood event occurred in Lismore on the New South Wales, North Coast. It was the largest flood in recorded history [32]. Demographic and disaster context information is provided in Appendix D. More than 31,000 people were affected by the highest flood levels ever recorded in the area [28]. The city was built on a flood plain and previous flood mitigation had included the Lismore levee bank, which was overtopped at 3:00am on the morning of 28 February 2022 [32]. There was a further flood event on 29 March 2022. There has been considerable criticism of the recovery efforts, lack of availability of temporary housing and difficulties in accessing materials [33]. There have been calls for a community-led response in place of the top-down approach that had been adopted by the key government agency, established in 2020 to coordinate emergency and recovery response, Resilience NSW [33].

Despite a significant body of research, much of which has been noted in this paper, which indicates that a community-led response leads to improved outcomes in disaster recovery, it appears that Resilience NSW has not taken heed [31]. Following the successful buy-back scheme in Grantham, the NSW Government has committed $800 million as part of a buy-back scheme in Lismore. More than 2,000 homeowners are now eligible for this program [34]. This policy also allows for raising, repairing and retrofitting of houses, not just selling and relocation. The government will honour pre-disaster prices for those who want to sell [35]. The plan is to spend more than $100 million dollars to acquire land and use this for future development of safe flood locations. With 4,055 homes being deemed uninhabitable, the move from the government will provide, it is claimed, peace of mind for all those affected [35]. The options for eligible households will be offered once a professional assessment of all factors [35]. The individual style of this approach mitigates the risk of people being left out or left behind by a blanket one-size-fits-all program. Deputy Premier and Minister for Regional NSW Paul Toole has praised the program for not having a one-size-fits all approach saying this sort of program allows people to stay in the region, in homes that can better withstand future floods [36].

The NSW Government sponsored an Inquiry into the Lismore floods [37]. For governments it is a primary goal to rehouse those affected, stabilise the community as a whole and get the community functioning successfully both economically and socially as a matter of urgency [37]. The inquiry has outlined some of the challenges that governments face and have to overcome to achieve successful recovery, which include:

- Fostering a positive working relationship between all levels of government and all relative governing bodies, to work together effectively to support all community members while developing and managing the intricate procedures and processes in a successful reconstruction and rebuilding recovery period.
- Maintaining clear lines of communication with the affected communities to keep them informed, involved and operating effectively as best as they can as a community.
- Having an effective assessment process for each individual household or area to evaluate which recovery outcome will best suit the situation e.g., rebuild, relocate, retrofit, repair or raise. There needs to be work on dealing with the outcomes of these assessments as it is a highly emotionally charged situation dealing with people's homes. There is also the economic side of all this that has to come into account when making decisions.
- Management of all the temporary solutions while the long-term recovery strategy is put into place.
- And finally managing the time frame all of the above – and doing all of this at a high speed and having to be lenient

with all usual policies and procedures due to the nature of the work being carried out.

## 5. Discussion

This paper has examined four case studies where the disaster incident was at least two years prior. In addition, a recent case study has been included where recovery is still in progress. The case studies chosen has allowed an exploration of whether Australian post-disaster recovery practices can be augmented to enhance the lives of those impacted by catastrophic disasters. The case studies demonstrate several areas of practice and response.

All the disasters used as case studies in this paper were the subject of a high-level government report or indeed a Royal Commission. This is an important component of the recovery process. They provide an independent analysis of different aspects of the disaster, including recovery, and provide recommendations for government and the community. From a reconstruction perspective, often the reports will provide guidance as to building codes and standards which should be applied.

Another response to a major disaster is the relevant government setting up an Authority or similar to co-ordinate the response to the disaster, for example:

- Queensland Reconstruction Authority (QRA), which was established as a temporary body in 2011 following the unprecedented disasters that struck Queensland over the summer of 2010–11, and to deal with the rebuilding of Grantham. It was made a permanent body in 2015.
- Victorian Bushfire Reconstruction and Recovery Authority (VBRRA), established in 2009 to coordinate the recovery of communities affected by the 2009 Black Saturday bushfires. Two years later in 2011, VBRRA was dissolved.

In addition, there are numerous international examples in both developing and developed countries, such as:

- Nepal Reconstruction Authority was established following the 2015 Gorkha earthquake.
- Louisiana Recovery Authority was created following Hurricanes Katrina and Rita.

An important short-term action with potential long-term impacts is the immediate response to housing impacted families. In many situations, temporary housing is provided in the form of a housing village. There were examples of this in the aftermath of the 2009 Victorian bushfires [38]. It is important to get such arrangements in place as quickly as possible following the loss of housing for families so that they simply have somewhere to live. However, perhaps of even more importance is making this temporary situation as good as possible, is that if impacted residents feel that their short-term needs are met, it hopefully provides them with some time in their lives to carefully consider the decisions which they need to make about their individual futures. There is a tension between re-building quickly and the understandable desire of those impacted to re-establish their lives to the greatest extent possible as quickly as possible versus a deliberative process where the focus is on long-term individual and community recovery [12]. Consequently, it is important for high quality temporary housing to be made available by relevant governments as quickly as possible to assist in the long-term recovery. This needs to be accompanied by trained staff who can quickly turn their attention to the task. Government agencies should have strategies whereby trained personnel can be brought in at short notice to undertake specialised activities, such as the establishment of a temporary housing village. Physical and human resources need to be 'at the ready', to the greatest extent possible, to be able to provide comfortable housing in the shortest timeframe.

An important and very topical contemporary practice is the opportunity for the implementation of a property buy-back scheme. Grantham is an excellent example where this has proved successful. Recent floods in the Lockyer Valley over the Australian winter in 2022 have again caused flooding to the area impacted by floods in 2011. As per the information provided in the case study, the speed of the move to higher ground was a feature of the Grantham response. Speed in this case does not appear to have led to less-than-optimal outcomes. The devastation caused by the 2011 flood was a factor in this case. Such was the devastation and loss of life in a small community, that for many, the opportunity to move to a property on higher ground was a straightforward and easy decision with sound long-term objectives. However, a large-scale buy-back program can be challenging and can take a long time, and disaster victims need to wait for an extended period, as was evident after the 2022 Lismore flood [37]. The Grantham example included about 100 homes, whereas the Lismore buy-back program is targeted for 2,000 homes, the largest

of its kind. It is an opportunity to learn how the buy-back approach can be better planned and streamlined, given that future disasters can be expected to be larger due to advancing climate change.

Another contemporary practice in response to disaster recovery is the engagement of the community in the recovery effort. It is intuitive that this would be the case, after all, the people directly impacted by a disaster should surely have large input into the recovery and reconstruction response. However, given the complexities of the recovery process, it is not always straightforward to get the community engaged. A striking example described in this study is in Mallacoota in Victoria following the 2019 bushfires. This was a community that organised themselves to be a proactive force in the recovery effort. Unusual in disaster recovery scenarios, perhaps unique, was a formal process to elect a committee from their peers to represent the community in decisions regarding the reconstruction effort in Mallacoota. This process led to MADRA – an unambiguous, representative group representing stakeholders. There could be no clearer consultative, authoritative group for which governments and other agencies could consult and receive advice. All of the case studies and much of the disaster recovery literature refers to the importance of community engagement to outcomes that are accepted by those impacted by disasters.

Community engagement is such a central feature of the disaster recovery literature that it warrants particular attention in assessing how to approach a disaster recovery situation. Mitchell [31] used nine case studies to examine the role of community-led recovery and the partnership options for the sharing of responsibility for disaster recovery between the community, government agencies and non-government agencies. This work focused on the sharing of risks faced by communities including community health, wellbeing and safety. The original concept was that communities hold the knowledge and expertise to lead their own recovery and that their ownership of the process can lead to better long-term outcomes for community health and well-being [31]. The intent of the report was to determine how Social Recovery Reference Group (SRRG) agencies could better support the long-term health and wellbeing of communities through community-led recovery. The recommendations for governments produced a sound list of actions which can inform provision of support for community-led recovery. Training for support agencies and the preparation of tool kits which can be deployed once a disaster occurs are extremely important to support a community-led approach, which has been recognized in this paper as reflected in the development of the recovery matrix presented below in Section 6.1. This aligns with the research question and aim presented above in Section 2. Thus, there is a strong connection between the research question and related gap identified in the literature (for example, by Mitchell [31]) and the consequent output, that is the recovery matrix, representing consistency and continuity throughout the paper.

Hogg et al. [39] undertook a study on the impact of a disaster with a particular emphasis on the effects of relocation of housing and businesses in Christchurch following the earthquakes. They divided the impacted groups into four and sought to measure the impacts of relocation on mood and anxiety symptoms over time. The study included findings of differences in the more affluent areas of Christchurch including the Port Hills area compared to less affluent areas including some residents of the city's plain areas. The findings suggested that it was important to include socio-economic status in exposure assessment. Further, females, older adults and those with a pre-existing mental illness were considered high-risk compared to other segments of the population. The report went on to suggest that mental health services should be targeted towards vulnerable groups [39].

The case study comparisons and research point to a need for a more systematic understanding of communities and their capacity for disaster recovery. In examining various population characteristics and the specific circumstances of the disaster, several factors suggest the level of support required by a community for disaster recovery will be high. These factors include the significant destruction of community assets, the high severity of the disaster and the socio-economic profile of the community. There is a growing body of knowledge which suggests that optimal recovery will be achieved through a community-led response. In considering the case study data, it is likely that other socio-demographic indicators could be used to predict the likelihood of a community taking up the opportunity to lead their own recovery. The successful community engagement in Mallacoota through the establishment of the MADRA has been lauded a success. The Mallacoota population demographics are unusual when compared both to the general Australian population and also when compared to similar demographic measures for the other case study populations (see Appendices A–D). The median age in Mallacoota, 59 years old, is considerably higher than for the other communities. Additionally, a higher-than-average number of people in Mallacoota are employed part-time, a lower number employed full-time, and the unemployment percentage is extremely low at 2.7%. The fact that this population was able to organise itself to take collective action whereas other communities have struggled

to get an effective and meaningful voice is likely to be a factor of the characteristics of the population and the nature of the disaster. That is, a more educated population than the other case studies presented (see Appendices A–D), more people with more time to devote to non-paid work based on the high number of residents with part-time work and that the disaster caused significant damage and trauma to the area and the population.

In exploring how to augment the current approaches to disaster recovery, it is suggested that a close examination of the socio-demographic characteristics of an impacted area is a critical place for government and agencies to start. Such an examination can provide a more nuanced and tailored approach to disaster recovery. A basic point scoring system could assist in a high-level, initial response to examining the approach to a disaster recovery scenario. For example, points could be awarded against criteria such that the characteristics which appear to suggest increased vulnerability could attract higher points. If the addition of the points associated with various characteristics is more than a predetermined amount, then the disaster would initially be classified as, say, Level 3 and the response of the relevant governments and agencies would be tailored accordingly. For example, this might involve an increased involvement of social workers or other community engagement resources to assist in the recovery period.

## 5.1. Community Recovery Support Matrix

A sample point table created by the authors to assess vulnerability is provided below, noting that further research and investigation would be required to determine such "points". From the case studies and other literature, four main factors were found critical towards influencing the vulnerability of individuals – age, education, employment and community assets – and points were allocated according to the level of each factor, 50 being the highest point and 10 being the lowest in a scaled graded according to tens. It was noted that people of both low and high age were vulnerable. In this example the higher the points accumulated, based on assumptions drawn from the case study information above, the higher the community vulnerability and need for additional support. Further research is suggested in this area to explore the impact of specific characteristics in more detail, but a basic framework is proposed below (**Table 2**).

**Table 2.** Community socio-demographic characteristics and context (points according to vulnerability).

| Community Socio-Demographic Characteristics and Context | Points |
|---|---|
| Median age below 40 | 50 |
| Median age above 40 and below 50 | 40 |
| Median age above 50 and below 60 | 30 |
| Median age above 60 and below 70 | 40 |
| Median age above 70 | 50 |
| High level of education attainment | 10 |
| Moderate level of education attainment | 30 |
| Low level of education attainment | 50 |
| High unemployment | 50 |
| Moderate unemployment | 30 |
| Low unemployment | 10 |
| High loss of community assets | 50 |
| Low loss of community assets | 20 |

Although the points are numerical for the purpose of weighting, some of the factors are qualitative. For example, based on community consultations the level of loss of community assets can be assessed as high or low according to the particular context and community. What might be considered high in one community may not necessarily be considered high in another community. It would depend on the economic level of the community.

Looking back at the case studies where the above-mentioned four factors were evident, it is clear that such a matrix utilised at the community level would have allowed vulnerability assessment that could inform disaster recovery. Therefore, it is being suggested that matix can be adapted widely across Australia, although not all the factors would not necessarily be very relevant in some contexts and there might also be other factors that are more context-specific. Nonetheless, it is a simple vulnerability assessment tool that can be adapted and applied, and

perhaps even improved upon.

### 5.1.1. Sample Application of Point System to Assist Supporting Community Recovery

To demonstrate how the community support matrix might operate in action, two of the case study communities examined have been utilised in the tables below as an example. Based on the case study examples, the highest community involvement in post-disaster recovery has been in Mallacoota. The socio-demographic characteristics investigated are quite different to those exhibited by the Lismore community. Although it is still early in the recovery process for Lismore, it would appear, given their population has almost the opposite characteristics compared to Mallacoota, they would require a higher level of support from government and non-government agencies. The tables below provide examples of the two extreme examples as applied using the "community recovery support matrix" (**Table 3**).

**Table 3.** Sample comparison of community recovery support characteristics between Mallacoota and Lismore.

| Recovery Support Required | Community Example 1 - Mallacoota | Points |
| --- | --- | --- |
| Median age | 59 | 30 |
| Education attainment | high | 10 |
| Unemployment | low | 10 |
| Extent of loss of community assets | high | 50 |
| Total | | 100 |

| Recovery Support Required | Community Example 2 - Lismore | Points |
| --- | --- | --- |
| Median age | 47 | 40 |
| Education attainment | moderate | 30 |
| Unemployment | low | 50 |
| Extent of loss of community assets | high | 50 |
| Total | | 170 |

### 5.1.2. Indicative Community Recovery Support Matrix

Based on the scores achieved in the above community examples, an initial approach to support options could be determined. This Community Recovery Support Matrix, once validated, would allow for better planning and determination of indicative recovery support options in the immediate aftermath of a disaster (**Table 4**).

**Table 4.** Community recovery support matrix.

| Point Level | Recommended Support Options |
| --- | --- |
| Level 1 (50–120 points) | Community empowered to self-manage as much of the recovery process as possible. Government and agency support to be offered as requested. Low level of case management required in medium to long term. |
| Level 2 (120–150) | Moderate level of government and agency support and activity should focus on empowering and supporting community-led recovery. Case management may be required at the individual level through to the medium term, but longer-term case management is less likely to be required. |
| Level 3 (150+) | High level of community support required. Community-led recovery will necessarily require additional support and individual case management through to medium term. |

## 6. Recommendations

Based on the examination of the case studies and the research findings, a set of recommendations are suggested below to augment contemporary Australian post-disaster recovery practices to better manage the impacts of disasters on communities.

1. Establish permanent disaster response and recovery authorities, such as the Queensland Reconstruction Authority (QRA), in all Australian states and territories which are responsible for developing and improving frameworks for disaster preparedness and recovery and to respond to disaster situations with the ability to employ

assets quickly. For example, in the context of recovery after the Black Saturday bushfires, a temporary organisation (VBBRA) was established, but in subsequent disasters there was no organisation in place to support the recovery. The NSW Reconstruction Authority was established after the Black Summer Bushfires, and similar to the QRA, has been supporting recovery in the state. Thus, such a body would allow more effective recovery in all the states and territories.

2. Establish a supply of temporary housing and a trained workforce that can be called upon to establish functional and high-quality housing as soon as possible following a disaster to promote short-term and long-term recovery interests.

3. Establish, wherever possible, an elected representative group drawn from members of the community to act on behalf of the community in priority setting and decision making and in liaising with government and other relevant bodies. The Mallacoota example discussed above in the context of recovery after the Black Summer bushfires demonstrates the potential for such a community-based approach.

4. Provide a property buy-back scheme if the chances of a disaster and property damage recurrence are high and, wherever possible, support new property builds in a nearby area to promote the re-establishment of a community. The buy-back initiatives of the government after the Lismore floods as discussed above would allow gaining lessons over the long term about the efficacy and potential of this strategy,

5. Further research adoption of a community recovery support matrix to provide governments and agencies with an initial guide to the community-specific support required for optimised recovery of the impacted community following a disaster.

## 7. Limitations

As mentioned earlier, this paper is drawn from a Bachelor's (Honours) thesis which was bounded in scope and field data collection was not permitted. Thus, the paper draws strongly from a limited set of case studies, which could not capture the vast diversity of vulnerabilities prevailing in different communities across Australia. The support matrix is derived from the case study findings, and is a simple tool at this stage, but can be the basis for future work, where it can be expanded and improved through empirical investigations in a wider range of contexts. The study relied on secondary data, although a key limitation, yet it allowed a preliminary design of the recovery matrix presented here. This will be the foundation for future research including a subsequent empirical stage where experts and communities would be consulted, and data from the field would be collected. This would allow refining the recovery matrix and to then offering it as a tool for trialling by relevant organisations.

## 8. Conclusions

It is difficult to determine success in post-disaster recovery. There are multiple factors at play including the timeframe under consideration, the relative severity of the disaster, the impact on community assets and infrastructure and the size of the community affected. To assess these issues and compare recovery success, further investigation is required including the development of survey instruments to administer to the affected communities, development of optimal reconstruction timeframes against which to measure success and an estimation of the funding required for the rebuilding of private and public buildings and infrastructure. The data sets used in this dissertation are public and consequently may not be specific to impacted communities. Data should be further refined to ensure accurate application of the recommended indicative community recovery support matrix.

## Author Contributions

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## Informed Consent Statement

Not applicable.

## Data Availability Statement

This paper is drawn from a Bachelor of Construction Management Honours thesis and it is not available in the public domain.

## Conflicts of Interest

The authors declare no conflict of interest.

## Appendix A. 2009 Victorian Black Saturday Bushfires Demographics and Disaster Context

Demographic information below has been drawn from the Australian Bureau of Statistics data from the closest available data set [40].

| | 2009 Victorian Black Saturday Bushfires |
|---|---|
| Setting | Kinglake Ranges communities (including Gippsland, Greater Bendigo, Alpine and Whittlesea) (Foundation for Rural and Regional Renewal, 2022) |
| Settlement Type | Remote cities/towns/rural |
| Hazard | Bushfire |
| Main Hazard Event | Black Saturday Bushfires |
| Recovery participants/delivery partners | Country Fire Authority (CFA), Goulburn Broken Catchment Management Authority (GBCMA), Upper Goulburn Landcare Network, Department of Primary Industries, multiple Natural Resource Management (NRM) groups (NRM Regions Australia, 2022), Red Cross |
| The 2011 demographic data below uses the Murrindindi LGA as indicative of the broader affected area (Australian Bureau of Statistics, 2011) | |
| People | 13,058 (50.6% male, 49.34% female) |
| Median Age | 45 |
| Main Country of birth | 82.3% were born in Australia |
| Employment % Full-time Part-time Unemployed | 53.9% (lower than the average for Australia 59.7%) 34.5% (higher than the average for Australia 28.7%) 4.6% (lower than the average for Australia 5.6%) |
| Common occupations | "The most common occupations in Murrindindi (S) included Managers 18.2%, Technicians and Trades Workers 17.2%, Professionals 14.9%, Labourers 12.0%, Community and Personal Service Workers 11.7%, Clerical and Administrative Workers 10.3%, Sales Workers 6.8% and Machinery Operators and Drivers 6.7%." (Australian Bureau of Statistics, 2011) |
| Educational Enrolment (Used as indicative of educational attainment) | "In Murrindindi (S) 26.1% of people were attending an educational institution. Of these, 27.0% were in primary school, 23.0% in secondary school and 12.9% in a tertiary or technical institution." (Australian Bureau of Statistics, 2011) |
| Private Dwellings Occupied Unoccupied Dwelling types | 73.2% 26.8% "Of occupied private dwellings in Murrindindi (S), 94.2% were separate houses, 1.3% were semi-detached, row or terrace houses, townhouses etc, 0.8% were flats, units or apartments and 3.7% were other dwellings." (Australian Bureau of Statistics, 2011) |
| Aboriginal and/or Torres Strait Islander People | 0.75% of people identified as Aboriginal and/or Torres Strait Islander people |

## Appendix B. Grantham Flood Demographics and Disaster Context

Demographic information below has been drawn from the Australian Bureau of Statistics data from the closest available data set [41].

| | 2011 Grantham Flood |
|---|---|
| Setting | Lockyer Valley |
| Settlement Type | Remote towns/rural |
| Hazard | Flood |
| Main Hazard Event | Grantham Flood |
| Recovery participants/delivery partners | Red Cross Australia, Brisbane City Council, The Queensland Flood Authority (QFA), The Strengthening Grantham Project, State Disaster Management Group, Jamie Simmonds (Kirkpatrick, 2022) |
| The 2011 demographic data below uses the Lockyer Valley LGA as indicative of the broader affected area (Australian Bureau of Statistics C, 2011) | |
| People | 34,954 (49.66% male, 50.33% female) |
| Median Age | 37 |
| Main Country of birth | 80.7% were born in Australia |
| Employment % Full-time Part-time Unemployed | 57.3% (lower than the average for Australia 59.7%) 29.9% (higher than the average for Australia 28.7%) 6.5% (higher than the average for Australia 5.6%) |
| Common occupations | "The most common occupations in Lockyer Valley (R) included Labourers 18.6%, Technicians and Trades Workers 15.4%, Managers 12.8%, Clerical and Administrative Workers 11.8%, Professionals 10.9%, Machinery Operators and Drivers 10.0%, Community and Personal Service Workers 9.5% and Sales Workers 9.2%." (Australian Bureau of Statistics C, 2011) |
| Educational Enrolment (Used as indicative of educational attainment) | "In Lockyer Valley (R) 31.0% of people were attending an educational institution. Of these, 30.9% were in primary school, 20.7% in secondary school and 16.7% in a tertiary or technical institution." (Australian Bureau of Statistics C, 2011) |
| Private Dwellings Occupied Unoccupied Dwelling types | 92.4% 7.6% "Of occupied private dwellings in Lockyer Valley (R), 94.1% were separate houses, 1.3% were semi-detached, row or terrace houses, townhouses etc, 3.0% were flats, units or apartments and 1.5% were other dwellings." (Australian Bureau of Statistics C, 2011) |
| Aboriginal and/or Torres Strait Islander People | 0.003% of people identified as Aboriginal and/or Torres Strait Islander people |

## Appendix C. Black Summer Bushfires Demographics and Disaster Context

Demographic information below has been drawn from the Australian Bureau of Statistics data from the closest available data set [42].

| 2019/2020 Black Summer Bushfires | |
|---|---|
| Setting | Mallacoota and Districts |
| Settlement Type | Remote town/rural |
| Hazard | Bushfires |
| Main Hazard Event | Black Summer Fires |
| Recovery participants/delivery partners | Bushfire Recovery Victoria (BRV), EGSC, The Victorian Department of Health (DH) and the Victorian Department of Families, Fairness and Housing (DFFH), National Resilience and Recovery Agency (NRRA), Red Cross, Royal Flying Doctor Service (RFDS), Local incorporated associations (MDBTA) and MDHSS (Mitchell, Case studies exploring community-led recovery and coordination, 2019) |
| The 2021 demographic data below uses the Mallacoota LGA as indicative of the broader affected area (Australian Bureau of Statistics B, 2021) | |
| People | 1,183 (47.5% male, 52.5% female) |
| Median Age | 59 |
| Main Country of birth | 76.6% were born in Australia |
| Employment % Full-time Part-time Unemployed | 39.7% (lower than the average for Australia 55.9%) 47% (higher than the average for Australia 31.2%) 2.7% (lower than the average for Australia 5.1%) |
| Common occupations | The most common occupations in Mallacoota included combined primary and secondary education 9.3%, accommodation 7.6%, supermarket and grocery stores 5%, other fishing 4.5% and seafood processing 4.5% (Australian Bureau of Statistics B, 2021) |
| Educational Attainment | In Mallacoota 22.5% of people had completed a bachelor's degree or above. 10.1% had completed year 12. 10.2% had completed an advanced diploma or diploma and 7.2% of people had completed year 9 or below. (Australian Bureau of Statistics B, 2021) |
| Private Dwellings Occupied Unoccupied Dwelling types | 69.9% 29.8% Of occupied private dwellings in Mallacoota, 93.8% were separate houses, 13.9% were semi-detached, row or terrace houses, townhouses etc, 0% were flats or apartments and 2.6% were other dwellings (Australian Bureau of Statistics B, 2021) |
| Aboriginal and/or Torres Strait Islander People | 0.9% of people identified as Aboriginal and/or Torres Strait Islander people |

## Appendix D. Lismore Floods Demographics and Disaster Context

Demographic information below has been drawn from the Australian Bureau of Statistics data from the closest available data set [43].

| | 2022 Lismore Flood |
|---|---|
| Setting | Lismore and surrounds |
| Settlement Type | Urban |
| Hazard | Flood |
| Main Hazard Event | Lismore Flood |
| Recovery participants/delivery partners | Jamie Simmonds (Kirkpatrick, 2022), Red Cross Australia, Australian Schools Plus, Foundation for Rural and Regional Renewal (FRRR), Lismore City Council, The Salvation Army Australia, Community-run Resilient, State Emergency Service (SES) |
| The 2021 demographic data below uses Lismore as indicative of the broader affected area (Australian Bureau of Statistics D, 2012) | |
| People | 76,751 (49.1% male, 50.9% female) |
| Median Age | 47 |
| Main Country of birth | 80.5% were born in Australia |
| Employment % Full-time Part-time Unemployed | 49.3% (lower than the average for Australia 55.9%) 38.7 (higher than the average for Australia 31.2%) 5.5% (higher than the average for Australia 5.1%) |
| Common occupations | The most common occupations in Lismore included Professionals 18.9%, managers 13.9%, technicians and trade workers 13.1%, labourers 13%, clerical and administrative 11.3% and sales workers 8.6% (Australian Bureau of Statistics D, 2012) |
| Educational Attainment | In Lismore 18.4% of people had completed a bachelor's degree or above, 11.7% had completed year 12, 8.7% had completed an advanced diploma or diploma and 8.9% of people had completed year 9 or below. (Australian Bureau of Statistics D, 2012) |
| Private Dwellings Occupied Unoccupied Dwelling types | 90.5% 9.5% Of occupied private dwellings in Lismore, 86.5% were separate houses, 6.6% were semi-detached, row or terrace houses, townhouses etc, 5% were flats or apartments and 1.5% were other dwellings (Australian Bureau of Statistics D, 2012) |
| Aboriginal and/or Torres Strait Islander People | 5.5% of people identified as Aboriginal and/or Torres Strait Islander people |

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