Southlakes Connections Project

Networks, Resilience and Action in Southlakes Community post the April 2015 Storms

2016

Dr Amanda Howard, Dr Kylie Agllias, Karen Barrett, Ingrid Stansfield, Jacqueline Gissane, Sarah Bryan and Brooke Murphy
Project Background .................................................................................................................................................. 4
Context and April 2015 storm event .................................................................................................................. 4

  Practice and Research ........................................................................................................................................... 5

Southlakes .................................................................................................................................................................. 6

  April 2015 Storm event ........................................................................................................................................... 7

Project Aims and Parameters .................................................................................................................................. 8

Project Activities ...................................................................................................................................................... 11

  Mapping of local networks and engagement with community members and services ........................................ 11

  Our Stories of the Storm Exhibition ..................................................................................................................... 13

  Ongoing community and service engagement and partnership development ..................................................... 14

  Natural disaster simulation activity ..................................................................................................................... 14

  Development of ‘bottom up’ co-ordination and collaboration strategy ............................................................. 15

  Development of web and social media strategy and digital story telling to co-ordinate local information provision and collaboration ........................................................................................................................................... 15

Research and Evaluation Methodology and Activities ......................................................................................... 16

Literature Review and Documentary Analysis ..................................................................................................... 16

Action Research with Project Group .................................................................................................................... 17

Focus Groups ......................................................................................................................................................... 18

In depth interviews .................................................................................................................................................. 18

Natural Disaster simulation – Observations, working groups recordings and process recordings ......................... 18

Ethics ......................................................................................................................................................................... 19

Recruitment ............................................................................................................................................................. 19

Data collection and analysis .................................................................................................................................... 19

  Limitations of the Research ................................................................................................................................... 20

Research findings .................................................................................................................................................... 21

Neighbourhoods and Informal networks .............................................................................................................. 21

  Formal Service Sector – Emergency and Human Services .................................................................................. 25

  Awareness ............................................................................................................................................................... 27

  Focal points and co-ordination .............................................................................................................................. 29

    Community triage systems .................................................................................................................................. 29

    Information and Communication ....................................................................................................................... 30

    Service co-ordination .......................................................................................................................................... 31

Project outcomes and planning for future natural disasters ................................................................................... 33

  Guidelines for whole of community natural disaster resilience planning and action ........................................ 34

  Co-ordination as collaboration – bottom up ........................................................................................................ 34

  Recognition of Self organising networks ........................................................................................................... 35
Critical role of local place based services such as community centres .......................................................... 35
Experience focused learning .......................................................................................................................... 36
Social media, radio and agile communication ............................................................................................ 37
Natural disaster preparation and planning as an ongoing community conversation .................................... 38
Community disaster resilience guidelines in summary ............................................................................... 39
Appendix A .................................................................................................................................................. 40
  Activating formal and informal networks to increase disaster preparedness and resilience .................. 40
Part 1: ‘At risk’ and vulnerable populations .............................................................................................. 41
  Who is at risk? ........................................................................................................................................ 41
    Low Income ........................................................................................................................................ 42
    Older People ....................................................................................................................................... 44
    Young People/Children ...................................................................................................................... 45
    People with Disabilities ....................................................................................................................... 46
    Culturally and Linguistically Diverse [CALD] communities .............................................................. 48
    Women .................................................................................................................................................. 49
Other factors that contribute to vulnerability .............................................................................................. 51
Part 2: Collaborative Community Responses to Disaster ............................................................................ 53
  The importance of collaborative formal and informal networks ............................................................. 53
    Social capital ....................................................................................................................................... 54
    Community capitals ............................................................................................................................ 58
    Resilience ............................................................................................................................................ 60
Key stakeholders in civic society .................................................................................................................. 62
Activating collaborative relationships and processes ................................................................................... 65
  Principles of activating formal and informal collaborative community networks .................................. 66
  Lessons from the literature about activation ......................................................................................... 67
Appendix B .................................................................................................................................................. 93
Appendix C .................................................................................................................................................. 97
Bibliography ................................................................................................................................................ 99
Project Background

Context and April 2015 storm event

In September 2014 Southlakes Community Services, a place based community organisation based in Morisset, NSW, applied for funding through the Community Resilience Innovation Program of the NSW State Emergency Management Program (SEMP) to explore the ways in which formal service and informal local networks might better co ordinate in natural disaster planning. The project developed from findings of some earlier research conducted by the University of Newcastle and Hunter Councils regarding ‘at risk’ populations and natural disaster preparedness, response and recovery. These findings focused on the potential for better collaboration between formal emergency and human services and local, informal community and neighbourhood networks in planning for, responding to and recovering from natural disasters.

Between applying for the funding and the project commencement, an East Coast low-pressure system caused significant storm and flood damage to communities across the Hunter, Lake Macquarie and Central Coast regions in April 2015. This storm event created a context for the project where findings were both urgently sought, but also where the operation of formal and informal networks could be examined at close quarters.

The project was focused on three key areas:

- Experiences of community members before during and after the April 2015 storms in working together and with formal services
- Experiences of the formal service system in planning and response to the April 2015 storms
- Interactions, intersections and connections between formal and informal local networks in response to and recovery from the April 2015 storms
Practice and Research

An important pretext for the design of the project was to provide a both a practical range of local activities which would explore and build on collaboration between formal and informal networks, and also add to the existing body of research evidence about how communities can become well prepared for and effectively respond to and recover from natural disasters. For this reason practice and research were undertaken in an integrated way throughout the project. Responsibility for the project operation and management sat with Southlakes Community Services Neighbourhood Centre and University of Newcastle Social Work conducted the research process for the project. The action research structure of the overall project meant that both the project activities and research components were able to adapt and respond to an unfolding community context post the storm.
Southlakes

The area covered by the project includes Morisset, Bonnells Bay and Morisset Peninsula, Cooranbong, Martinsville, Dora Creek and surrounds. These communities are located at the southern end of Lake Macquarie and are characterized by a combination of town centres, suburban development including waterfront housing and businesses and also semi rural and rural development. The area is bordered by the Watagan Mountains to the west.

Morisset is the transport hub for the area with a major train station, bus interchange and freeway access both south to Sydney and north to Newcastle.

In 2014 the population of the area (identified by the Australian Bureau of Statistics as Morisset-Cooranbong was 15,066. The area is a popular retirement destination, with the median age for the area being 45.2, considerably older than the median age for Australia at 37.7. (ABS 2014)

Median total income for the area is lower than the national median ($39, 596 for Morisset-Cooranbong compared with $44,940 nationally)(ABS 2014)
April 2015 Storm event

On April 21 2015 the Hunter, Lake Macquarie and Central Coast regions of NSW experienced significant impacts from a low pressure system which moved along the east coast of Australia. Resulting storms left extensive flooding, fallen trees, damage to houses and infrastructure. In the Southlakes area damage to phone and electricity infrastructure resulted in a large number of residents and businesses having no power or telephone communication for up to 7 days.

Local flooding and storm damage cut off some streets for 2-3 days.
Project Aims and Parameters

The project focus was on examining the gap in communication between formal and informal local networks in disaster resilience planning and had 5 overall aims:

1. Develop processes and strategies which will bring together existing formal and informal networks (currently working well but in isolation) in the South Lake Macquarie area to more effectively coordinate a shared approach to local disaster resilience.

2. Map and develop effective methods for formal and informal local networks to better work together in disaster preparedness, response and recovery.

3. Develop and document clear roles and responsibilities for voluntary organisations and groups, support and emergency services, business and local government in local disaster resilience planning and implementation.

4. Evaluate outcomes to build on the evidence base for effective local community capacity building in disaster preparedness, response and recovery.

5. Establish sustainable and integrated local disaster resilience network supported by the neighbourhood centre as a local and stable hub.

Project objectives were:

1. To develop effective strategies and processes for coordination between formal and informal networks in the South Lake Macquarie area.
2. Develop documented and transferable guidelines and promising practice for an integrated, shared responsibility approach to disaster resilience planning for local communities.

3. Through evaluation build on research evidence base for effective practical approach for community level shared responsibility in disaster resilience planning.

4. Establishment of sustainable and integrated local disaster resilience network supported by the neighbourhood centre as a local and stable hub.

Initial project outputs were focused on holding a series of community forums to gather information, discuss gaps and ideas for more effective communication between formal and informal networks and finally develop a set of guidelines and agreements for better co-ordination of these networks in natural disaster planning.

The occurrence of the storm event in the area in April 2015 created an opportunity to look more closely at the operation of formal and informal networks in direct response to natural disaster. As a result the community forum approach was adjusted to include a series of smaller meetings/discussions with local community groups and services followed by a half day simulation of a natural disaster where community members and groups were invited to participate along with emergency services, local government and other human service providers. The simulation activity was planned as a key component of the evaluation for the project, but became more integrated into project activities as well as evaluation as it provided an opportunity for formal and informal network members to engage in a ‘real life’ process of communication and decision making where data could be simultaneously gathered. This approach was developed as a more detailed and interactive strategy for achieving project outcomes in the wake of the April 2015 storm event and the process of community recovery from this event.

In this context two additional activities were included in the project along with interview and focus groups, which formed key components of the research/evaluation. The first of these was a detailed mapping exercise of local informal and formal networks in the area and the second was a community exhibition of photos, art, stories and reflections on community member’s experiences of the April 2015 storms.

During the early stages of the project it became clear that an opportunity for community members to share their stories and experiences from the storm and publicly celebrate resilience, creativity and local community
initiative might provide a valuable addition to the recovery process. This also provided a chance for project workers and researchers to hear in detail how formal and informal networks operated in practice via the stories and images shared by local people. Rather than inviting community members and service providers to a meeting to discuss planning processes, a decision was made to start the planning process with the narratives of those who had experienced the storm first hand.
Project Activities

While project and research activities were overseen separately, an action research framework for the project overall (detailed in the following section of this report) resulted in ongoing communication between project workers and researchers, and at times a process of integration between project and evaluation/research activities was adopted. This proved to be an effective strategy to achieve planned outcomes for the project as both sets of activities were able to be refined, better targeted and adjusted in the context of new learning as the project unfolded.

A total of 130 people were directly involved in project activities.

Outlined below are project activities:

Mapping of local networks and engagement with community members and services

Initial discussions regarding information on existing formal and informal networks in the Southlakes area revealed that while there was information about a number of different groups, organisations and networks, no comprehensive map of existing networks was available. In addition, an understanding of the role and activities of, and connections between networks in the community was fragmented and information inconsistent. It became clear that prior to effective engagement of the range of groups and networks in Southlakes, a comprehensive mapping exercise would be essential to ensure an inclusive and well-informed approach.

Final year Social Work students, working in collaboration with the Southlakes Neighbourhood Centre Coordinator undertook an extensive engagement and mapping process, firstly for informal networks and then for formal services and networks in the areas. A total of 13 community groups were contacted and included in the map. Each group was visited by students and a discussion about the group membership, activities, connections and experiences during the April 2015 storms was completed. Groups were also invited to participate in the research component of the project.
In relation to informal networks, the following diagram illustrates the range and function of groups contacted:

- Social support
- Young people
- Recreation
- Special Interest
- Environment/Sustainability
- Community engagement and support
- Education
- Craft
- Service clubs

In relation to formal services and networks, Southlakes and Lake Macquarie Interagency networks were contacted and participating local services mapped. In addition local emergency services, non-government organisations (as well as larger organisations with a local presence), plus local and State government agencies with a local project or worker were included. A total of 15 people from emergency services and 29 service providers were identified as having a current or potential role in natural disaster planning response and recovery in the Southlakes area. The diagram below illustrates the range of organisation types mapped:

- Locally based community and business organisations
- Large NGOs with a local presence
- Local government
- Local and regional emergency services
- State government agencies apart from emergency services
Our Stories of the Storm Exhibition

As part of the mapping process, students observed that community members were initially reluctant to talk about their experiences of the April 2015 storm. However, when the discussion changed focus to the relationships, support and connections which people experienced as part of informal community networks, stories of resilience, assistance and strong support systems began to emerge. It was from the narratives of connection and belonging that the critical role of informal networks in enacting resilience during the storm could be mapped.

The idea of providing a public celebration of community resilience during the storms was developed from these discussions. Community members were invited to contribute to the exhibition, which was held at Southlakes Community Centre, with stories, photos or any item which reflected their experience during the storm. The idea was welcomed by community members and contributions were received from local community groups and individuals and displayed as part of the Exhibition, entitled, ‘Our Stories of the Storm’. The exhibition became a key activity of the project, which actively engaged both formal and informal networks together. Advice and support was provided by local politicians, local government, Red Cross, ABC1233 and a range of community groups and organisations.

The Exhibition was launched by local State member, Greg Piper, as was attended by over 50 local residents and services.
Included in the exhibition were:

- A collection of individual’s and group’s creative pieces depicting the storms from April.
- Quotes from the interviews with community groups and members.
- A compilation of photos of the community groups visited as part of the mapping process.
- A slide show including photos of assets within the Southlake’s region.
- Wangi Library Knitting Group submission of items they had knitted during the storms.
- Children’s drawing submitted by from Southlake OOSH.
- Submissions from: Federal Member for Charlton, Pat Conroy; State Member from Lake Macquarie, Greg Piper and Lake Macquarie City Council Mayor, Jodie Harrison.

The Exhibition ran for 4 weeks at the Community Centre and was estimated to have been seen by over 250 people.

Ongoing community and service engagement and partnership development

Throughout the project ongoing engagement with community members, services and regional networks was undertaken. The development of long-term relationships at a local level was seen as a key outcome for the project. This engagement included attendance at meetings, providing social media and written newsletter updates of the project progress, attendance at community events and hubs such as libraries and ongoing informal discussion with services and networks about collaborative opportunities, which the project was developing.

Natural disaster simulation activity

As part of the research component of the project a natural disaster simulation day was planned and completed. Further detail about this part of the project is provided in the next section of the report, however, it is important to mention here, as the simulation also became a catalyst for ongoing collaboration.
and co-ordination of natural disaster planning in Southlakes. It was this activity which brought together project and research activities by providing a ‘real life’ scenario in which community members and services could work through how they might collaborate, while data about this process could be collected as the simulation took place.

Development of ‘bottom up’ co ordination and collaboration strategy

During the project evidence began to emerge regarding the need for a community led disaster planning process, which could actively engage with community members and also with the emergency services at all stages of any future natural disaster. The process of developing this ‘bottom-up’ collaboration strategy is a critical outcome of the project and the foundations for this were created through project activities. This strategy is an ongoing legacy for the project and will be co-ordinated through Southlakes Neighbourhood Centre. Further details regarding this activity are provided in findings and guidelines sections of this Report.

Development of web and social media strategy and digital story telling to co-ordinate local information provision and collaboration

The project included a small digital story telling component comprising video vignettes of local community members sharing their experiences of the storm. In addition, a web page and social media initiative to co-ordinate local information and encourage discussion was established as a conduit for further network development and resourcing.
Research Methodology and Activities

Alongside the project activities, a research component was designed to examine 2 key questions:

1. What can we learn from understanding the operation of local formal and informal networks to assist in more integrated and effective natural disaster planning, response and recovery?
2. What useful guidance can be developed to assist and support communities to develop integrate and whole of community natural disaster resilience planning?

University of Newcastle Social Work researchers were engaged to co-ordinate this component of the project. Outlined below are the overarching methodological framework, different methods used, recruitment and data analysis processes and some reflections on limitation of the research.

Initially a mixed method study was designed which included a community survey. This was modified as part of an early discussion regarding the most useful data collection methods for the project given its focus on the operation and integration of local networks. A more comprehensive qualitative methodology was developed as a result. The importance of gathering data which was detailed and rich in terms of how, when and where networks were enacted during and after the April 2015 storms, rather than broad but less detailed information which would not effectively address project objectives, precipitated a change of focus to purely qualitative data.

Literature Review and Documentary Analysis
At the outset a literature review was conducted which focused on current research available on resilience/vulnerability, social capital and the role of local community networks in natural disaster planning response and recovery. This literature review is provided in Appendix A of this report and provides a comprehensive resource of current knowledge in these areas, which can be utilised by communities in disaster resilience planning.
Action Research with Project Group

In order to create a mechanism for dialogue and ongoing learning between project activities and the research component, an action research framework was developed in which a project team comprising workers and researchers was formed early and met regularly to check in on progress, reflect and evaluate how activities were taking shape, and making changes where necessary. This enabled learning from the project in real time to be immediately included in the research, and for the project itself to take advantage of lessons learned along the way which could be put into practice during subsequent stages over the life of the project. In addition the project group also sought advice and input from a range of key stakeholders including local government, Red Cross, agencies and community leaders, which was also incorporated in the iterative project activities over time. Action research is ideally suited to projects where research evidence needs to be gathered and can but acted on immediately as part of the project itself. Where community engagement outcomes are critical, as in this project, action research ensures an ongoing and participatory conversation between research and practice. Rather than collecting data then reporting at the end of a project action research is cyclical, with each new set of data analysed and acted upon at numerous stages through the project. The diagram below illustrates this process.
The action research group met monthly over the 14 months of the project, with each meeting focused on an aspect of progress and also reflection about the overall shape of the project.

**Focus Groups**

A total of 10 focus groups were conducted as part of the research component. Two focus groups were held with service providers and a further 8 with community members and groups. A total of 86 people participated in focus groups, with more females participating (n=56) than males (n=30).

The purpose of the focus groups was to gather data on the ways in which existing networks (both formal and informal) operated currently and to explore ideas for improving communication between networks through collective discussion in each group. All focus groups participants were members of more than one network, with a third (n=29) stating that they participated in both formal and informal networks at a local or regional level.

Focus group questions can be found in Appendix C of this Report.

**In depth interviews**

15 in depth interviews were conducted with community members as part of the research. The purpose of the interviews was to gather data from community members who had experienced the April 2015 storm first hand, to examine their direct experience of activating, leading or interacting with both formal and informal networks before, during and since the storm. Interview questions focused on individual experiences and reflections to determine where, when and how, if at all, either (or both) formal or informal networks were utilised for support and assistance.

Interview questions can be found on Appendix B of this Report.

**Natural Disaster simulation – Observations, working groups recordings and process recordings**

The culmination of research activities for the project was a half day simulation of a natural disaster in the Southlakes area. An external consultant was contracted to develop and run the simulation day with researchers gathering data through observation, process recordings and audio recordings of simulation
workshop group discussions. The scenario for the simulation was developed in consultation with the project action research group and local emergency services staff and volunteers.

Community members, emergency services staff and volunteers and service providers were invited to attend the simulation day, which was held on Saturday March 19 2016. 46 people attended the day including 8 emergency services staff, 6 emergency services volunteers, 25 community members and 5 service providers. 2 researchers also attend the day to collect data.

Participants worked through a natural disaster scenario using a number of guiding questions, which explored planning, preparation, response and recovery.

Ethics

The research component of the project was approved by the University of Newcastle Human Ethics Research Committee. Approval number: H-2015-0391.

Recruitment

Research participants for focus groups, interviews and the simulation day were recruited via an expression of interest process and through snowballing, where research participants are invited to pass on details of the research and contacts to others in the community they know and think might be willing to participate. Recruitment and participant information was distributed via a range of existing local community networks. Potential participants were asked to contact researchers to register their interest in taking part in either an interview or a focus group. Written consent was received from all participants.

Data collection and analysis

All interviews and focus groups were audio recorded with data from each recording then transcribed for analysis. Data was coded and a thematic analysis completed. Focus group and interview data was initially analysed separately, then a thematic analysis undertaken to determine similarities and points of difference in
the data overall. Data from service providers and community members was also analysed separately then together for similarity and differences in themes.

Audio recordings were also made of individual table discussions at the simulation day and transcribed. Thematic data analysis was also undertaken of these recordings. Researchers also analysed process recordings and observation memos from the simulation day thematically.

Notes and memos from meetings of the project action research group were analysed according to both processes and thematic content.

Limitations of the Research

While a significant number of community leaders, members and service providers in the Southlakes area did participate in the research, there were a number of groups and individuals the research included only in very small numbers due to time, scope of the research and challenges in recruitment. These groups included parents with young children (while attempts were made to include this group in the research, logistical challenges in finding an suitable time to meet with local parents and playgroups proved a major barrier), those in transient housing and children and young people under 18 (this group was excluded from the research due to time constraints and consent processes required for their inclusion). Each of these groups are important contributors to research in this area and it is hoped that in the future we will be able to conduct research regarding community responses to natural disaster with these groups.

A further limitation should be noted with regard to the simulation day. The decision to engage an external consultant to facilitate this day was made in order to separate the research data collection from the running of the day. While the day was well attended, a limitation in terms of research evidence was time management of the facilitation, which meant that too much time was spent in discussions of practical preparation for natural disasters, leaving inadequate time for the level of detailed discussion about the operation of and integration between formal and informal networks. This discussion was rushed and proved disappointing in relation to the potential information, which might have emerged if the process had been managed differently by the facilitator.
Research findings

Neighbourhoods and Informal networks

The research found strong evidence for the operation of informal networks both at a neighbourhood and community group level, in operation as the first port of call during the April 2015 storms. While most community members who participated in the research spoke positively about emergency services (particularly the SES and Rural Fire Service), their experience during and in the week following the storm featured direct contact with neighbours, friends and family rather than with emergency services personnel.

Most participants spoke about the way in which their existing neighbourhood connections and networks assisted them to “ride out” the aftermath of the storm – both in a practical and emotional sense. As one person reported:

*We were without power for four or five days and neighbours helped each other, we knocked on doors and we shared. Participant 6*

Research participants reported getting practical help from neighbours in a range of ways including borrowing generators, sharing a BBQ, boiling hot water and helping with chainsaws and cleaning up. One parent reflected on the importance of friendships for both short and longer terms assistance;

*Friend networks got us through because we have no family nearby. I used my mother’s group connections to find a shower and it was a mother’s group connection who we stayed with. Participant 9*

In many cases, existing relationships and neighbourhoods networks were drawn on during the storm and provided a source of information and support when there was no phone or electricity;

*I have a fair amount of contact with neighbours. They were in the same position as me. There was a lot of damage but not to houses. As the news spread I realized others had more damage. I stayed in touch by word of mouth and by walking up the road and talking to other people in the street who might have heard something. Participant 1*
Many participants not only spoke about community connections helping them in a practical way by offering use of supplies and equipment but also how friends and neighbours provided emotional support in a time when many people felt extremely isolated. Participants reported the importance of friends and neighbours and helping them “cope”. One person summed this up well:

*If we didn’t have any connections I don’t know what we would have done.* Participant 14

These existing community connections enabled people to maintain a sense of normality in their day-to-day lives in the aftermath of the storm. Many community groups continued to run and meet – to offer members a sense of connection and a place to come together and share their stories. Members of community groups spoke about contacting others in the group where they could to check in on them.

Participants in interviews and focus groups reported that one of the immediate results of the storm was to bring the community together in a demonstration of support. For some this was a practical and social process:

*A lot of people had food in their fridge that was going off so we had a giant BBQ – 100 people came.*

Participant 12

Others were more reflective about the importance of emotional support and connection as well as de briefing in the event of a disaster:

*We probably talked to each other more – we all got together and had drinks and talked about what had happened.* Participant 9.

*I thought it was interesting how people became more of a community during the disaster. You know how you walk down the street and no one talks. People were talking to each other, relaying stories to each other. Sometimes people just needed a sounding board, that they weren’t alone.* Focus group participant.

The character of local informal networks emerged clearly from interview and focus groups conversations. Participants spoke both about activating existing networks and seeking out other people they didn’t know but were neighbours. The informal networks described by all research participants had 3 characterising features:
1. They were all relational – that is they relied on direct relationships and communication between people. Networks were activated not based on roles and responsibilities but on reciprocity, that is, the idea that people support each other in relationship during times of crisis.

2. They were spontaneous – no one who participated in the research described informal networks they were part of or benefited from as connected to a plan or procedure. Networks were activated out of care or worry for others, out of a need for practical or emotional support, or as a result of seeking information and working out what was happening. Although many networks existed before the April 2015 storm, they were activated spontaneously during that event, without a plan or any formalised process. The networks were exclusively self-organising, that is, there was no leader or centralised decision-making. People organised themselves to seek company and look out for others.

3. They operated alongside the emergency management and human services system and largely without reference to that system. Informal networks described by research participants had almost no interaction with the formal services sector except in one case – the community centre. While many of those who participated in the research spoke about the SES, RFS and Council positively in terms of providing practical assistance in some areas with clearing roads, trees and debris, interactions between community networks and formal services was almost invisible from interview and focus group discussions. One interesting note in relation to this is the gap between what community members said in the simulation activity regarding expectations of emergency services in particular, and what actually happened in practice during the storm. While most of the participants at the simulation day spoke about the central role of emergency services in managing all aspects of natural disaster management, those who took part in interviews and focus groups talking about their actual experience, had little, if any interaction with emergency or other services.

This quote provides a good example of how these features were demonstrated through informal networks during the storm:

*I also had a whole host of knitting ladies keeping track of each other with their mobiles. I contacted the most vulnerable people and I know they would be in touch with others. There’s a little network. One of*
them was 92 and another ladies just down the road was looking out for her. They didn’t know each other before the knitting group. Participant 6

The one exception to this was the operation of the Southlakes Community Centre during the storms. The Centre did not lose power and was able to provide a safe, warm space where phones could be charged, people could access a hot drink and some food for free. This space was advertised only via a sign at the front of the Centre, but word spread quickly and people without power or impacted by the storm began to arrive. The Centre was not a designated evacuation point but became a place of contact and safety for many by utilising the same features of the informal networks operating in neighbourhoods. As one community member and volunteer observed:

They [community members] could come together and have a cuppa. Kids played games with kids they didn’t know. There was about 30 people in a room that held 20 so people did talk. The volunteers bonded too. Because of the disaster, even though I was new, I could just muck in and be useful so I felt like I have been here for ages. Focus group participant.

For another the simplicity and welcome created a space where community members could come and connect informally with other people as well as access practical support:

Down at the centre we had no less than 20 people at any one time charging phones and using the computers. We had heaps and heaps of people just charging their phones. It was good to come down here and help people who had lost power – cooking toast, heating soup. There were heaps of people that don’t usually come here or even knew it was here. Focus group participant.

The capacity of people to utilise informal networks to access resources during a time of crisis was also described by a number of participants. In the quote below the critical role of informal networks is contrasted with social isolation in relation to accessing basic resources during the storm;

In one local caravan park with very vulnerable people were really resilient. They found the one car and found us and turned up for a feed on both nights which was great. Some people were utilising
networks in different ways to get to services but others were not able to due to isolation. Focus group participant.

Formal Service Sector – Emergency and Human Services

Responses from services providers (both emergency services and human service providers) highlighted a number of challenges experienced for the first time during the April storms due to the widespread impact in the region and significant communication and access problems created by extended power outages (up to 7 days in some parts of Southlakes). The operation of formal networks amongst human service providers, often with very vulnerable clients in the Southlakes area was disrupted by the lack of power and telecommunications in the area. Many services operating in the area with bases elsewhere became aware how reliant they were on telephone and Internet to communicate with workers and clients. Participants highlighted the need for better co-ordination and communication within formal networks and the development of a plan at a local level for contacting clients when workers based ‘out of town’ are not able to contact or travel to the area due to storm and flood impacts. One worker reported:

The communication problems were one of the things people were most frustrated with. You couldn’t do anything because power and telephones were down and no one could communicate but it was one of the most stressful things for people as they didn’t know what as going on. Focus group participant (services)

Members of interagency networks reflected on the need for better co-ordination within those existing networks:

One thing that was remarked to me was the lack of inter agency communication. So only one agency knows who the vulnerable people are and they are in Newcastle and can’t get to anyone. Focus group participant (services)

Interestingly, emergency and human services workers also identified relational and informal networks as critical in responding effectively during the April storms. For some, there was a clear separation between how these networks might be utilised in a professional capacity and how they are enacted as a community
member, but for many in the formal service sector informal relationships were seen as essential to working effectively. As one worker observed:

*One of the people who volunteer here is also in the SES and we were checking on that person. Because we knew them we were able to have a more direct interaction with the SES and were able to offer our centre and for people to find out through that relationship. The personal relationships and networks worked well. Focus group participant (services)*

Two further comments from service providers illustrate the role played by connecting formal and informal networks to provide support for those at risk during a natural disaster:

*I don’t think there was anything really in place to target people who are most isolated or at risk. It often relied on local people knowing who the vulnerable people are. We dropped off some food hampers and relied on the local nurse who knew the families who might need some food. Focus group participant (services)*

*I think we have learned a lot just having these conversations at the interagency. So at times of crunch I know more people and organisations to go to and access. Keeping up your networks is important. Databases are problematic but keeping relationships up is important. Focus group participant (services)*

During discussions with emergency and human service providers, there was some tension with regard to the role of community members and that of the emergency services in responding in the first instance to a natural disaster, and also in participating in local emergency planning processes. While most members of formal networks spoke about the importance of better relationships between local groups/community members and formal networks, for some the risks involved in engaging with informal networks and the tension between the command and control imperatives of emergency management and the more relational and spontaneous features of informal networks was difficult to reconcile. Decisions about where evacuation centres would be placed, membership of formal local emergency planning groups, and real engagement with community groups and informal networks in natural disaster planning, response and recovery remained for some service providers as outside the realms of wise practice. At the same time, emergency and human service providers
unanimously reported that there were not enough resources available to fulfill all expectations of them during a natural disaster of the scale of the April 2015 storms. It is this conversation, which is at the centre of the ongoing work of the project and developing a collaborative process for formal and informal networks to occupy.

For most of those who participated in the research from the formal service sector, navigating professional expectations with personal knowledge and values was often difficult. Many, but not all, of those who participated in focus groups were outsiders in the community and this meant that they were more reliant on local knowledge and networks to support people during a natural disaster, but less equipped to do this without paying attention to developing strong relational networks. The exception to this was SES volunteers who were also local people and often found themselves, negotiating the parameters of formal and informal disaster responses on the front line. In this context, however, the practice on the ground was reported as much more straightforward than discussion about what to do during the simulation exercise. The quote below illustrates this well;

*Our neighbours were away and a tree came down on the roof. The whole neighbourhood came together with the SES to make the house safe and work out whether they had a fridge with food in it which would go off.* Focus group participant (services)

**Awareness**

Everyone who participated in the research (members of formal and informal networks) raised the issue of awareness and community education as an area where much further work needs to be done to better prepare communities for natural disasters. For community members, awareness of how to prepare, the impacts of an East coast low pressure system and where to find information were key considerations.

*I really think there needs to be much more discussion. There is a lack of understanding on the systems and who is in charge. Even the emergency services and the importance that the community takes more responsibility to developing a network.* Participant 1
For those in the formal service sector, taking stock of lessons learned in April 2015 and developing more comprehensive planning and networks to respond more effectively next time were central considerations:

*There was a steep learning curve about what to do when workers can’t get to vulnerable people. How to work around this. I don’t thing there was anything really in place to target people who are most isolated or at risk. Focus group participant (services).*

During the simulation exercise community members and service providers demonstrated a strong practical awareness about how to prepare for another storm but did not discuss emotional support, connections with others (apart from family) and the role of community networks during and after the storm. This contrasted markedly with the reflections of those interviewed or participating in focus groups, who discussed practical preparation response and recovery almost exclusively in the context of local informal support networks. This difference in relation to a hypothetical event in the future, when compared to the experience of an actual event highlights an important consideration in any awareness raising initiatives which may be developed. The tendency in planning processes to focus on lists and very concrete actions may be crowding out a discussion of what really happens during a disaster event.

In practice, over two thirds of the people we spoke to knew preparation was important and could list the key elements in being prepared. Just under half of the research participants were also able to draw on past experiences to respond to the storm and utilise camping or other resources either belonging to themselves or neighbours to assist in seeing the crisis through. This series of quotes is indicative of discussion in both interviews and focus groups:

*We knew from the last big storm that one generator wasn’t enough so we had a second one ready to go. Participant 5*

*We had a transistor radio ready –we learned this from the bushfires a couple of years ago. Participant 3*

*Because we live in a rural area we have a fire, gas, bore water and a generator to run the fridge, the coffee machine and the TV. Participant 7*

*We own a caravan so we had gas fridge, shower. Participant 4.*
Focal points and co-ordination

A major theme identified by research participants across interviews and focus groups and the simulation was the critical role of co-ordination in relation to information, disaster response, access to support and opportunities to contribute. While some participants expressed a desire for centralised co-ordination with one group or individual in charge, over three quarters of research participants described the need for a series of focal points or co-ordination nodes which were organised in a collaborative rather than command and control structure. The unpredictability of a storm event was discussed at length in relation to having flexible and responsive co-ordination processes and community focal points depending on where damage is worst and what transport and communication is available.

Community triage systems

A particularly interesting finding from the discussions with community members and groups was the way in which individuals and families seemed to create their own community triage systems – their own ways of checking up on family, neighbours and vulnerable people in the community. Using the dispersed and relational networks described earlier, community members were often the first and sometimes the only people on the scene to check on more vulnerable community members. One participant reported:

_We have a fairly close relationship with our neighbours. The lady on one side lives on her own so my husband went over and checked that she was ok. Participant 10._

For another, checking in and practical assistance were part of the same process:

_My next door neighbours, they’re in their 80’s so I went over to see how they were. I had a couple of thermoses so I would take them over to them each day with hot water. Participant 5_

Some people described receiving assistance in this way:

_We just couldn’t believe the amount of help we received – people we didn’t even know. One neighbour from 5 or 6 doors down came up a couple of times. She lives on her own and she offered us her shower and washing machine to use. We didn’t know her from a bar of soap. Participant 13_
There was little discussion of how these triage, or “checking up” systems, actually started – they seemed to be an individual or family decision based on the knowledge of their neighbours or communities and who might need assistance.

Information and Communication

ABC radio was discussed by both community members and service providers as a critical source of reliable and up to date information throughout the April 2015 storms. For regional information the ABC was seen as working effectively and accessible even where there was no power. Access to transistor and car radios in most neighbourhoods meant that news could be effectively conveyed about current conditions and assistance.

At a local level, community members participating in the research reported that while there were some places you could get some information, there was no co ordination of local information in terms of access to power, food and drink, services and support, issues such as school closures and where local roads were flood effected.

In addition, information for those wanting to help was also seen as lacking. As one participant commented;

*I think people really often want to do something to help but just don’t know what to do. If there was a co ordinating process and people knew who to talk to and what they can do. Focus group participant.*

A number of participants identified a community based information and discussion hub as an initiative, which would be helpful in the event of future natural disasters. This was not just emergency services information but local community information. Over half of the research participants expressed a concern that a plan for co ordination and information be put into place before people forgot about lessons learned in April 2015. This is summed up well by one participant:

*When a disaster happens everyone starts to draw on their resources and skills to help each other and I found after people were thinking and talking about being better prepared. I am concerned about how everyone will know the information as it may be years until another disaster, How will we respond next time or will we do the same. Will we remember the last disaster and what we learned. Participant 5*

While computers were unavailable to many during the period when phone and power was out, many of the younger research participants identified social media and web sites as the major, and in some cases the only
method by which they access information, including natural disaster information. For this group the loss of power was very problematic as the follow comments attest:

*Facebook is our main communication – we don’t have each other’s mobile numbers so we communicate through Facebook. Participant 7*

*We don’t have a house phone anymore and mobile reception was down so that was a bit of a shock, to realise how cut off you would be. Participant 9.*

For others a lack of phone access increased stress as many older community members were concerned in case of a personal emergency or because they could not contact family members for a number of days.

**Service co ordination**

Processes for better co ordination within formal service networks were also highlighted. While a second, though less serious, storm event had taken place in January 2016 and workers particularly could identify the improved processes and co –ordination during that event when compared to April 2015, most workers still felt there was some way to go. In some cases better knowledge of available resources was seen as key:

*I think some of the emergency services don’t always know what resources are available to support them. We had power, sleeping accommodation. No one would know that was there. Focus group participant (services)*

For others the development of local communication systems and relationships was needed:

*I think a network is vital and a specific organisation you can go to register you have a network of people who can action things if asked to. Focus group participant (services)*

In practical terms individual organisations were thinking about how they needed to change their processes to build a local interagency support network for clients:
For us knowing that for our clients, we can say if we can’t get to you, you can go to Southlakes or wherever. I’m thinking we can put on clients forms whether they are ok for details to be passed to a local agency in a crisis. Focus group participant (services).
Project outcomes and planning for future natural disasters

Overall project outcomes were met, and in some cases exceeded. Adopting an action research approach to project development meant that activities and processes could be adjusted to better achieve overall project objectives. Key outcome measures against project objectives are outlined in the table below.

| Guidelines and promising practice | • Process documented for development of local disaster plan coordinating formal and informal networks  
• Web and social media presence for ongoing dialogue and development of local disaster planning including community and service providers |
| Build on evidence base for local disaster planning | • Qualitative research completed and reported regarding operation of formal and informal networks in disaster planning, response and recovery  
• Research response made available to all community member and service providers. Conference presentations, articles and community forums planned for effective dissemination of research findings |
| Sustainable, local disaster resilience network coordinating formal and informal networks | • Local disaster resilience network established to be coordinated through Southlakes Neighbourhood Centre.  
• Partnership development underway between local community groups and service providers.  
• Neighbourhood Centre facilitating ongoing community education, discussion and engagement on natural disaster planning and resilience. |

Project activities tapped into and research carried out demonstrated a rich and active informal community network operating at a neighbourhood and community groups level in Southlakes. An active and well-established formal service network was also in evidence across the area.

Research evidence from both network systems identified further work to be done in:

• connecting different parts of the formal networks,
• connecting community members experiencing social isolation with informal as well as formal networks
• developing dialogue and relationships between formal and informal networks at a neighbourhood and locality level in natural disaster planning.
Guidelines for whole of community natural disaster resilience planning and action

Project activities and the accompanying research also revealed a number of promising practice guidelines which can be used by any community interested in developing better co-ordination and integration of local networks. These are outlined briefly below:

Co-ordination as collaboration – bottom up

Research data from the project highlighted the importance of developing collaborative local networks to effectively create natural disaster resilience. This may seem like an obvious recommendation, however, the tension between the necessary command and control imperatives which direct the formal emergency and other services sector and the relational and spontaneous motivations which shape informal networks was found to be very real, and a key impediment to adopting an integrated network approach in disaster planning. Evidence suggested that it is critical to clarify the parameters of support and assistance provided by each network type early in the planning stages and for appropriate space to be established for formal and informal networks to firstly play to their strengths, and secondly, compliment each other.

While in Southlakes there was strong evidence that formal and informal networks tended mostly to work in parallel, where there were instances of effective integration the development of trust, mutual respect and investment in ongoing relationship building were features. In other words, social capital (trust, reciprocity) was a key component rather than formalised procedures and protocols. Responses to the April 2015 storms where formal and informal networks were effective were actively collaborative and either built on existing relationships or established trusting relationships as the basis for action.

This does not mean protocols and procedures were irrelevant, but rather that these were used as guidance and reference rather than as a prescriptive and dominant driver of communication and action.

In developing ongoing disaster resilience networks an intentionally collaborative process must be established where community members could participate as valued contributors alongside emergency and other services rather than as people who should be told what to do. For this reason it is more effective for discussions to be
facilitated by a group or organisation which sits between formal and informal networks. Alternatively, facilitation of discussion and planning can be shared between members of formal and informal networks.

The issue of power and authority is one, which was constantly being negotiated in the project and this is a critical consideration. Effective shared responsibility requires power sharing and a focus on ensuring networks build capacity for shared leadership over time.

Recognition of Self organising networks

Data gathered throughout the project consistently highlighted the important and often unrecognised work undertaken by established or spontaneous self-organising networks in natural disaster management. These informal networks of neighbours, interest groups and volunteers were particularly active during the immediate response and then recovery phases of the April 2015 storms. The importance of creating an environment where this kind of community based and relational network is recognised and nurtured should not be underestimated in developing a natural disaster resilience strategy.

One danger in formally recognising these kinds of networks arises when attempts are made to control informal networks as if they were part of a formal emergency response agency. Evidence from this project illustrates the critical role played by such networks and the importance for any disaster resilience strategy of including consideration of local self-organising networks in planning, response and recovery.

Critical role of local place based services such as community centres

While informal networks and the formal emergency and human services networks were found to largely operate in parallel in Southlakes during the April 2015 storms, the role of local place based services such as community and neighbourhood centres as conduits for safe, immediate community support and engagement was a strong theme in the research findings. To some extent the local club also provided this kind of conduit, although there was a focus of supporting existing members and their families rather than the general community. In Southlakes, the community centre worked between the formal services sector and informal networks as a first port of call provider of practical and emotional support during the storm and its immediate aftermath.
The community centre sat outside the command and control purview of emergency services but was able to offer a safe and welcoming space for community members (and also volunteers) which fulfilled a support role located between the operation of neighbourhood informal networks and formal evacuation and assistance services.

In developing an ongoing community disaster resilience network and discussion, research evidence from interviews, focus groups and the simulation indicates that the community centre (with ongoing local relationships and located at the nexus between community members, volunteers and paid workers) is ideally placed to act in a facilitating and collaborating role, which spans formal and informal networks.

Place based services such as community centres are located close to community networks, have local knowledge and relationships identified by all research participants as essential in natural disaster planning, response and recovery, and already bring together informal networks, local volunteers, and interagency networks.

**Experience focused learning**

One interesting finding from the research was focused on the way research participants engaged in learning and then put this into practice. While during the simulation session both service providers and community members retained a strong focus on practical planning in terms of resources, lists of practical actions and deferral to emergency services before acting, research evidence from interviews and focus groups revealed that in the actual storms in April 2015 local informal networks were activated to provide both social and emotional support as well as practical assistance across the area. During the simulation there was little discussion of this kind of spontaneous support for others, but rather a focus on what was considered the ‘right’ things to do as a responsible citizen. In practice community members mobilised resources, care for others and provide social support in an integrated and immediate way in response to the storms.

The learning here for natural disaster resilience planning is to balance reflective and experience based learning with planning for a hypothetical (at the time of discussion) future. Discussion about what people actually did proved more valuable in terms of a sustainable planning and learning process than a focus on providing the ‘right’ answers in a group setting. Community education was a key theme for most research participants and
the way this is approached is critical for both long term community awareness of natural disaster resilience and collaborative engagement across networks.

Research evidence highlighted the need for community education to start with examples of existing experiences, activities, networks, relationships and actions during a natural disaster which can be identified by network members, and build on these with additional knowledge. Where a didactic and information giving approach to community education was adopted learning and sustained action were described by research participants across both formal and informal networks as less effective and engaging than when stories and experiences were valued as learning opportunities.

Social media, radio and agile communication

Communication within and across networks was raised throughout the research process along with co-ordination of information. The power and telephone outage during the April 2015 storms was described as frustrating for many as most communication was now web or social media based, however, those who did not lose power described social media updates as particularly useful. For others access to ABC radio when power and telephone communication was down was seen as important and very helpful for receiving information and feeling in touch with the outside world.

Overwhelmingly community members who participated in the research described how quickly they and their neighbours adjusted to the lack of technology based communication, either pooling working phones in the area or going out to talk to neighbours face to face. Difficulties in communication in this context were particularly experienced by service providers based outside the area trying to get in contact with clients, and family members from outside the effected areas checking on loved ones.

Learning from the research highlighted the need for a multi faceted approach to communication which included, face to face, phone and social media where possible, ABC radio, and also the use of CB and two way radios (particularly in rural areas). In developing a disaster resilience plan, consideration of communication hubs where power is available and access to a range of communication contingencies was seen as essential. Community centre volunteers described the demand for access to computers with Internet access during the April 2015 storms being beyond the capacity of the centre. This observation highlighted the importance of
mapping and developing a mobilisation plan for available technology at a local level as a key component of disaster resilience planning.

**Natural disaster preparation and planning as an ongoing community conversation.**

In the research evidence gathered for the project the importance of ongoing conversation, relationship building and negotiation between and within local networks was a consistent theme. Where networks were described as not functioning well or in conflict during the April 2015 storms and since, participants identified assumptions, de valuing of skills and roles, power struggles and contradictory communication as significant issues. Many of the issues raised related to formal networks, where roles and function parameters, funding, and proscriptive policies sometimes created insurmountable barriers to collaboration even when workers expressed a desire to work more effectively with others.

Balancing local knowledge and relationships (identified by research participants from both informal and formal networks) with professional expertise and emergency management protocols was described as a major consideration for anyone developing a whole of community disaster resilience plan.

A number of participants spoke about the importance of disaster resilience planning becoming embedded in all community conversations and framed as an essential part of community well being. The development of opportunities for this conversation to be more effectively infused into community group and neighbourhood discussions was viewed by most participants as a central task in effective natural disaster planning. When asked how this might happen, a number of people spoke about focusing the conversation on how to build on local relationships and integrate local and professional knowledge in a more general sense rather than only talking about natural disasters. For many, creating a range of spaces for discussion and encouragement of community stories was a useful strategy. Opportunities to share experiences, such as the ‘Our Stories of the Storm’ exhibition were reported as helpful as they combined celebration, learning and relationships building. For an effective natural disaster resilience process to develop at a local level the research found that information, discussion and engagement (and in effect leadership) needed to be dispersed and inclusive of both formal and informal networks. Whole of community planning was best balanced with opportunities for very localised and informal discussion. Centralised and prescribed planning processes, which tended to favour
participation by formal services and networks, and often excluded local community members (this was the case with the Local Emergency Management Committee) either intentionally or as an unintended consequence, were not seen as effective by over half of those who participated in the research.

**Community disaster resilience guidelines in summary**

1. Collaborative and bottom up processes replace service focused and centralised planning
2. Self organising community networks are central to effective planning
3. Community centres have a vital role to play bringing together formal and informal networks
4. Communication is coordinated and uses diverse methods and tools
5. Ongoing dialogue and conversation which is widely inclusive and dispersed to a neighborhood level as a central guiding principal
6. Community education is experience based and builds on community strengths, stories and resilience
Appendix A

Activating formal and informal networks to increase disaster preparedness and resilience
Part 1: ‘At risk’ and vulnerable populations

Who is at risk?

Social inequalities are rarely neutral or benign phenomenon in times of natural disaster; rather research shows that disaster tends to exaggerate and multiply the preexisting vulnerabilities inherent in belonging to particular groups (Adeola & Picou, 2012; Bui, Dungey, Nguyen, & Pham, 2014; Clear, 2007; McGuire, Ford, & Okoro, 2007; Parliament of Victoria, 2010b; Reininger et al., 2013). Gender, race, income, ability, and age are commonly cited moderators of disaster preparedness, response and long term recovery in developing and developed countries (Bui et al., 2014; Chan, Cheung, Kim, Lee, & Lin, 2007; Climate Change Science Program, 2008; Mallon, Hamilton, Black, Beem, & Abs, 2013; Nahar et al., 2014). While there are a number of core groups highlighted in the literature and the following review, it is also important to remember the multiplying affect of social disadvantage, and special needs, in specific and underrepresented groups. For example, drug users are rarely mentioned in the disaster literature, but this group is a prime example of how the intersection of factors such as poverty, poor health, mental health – and possibly previous trauma, gender, age and race – are enhanced by addiction during periods of disaster. Qualitative research after Hurricane Katrina found that drug users, their families and even communities were vulnerable to additional disaster related risks and effects. Addiction meant that many drug users did not heed evacuation warnings and engaged in potentially dangerous activities to maintain their addiction - and presumably their personal sense of stability - during the disaster period (Dunlap & Golub, 2011).

Additionally, belonging to a particular socially disadvantaged or vulnerable group will intersect with environmental and cultural factors in particular countries and locations to produce diverse and unique experiences and disparities (J. R. Elliott & Pais, 2010; Neutens, Vyncke, De Winter, & Willems, 2013). For example, Elliott and Pais’ (2010) research found that socially vulnerable populations might be displaced or concentrated after a natural disaster depending on their original geographical location. Research shows that vulnerable populations often become more exposed to disaster related injustices due to the location in which they live (Zakour & Harrell, 2003). Indeed, Elliott and Pais (2010) draw attention to post disaster processes that exaggerate inequality:
reconceptualizing disaster recovery not as an act of unified resilience but as a struggle by privileged residents to restore the local social order, with them on top. The corollary, now widely accepted in disaster studies, is that socially disadvantaged residents are vulnerable not just to disasters but to post disaster recoveries (J. R. Elliott & Pais, 2010, pp. 1187-1188).

It is important to recognise that people in vulnerable groups may have limited voice in the political and social processes that promote preparedness and lead to recovery (Allen, 2007; MDC, n/d). This was highlighted during the Royal Commission into the Victorian bushfires, where it was recognised that inadequate understandings of specific needs prevented measures being taken to give specific and targeted advice to vulnerable groups during this period (Parliament of Victoria, 2010b). Commentators such as Fjord and Manderson (2009) argue that “cultural depictions of both disasters and disabilities [and I would suggest this applies to all groups experiencing social inequality] often replicate the explanation that people’s characteristics are responsible for tragic outcomes rather than the social inequalities that ensure they will be harmed” (p. 65). It is these conceptualisations that often exclude people from these groups in the planning and preparation stages of disaster management and contribute to the issues and consequences described below. This report concurs with Parr (1998), in taking the position that vulnerability should not mean inevitably poor outcomes for particular groups, rather it should highlight the areas that need to be addressed to ensure human rights and safety for all community members.

**Low Income**

International research continues to show that low income households are more susceptible to climate change, as well as being disproportionately disadvantaged during the preparation, response and recovery phases of natural disasters (Allen, 2007; Bui et al., 2014; Climate Change Science Program, 2008; Mallon et al., 2013; QCOSS, 2011; Zakour & Harrell, 2003). Income influences the capacity of people to prepare for disasters (Brotherhood of St Laurence, 2007; QCOSS, 2011; VCOSS, 2014). Low income groups are less likely to be able to afford disaster insurance, less likely to have the time or resources to attend community meetings and be more likely to have expectations that governmental authorities should be responsible for disaster relief and recovery processes (Howard, Blakemore, & Bevis, 2014; MDC, n/d; VCOSS, 2014; Wang et al., 2012; Zakour & Harrell, 2003). Poorer individuals and families are more likely to live in sub-standard or overcrowded housing...
that increases exposure or properties that are more vulnerable to disaster (Climate Change Science Program, 2008; Mallon et al., 2013; O’Neill, Zanobetti, & Schwartz, 2003).

Limited income often prevents the purchase of essential items, including adequate supplies of food (Howard et al., 2014; L. Ritchie, Tierney, & Gilbert, 2011). For example, research in poorer communities in China, showed that previous disaster exposure had little influence on preparedness with very few residents possessing a medical kit (10.7%) or extra medications (9.6%) (Chan et al., 2007). Many residents suggested they could not obtain these items due to limited resources (31.7% couldn’t afford medical kit and 43.6 % said they could not afford to store medicine) (Chan et al., 2007). Low income groups are less likely to have access to adequate communication systems such as computers or the internet, reducing access to preparatory information or warning systems (Howard et al., 2014; Parliament of Victoria, 2010b; VCOSS, 2014). They are less likely to have access to protective equipment such as an air conditioner during heat waves, often experiencing financial burdens that restrict purchases or the use of such equipment (Climate Change Science Program, 2008; Hansen et al., 2011).

Disaster also has a disproportionate effect on low income recipients in the recovery period (QCOSS, 2011; VCOSS, 2014). Evidence suggests that low income groups are more likely to live in disaster prone areas and there may be fewer services – with poorer service connections and limited service capacities – resourcing these areas after disaster, and there may be geographical barriers to providing relief, such as distance from urban centres (Allen, 2007; Zakour & Harrell, 2003). During disaster, people with lower incomes are less likely to have transport, effectively limiting evacuation options (Burney, Simmonds, & Queeley, 2007; MDC, n/d). These groups are more likely to clean up the environment themselves after a disaster, rather than hire workers to do so, adding to toxin exposure and physical risks (Allen, 2007). They might have fewer social and familial resources to draw upon during a period of crisis (Zakour & Harrell, 2003). They are less likely to be able to afford repairs, more likely to experience unemployment, difficulty finding housing and less likely to receive insurance payouts (Mallon et al., 2013; MDC, n/d; QCOSS, 2011; VCOSS, 2014). All of these factors have a high likelihood of contributing to increased stress and other mental health disturbances (VCOSS, 2014).
Older People

Older people have been identified internationally, as having a higher vulnerability during adverse weather conditions such as heatwaves and natural disasters (Banwell, Dixon, Bambrick, Edwards, & Kjellstro, 2012; Climate Change Science Program, 2008; Mallon et al., 2013; Wilson, 2011). For example, 69% of deaths during Hurricane Katrina in 2005 were people aged 60 years or over (Louisiana Department of Health and Hospitals in Climate Change Science Program, 2008). Australian heatwaves have contributed to a number of serious health issues and deaths in the older population (Banwell et al., 2012; Mallon et al., 2013; Victorian Government Department of Social Services, 2009).

Older people may have additional risks in the preparatory period if they are unable to use or access communicative technologies used to warn and prepare community members for heatwaves or impending disasters (such as computers and mobile phones). For example, Australian research found some older people had problems understanding and operating air conditioning units and controls (Hansen et al., 2011). Isolation exacerbates such risks. Many older people who live alone, have little interaction with their neighbours and live away from family will stay in their homes during and after a disaster – through choice or inability to evacuate – and may be overlooked by essential services (Portelli & Fulmer, 2010). They are often less likely to evacuate than younger people ad families (Dash & Gladwin, 2007a). Older people are highly vulnerable during periods of high heat and while Australian research showed a high level of health professional and carer awareness about potential harm, there were gaps in knowledge (about thermoregulation, risk factors and related illness) and intervention was primarily reactive(Ibrahim, Andrianopoulos, McInnes, & Evans, 2012).

Older people are also more susceptible to deaths and health related complications during and post disaster and especially while housed in emergency accommodation or shelters (Climate Change Science Program, 2008; Hansen et al., 2011). This is often due to their age related physiological status, limited mobility and disability (see below) and the exacerbation of chronic illness, particularly triggered by climate related events and disasters (Climate Change Science Program, 2008; Hansen et al., 2011; Portelli & Fulmer, 2010). For example, extreme heat has been shown to exacerbate anxieties in older people (Hansen et al., 2011). Older people requiring medications can also be placed at risk if they do not have adequate supplies, or they leave their residences without medications and medical records (Tomio, Sato, & Mizumurra, 2012). This period is
also problematic in terms of exposure to abuse and victimisation by relatives and community members; including financial abuse such as theft and contractual fraud, physical and sexual abuse by relatives and particularly co-housed community members, as well as abandonment and neglect (Gutman & Yon, 2014; Portelli & Fulmer, 2010).

Young People/Children

Young people, and particularly children, have increased risks of injury, disease, psychological effects and death during disasters primarily due to their reliance on others for care, as well as developmental and physiological vulnerabilities (Climate Change Science Program, 2008; Fung & Loke, 2010; Global Protection Cluster, n/d; Johnson & Gaskins, 2013; Lazarus, Jimerson, & Brock, 2003; Murray, 2011; Tang, Liu, Liu, Xue, & Zhang, 2014). Vulnerability will be mitigated by factors such as developmental stage, body mass, age, health, previous trauma and levels of physical support and emotional care (often influenced by sole or co-parenting status and/or numbers of dependent children) (Raphael & Burns, 2014; Tang et al., 2014; Zakour & Harrell, 2003). Children and young people are often reliant on parents and carers to take protective measures for them, and smaller children will be less able to escape from a disaster unassisted or withstand disaster related elements due to their small body mass (Climate Change Science Program, 2008; Peek & Stough, 2010). However, being a parent to small children may actually decrease time to prepare, access disaster related warnings and the capacity to attend community meetings (Community Capability Eastern Metropolitan Region, 2014).

“The chaos associated with natural disasters, and the disruption of family and community life, often create opportunities to exploit and abuse children” during and beyond the actual disaster period (Davie, Stuart, Williams, & Erwin, 2014; Global Protection Cluster, n/d, p. 1). Separation makes a child particularly vulnerable to illness and abuse, and even brief separation from parents and carers can be particularly risky if the child has extra medical or disability related needs (Davie et al., 2014; Murray, 2011). Young children are highly susceptible to infectious diseases after disaster due to their limited immune systems (Climate Change Science Program, 2008; Johnson & Gaskins, 2013). Children with special healthcare needs and disability (see below) are at increased risk if they require specialized care, particular diets, treatments or equipment that may not be available in the initial recovery period (Murray, 2011). It is also important to remember that younger children may not be able to communicate their needs or health related issues, which creates added
vulnerability. In the post disaster period, shelters may not be suitable for children in terms of emotional support and facilitating play, while communal areas and gathering places may pose safety hazards for young people (Community Capability Eastern Metropolitan Region, 2014; Davie et al., 2014).

Children “are likely to have disproportionately long-lasting psychological and physical health problems in unfortunate events” (Dirkzawager, Kerssens & Yzermans in Fung & Loke, 2010, p. 880). Children’s sense of safety and routine, emotional stability, as well as disaster associated losses require high consideration during and beyond the recovery period (Gibbs et al., 2014; Lazarus et al., 2003). In the post recovery period, “changes in parenting [might] include overprotection of the child, hyper-vigilance of their activities, and removal of a child’s autonomy” (Cobham & McDermott in McDermott, 2014, p. 11), which may have an impact on normal activities, play and development. Comparatively, young people may be required to take on additional burdens beyond their developmental capacities (Global Protection Cluster, n/d), and may lose or delay opportunities for their future, such as education (Gibbs et al., 2014).

People with Disabilities

People with disabilities cross the spectrum of age, culture and gender. Natural disasters exert particular risks and burdens on people with a disability (including psychiatric disability), primarily due to issues such as limited mobility and reliance on others, increased health or mental health related vulnerabilities and impairments that potentially interfere with receiving, understanding and/or acting upon disaster related information (Fjord & Manderson, 2009; Howard et al., 2014; Kettaneh & Slevin, 2014; McGuire et al., 2007; Nakamura, 2009; Peek & Stough, 2010; Person & Fuller, 2007). Many argue that Australian and International governments and services have not paid enough attention to – or engaged in enough consultation with – people with disabilities in the preparation and planning for extreme weather events and disasters, leaving many highly vulnerable to initial impacts such as injury and death, and a complicated recovery processes (Boon, Pagliano, Brown, & Tsey, 2012; Fjord & Manderson, 2009; Hans & Mohanty, 2006; Kettaneh & Slevin, 2014; Nakamura, 2009; Priestley & Hemingway, 2007). For example, people with disabilities were shown to be significantly affected during Hurricane Katrina:

Some died; some may have had their primary disabling conditions untreated for several days; some went without prescribed medication, proper food and fluids; some were exposed to the elements; and
some may have had their primary disabling factors complicated by hurricane-related secondary conditions, dehydration, infection and injury (McGuire et al., 2007, p. 54).

Studies have shown that “adults with sensory disabilities such as blindness or deafness ... often do not receive timely warning messages” (Phillips & Morrow in Peek & Stough, 2010, p. 1263), or preparatory information (Hans & Mohanty, 2006; Lowe, Ebi, & Forsberg, 2011). Cognitive impairment might prevent some people with disabilities from recognizing potential threats or create added anxiety and confusion (Climate Change Science Program, 2008; Peek & Stough, 2010). Limited physical mobility can decrease protective actions, such as running away or getting down stairs if lifts have been deactivated during disasters; limited access to suitable public transport can prevent travelling to cooler areas during heatwaves or timely evacuation (Climate Change Science Program, 2008; Hans & Mohanty, 2006; Kettaneh & Slevin, 2014; Peek & Stough, 2010). Isolation can leave some people with disabilities stranded in their own homes; Many older people with disabilities may live alone and anonymously, so identification and response is difficult, especially in larger cities and regions (McGuire et al., 2007). However, there are also risks for residents in assisted living or care facilities, when there are limited staff ratios and where facilities are poorly designed (Kettaneh & Slevin, 2014; McGuire et al., 2007).

People with disabilities might require extra assistance to evacuate during a disaster and this is often complicated by the timing of the evacuation (e.g. preventative or rescue stages) (Christensen, Blair, & Holt, 2007; McGuire et al., 2007). They are more likely to require special access, equipment, medications or medical attention post disaster and health deterioration can occur during this period (Boon et al., 2012; McGuire et al., 2007). Some people with disabilities will require additional privacy to conduct health related procedures such as catheterization, which can be difficult in shelters or evacuation centres (Kettaneh & Slevin, 2014). Long term effects can include poor health and mental health or an exacerbation of existing health and mental health issues, as well as displacement associated issues such as unemployment (Harley, Beach, & Alston, 2008; Person & Fuller, 2007). Access to suitable accommodation is often an issue for those with mobility limitations and discrimination can be an issue for some when seeking post disaster accommodation (Hans & Mohanty, 2006; Kettaneh & Slevin, 2014; McGuire et al., 2007). The loss of independence can also have significant effects on emotional wellbeing and mental health (Kettaneh & Slevin, 2014).
Culturally and Linguistically Diverse [CALD] communities

Research has shown that residential mobility, immigration and cultural and linguistic diversity can limit preparedness and increase physical vulnerability during extreme weather conditions and disaster, as well as negatively impacting long term recovery after a disaster (Adeola & Picou, 2012; Burke, Bethel, & Britt, 2012; Climate Change Science Program, 2008). Burke et al.’s (2012) study with Latino migrant and seasonal farm workers in the US found that they had a sound understanding of the need to prepare, but actual preparations were limited. CALD groups may be less likely to prepare effectively for a disaster due to language barriers and a lack of culturally or linguistically appropriate educational materials (Burke et al., 2012; Climate Change Science Program, 2008; Eisenman, Glik, Maranon, Gonzales, & Asch, 2009; Hansen et al., 2013). Language can also be a barrier to timely and effective evacuation of diverse language groups (Cherry & Allred, 2012; Clerveaux, Spence, & Katada, 2010).

CALD families, and especially new arrivals, may have a limited understanding of local geography (such as where the disaster is occurring and which direction or road to take to avoid it) (Burke et al., 2012). They may not fully comprehend the risks of particular hazards and pending disasters (Burke et al., 2012; Climate Change Science Program, 2008; Eisenman et al., 2009). For example, research shows that migrants were often unsure about what and how to prepare for a disaster in their location (Burke et al., 2012; Eisenman et al., 2009), and some living in overcrowded conditions did not have room to store disaster kits and supplies (Eisenman et al., 2009). Research has shown that CALD populations may not fully understand the possible effects of heatwave conditions, may not be familiar with the types of clothing necessary, how to most effectively utilize an air conditioner; they may be unable to care for themselves due to cultural obligations such as fasting during Ramadan or feel socially excluded from certain public areas with airconditioning or swimming pools (Hansen et al., 2013).

CALD families may have fewer familial and social supports before and after a disaster, affecting levels of preparation, communication of warnings and recovery processes (Climate Change Science Program, 2008; Drogendijk, van der Velden, Gersons, & Kleber, 2011). Language barriers that affect activities of daily living and recovery can affect immigrants during recovery and research has shown these difficulties are positively associated with mental health problems post disaster (Drogendijk, van der Velden, & Kleber, 2012).
Additionally, studies have found that less acculturation poses increased risk for mental health issues post disaster (Drogendijk et al., 2012; Vu & VanLandingham, 2012). Immigrants in Drogendijk et al.’s (2012) study, who were more committed to the communal and collectivist values of their country of origin – which sharply contrasted with the individualistic and liberal culture in which they were residing – were more likely to experience recovery stressors and poor mental health. Studies show that immigrants have higher levels of physical and psychological health issues post disaster (i.e. higher than previously and/or higher than native populations) (Soeteman et al., 2009; Vu & VanLandingham, 2012; Webster, McDonald, Lewin, & Carr, 1995). While Soeteman et al (2009) found higher levels of health concerns in immigrant than native populations this was explained by higher levels of pre-disaster ill-health. Regardless, this is a vulnerability that needs to be considered during disaster recovery.

Women

While research shows that women are more likely to accurately evaluate risk and evacuate than men (Dash & Gladwin, 2007a), they are generally more vulnerable and fare worse than their male counterparts across a number of domains in extreme weather conditions and during and after a disaster (Hazeleger, 2013; Nahar et al., 2014; Webster et al., 1995). Gendered norms in particular cultures and societies can make some women more vulnerable to natural disasters (e.g. women not being taught to swim) and limit post disaster resources and recovery (e.g. gender separation, social mores about breast feeding in front of strangers, and allocation of disaster relief to male heads of families) (Nahar et al., 2014). Women are more likely to live in riskier accommodation, such as mobile homes, than men (Dash & Gladwin, 2007a). While some international studies show higher disaster-related mortality for women (Neumayer & Plümper, 2007), this has not been shown in Australia, where it is thought that men’s higher mortality rates are due to the riskier roles they actively take to mitigate the effects of disaster, such as fighting bushfires (Hazeleger, 2013).

The post disaster period can also be difficult for women. Alston (2013) says, “because women are less likely to own land and resources, they are more restricted in their capacity to recover from environmental disaster, are less involved in decision-making and therefore have limited capacity to express their needs” (p. 223). Women tend to be vulnerable when resources are scarce, often due to less bargaining power than men, cultural and gendered notions about sharing with others and making sacrifices for children and male family
members (Enarson, 1999). They are less likely to be in secure and well paying employment, and economic stimulus in the post disaster period is often directed at male dominated industries such as construction (Hazeleger, 2013).

Women are highly vulnerable to sexual harassment and violence in evacuation centres and shelters (Drolet, Ginsberg, Samuel, & Larson, 2012; Nahar et al., 2014). Houghton et al.’s (2010) research draws attention to the active disaster period as a time of vulnerability to domestic violence, for women who may not be able to phone for assistance or physically leave violent circumstances. Additionally, research consistently shows sharp increases in domestic violence after disaster (Drolet et al., 2012; Enarson, 1999; Houghton et al., 2010; Parkinson & Zara, 2013). It appears that the stressors associated with disaster – such as overcrowding and grief and loss – often exaggerate existing relationship dynamics, so previously isolated or abused women are increasingly likely to be isolated and exposed to domestic violence in the recovery period (Drolet et al., 2012; Enarson, 1999; Hazeleger, 2013). Housing stressors and economic dependence may mean that women and children are less likely to be able to leave dangerous and violent situations after disaster (Enarson, 1999; Hazeleger, 2013). Disturbingly, Australian research showed altered, inappropriate and minimising responses to women experiencing violence after disaster:

Community members, police, case managers, trauma psychologists and family violence workers empathised with traumatised and suffering men—men who may have been heroes in the fires—and encouraged women to wait it out. These responses compromise the principle that women and children always have the right to live free from violence (Parkinson & Zara, 2013, p. 28).

Studies have shown that women are likely to perceive both positive support and negative interactions after a disaster (Arnberg & Melin, 2013). Nahar et al. (2014) suggest that “once the [disaster] event is over, there may be unattainable expectations for women to fulfill their family roles and responsibilities” (p. 712). This is supported by the UN Commission on the Status of Women report that suggested “women also take on additional responsibilities to provide non-market substitutes for market goods that their families are no longer able to afford e.g. take away food, child care, house cleaning” (cited in Hazeleger, 2013, p. 43). While research and anecdotal evidence suggest that social capital is a protective factor in times of crisis and disaster (see Social Capital), some suggest that this must be considered in relation to the gendered burdens that civic
expectations may exert upon women (Ganapati, 2012). For example, Ganapati’s (2012) research with Turkish women after the 1999 earthquake, found they were often allocated the first aid and psychological support roles, rather than the physical roles allocated to men. While this illustrates the perpetuating of gendered assumptions, this author would also suggest that it rendered these women more susceptible to vicarious trauma.

Other factors that contribute to vulnerability

There are a number of individual factors that also make people potentially vulnerable regardless of whether they belong to particularly vulnerable groups including people who: live alone; live in remote areas; live in unsound buildings, have communication difficulties; are un or underprepared; have previous or current experiences of trauma and or crisis, and are new to an area (Akama & Chaplin, 2013; Council of Australian Governments, 2011; Howard et al., 2014; Parliament of Victoria, 2010a). Akama and Chaplin (2013) also found that people with insular bonding networks tended to be vulnerable, because they potentially missed out on vital information regarding preparation and evacuation. The preparation for disaster and evacuation behaviours are social processes, where one must perceive and act upon risk accurately, so those who do not assess risk well are potentially vulnerable (Akama & Chaplin, 2013; Council of Australian Governments, 2011; Dash & Gladwin, 2007b). Several studies suggest that the public are underprepared and often have an unrealistic view of the role and capacity of emergency, relief and community services during time of disaster, a significant factor contributing to complacency in preparation and vulnerability during a disaster (Baker & Cormier, 2013; Burke et al., 2012; Mallon et al., 2013). When trust in local authorities is low, people can be vulnerable to overlooking or minimising official warnings (Oxley, 2013; Scolobig, Prior, Schröter, Jörin, & Patt, 2015) At a broader level:

Work-life patterns, lifestyle expectations, demographic changes, domestic migration, and community fragmentation are increasing community susceptibility, as well as altering local social networks and sustainability of volunteer groups. The increasing complexity and interdependencies of social, technical, and infrastructure systems are also playing a role in increasing our vulnerability to disasters. Pressures for urban development to extend into areas of higher risk from natural disasters compounds
the problem, as does the expectation that the same services and facilities will be available wherever we choose to live (Council of Australian Governments, 2011, p. 1)

One of the most cited structural issues that creates vulnerability is inadequate communication systems (Manjo & Baker, 2007; Mendonca, Jefferson, & Harrald, 2007; Parker, Priest, & Tapsell, 2009). Protective factors include a diverse and support network, access to an appropriate level of resources (such as economic and intellectual), capacity to seek information and support, and preparedness (Howard et al., 2014; Patterson, Weil, & Patel, 2010).

An important note about vulnerability, resilience and social capital

The previous section describes vulnerabilities of certain groups during extreme weather conditions and during disasters, which included physiological, structural and ideological barriers to safety. However vulnerability, resilience and social capital are not mutually exclusive concepts. Research shows that socially disadvantaged and vulnerable groups are often highly resilient contributors to community in times of crisis and disaster, which will be discussed in section 2 of this review.
Part 2: Collaborative Community Responses to Disaster

If we take a social vulnerability stance, disasters and their consequences, are viewed as a complex mix of natural hazards and human responses or actions (Peek & Stough, 2010). Disasters are “the convergence of social, political, and economic factors that shape people’s exposure to risk and ability to prepare for, respond to, and recover from extreme events” (Wisner in Peek & Stough, 2010, pp. 1260-1261). This section examines current theory and research that illuminates best practice in activating collaborative community responses to disaster, including: why it is important to develop collaborative formal and informal networks, how collaboration can be activated, who should be involved and when these processes should take place. While acknowledging the various definitions and cultural conceptualisations of community, in this review, community primarily refers to: “an entity that has geographic boundaries and shared fate. Communities are composed of built, natural, social, and economic environments that influence one another in complex ways” (Norris, Stevens, Pfefferbaum, Wyche, & Pfefferbaum, 2007, p. 128). Rowlands (2013) says that communities provide a shared life based on common locality, culture, and routine, within a group in which members are united by their common identity in spite of personal differences. Loss of community threatens identity, independently of the loss of personal relationships.(p. 25)

The importance of collaborative formal and informal networks

Australian disaster policy and practice is theoretically underpinned by; crisis, trauma and grief and loss knowledge, the strengths perspective, and community development (Rowlands, 2013). For the past decade, Australian disaster preparation, response and recovery has shifted from the sole domain of emergency services to a shared responsibility approach, and there has been an associated emphasis on the concepts of the social environment and environmental capabilities, individual and community social capital, capacity building, resilience and shared responsibility (Australian Red Cross, 2013; Council of Australian Governments, 2011; Hartel & Latemore, 2011; Winkworth, Healy, Woodward, & Camilleri, 2009). These terms and concepts are also used internationally, but they are often referred to broadly as a ‘people centred’ approaches to disaster management (e.g. Oxley, 2013; Scolobig et al., 2015). According to these understandings, community is no longer seen “as an aggregation of individual persons” or population, but as “an autonomous actor, with
its own interests, preferences, resources, and capabilities” (Patterson et al., 2010, p. 130). Complimenting this stance has been an increased recognition of the importance of building informal and formal networks and better coordination between local and national services towards mitigating the effects of disaster (Anikeeva, Steenkamp, & Arbon, 2014; Australian Red Cross, 2013; Council of Australian Governments, 2011; Weil, Lee, & Shihadeh, 2012). Community services, that possess skills, resources and particularly relationships with vulnerable people, have been recognised as core sources for disaster preparation and management (Australian Red Cross, 2013; State Government Victoria, 2012). Additionally, the strengths and resources of community members are increasingly seen as imperative to disaster management, and acknowledgment has been given to important roles they play in supporting each other during and after disasters (Australian Red Cross, 2013; State Government Victoria, 2012).

Commentary outside of official channels also suggests a role for community, and particularly community developmental models, in future disaster management (Rowlands, 2013; Winkworth et al., 2009; Woods, 2014). Some suggest that community development is required to “compensate for bureaucratic structures lost to neo-liberal policy changes in the last two decades” (Goel in Woods, 2014, p. 97), and is essential to combating the widening gap between rich and poor exacerbated by individualistic political ideologies (Woods, 2014). Community based approaches are also viewed as imperative to prepare for and combat the increased frequency and severity of natural disasters potentially caused by climate change (Woods, 2014).

The following sections briefly examines the concepts of social capital and then resilience, but it is important to recognise that these concepts have been used interchangeably with some of the aforementioned concepts, and they are variously conceptualised as theory, a set of capacities and strategy within the literature.

Social capital

Disaster policy and planning has traditionally identified and focused on five primary factors considered important to recovery; damage, population density, human capital, economic capital, and social capital (Aldrich, 2009). There has often been a focus on the physical environment in disaster planning and the building – and rebuilding – of physical infrastructure has featured heavily in recovery preparation (Aldrich &
Meyer, 2014; Hartel & Latemore, 2011). However, Aldrich (2009) cites a number of examples demonstrating that scale of disaster and the level of financial assistance are less likely to predict recovery than social capital. These findings are supported by an increasing body of research suggesting that social capital is vital in post-disaster recovery, if not the most influential aspect (e.g., Aldrich, 2010; Clear, 2007; L. M. Miller, 2007; Nakagawa & Shaw, 2004). There is considerable evidence of a growing understanding, adoption and activation of social capital and resilience strategies in Australian and international disaster policy and planning (Australian Red Cross, 2013; Federal Emergency Management Agency, 2011; Regional Australia Institute, 2013; State Government Victoria, 2012; United Nations International Strategy for Disaster Reduction, 2012). However, some suggest that the adoption of person-centred principles in Australian disaster management still necessitates an overhaul of residual policies and practices that remain primarily reactive (Hossain, 2013).

Social capital is a complex concept that has developed over time as a way of understanding individual and community relationships and their activation towards individual or collective resilience. Social capital has been defined as:

- the networks and support that people rely upon in their daily lives, the trust that they develop, with each other and institutions, and the degree to which people are prepared to help each other without obligation (called reciprocity). It is seen as a type of capital, like financial and human capital, that can be invested in and drawn upon (Australian Red Cross, 2013, p. 7), and
- the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition – or in other words, to membership in a group – which provides each of its members with the backing of the collectivity-owned capital, a ‘credential’ which entitles them to credit, in the various senses of the word. These relationships may exist only in the practical state, in material and/or symbolic exchanges which help to maintain them (Bourdieu, 1986, pp. 248-249)

It is often conceptualised and measured in relation to elements such as: levels of trust, numbers and types of networks, relational structures, access and capacity to use resources, participation in and contribution to non-profit, religious and civic organisations, and sense of belonging (Aldrich & Meyer, 2014). Put simply, social capital is often viewed as the glue that holds communities together, and a resource that can be directed...
towards social or collective action, where trust and reciprocity ensure durability (Hartel & Latemore, 2011; Stone & Hughes, 2002).

Social embeddedness is important across the entire disaster experience (Rowlands, 2013; Wood, Boruff, & Smith, 2013). For example, research shows that social capital has a positive influence on preparedness planning (Bihari & Ryan, 2012; A Brunie, 2007; L. M. Miller, 2007), whereas social isolation has been correlated with less preparedness in senior citizens (Staley, Alemagno, & Shaffer-King, 2011). When people feel ‘attached to place’, as if they belong in their community, they are more likely to participate in preparedness and post-disaster activities (Bihari & Ryan, 2012). Research shows social capital increases familiarity with services (A Brunie, 2007), and when communities have higher levels of social capital, people are more likely to develop and participate in collaborative problem solving activities, as well as preparedness activities (Bihari & Ryan, 2012). Additionally, social capital and particularly civic ties have been shown to influence business owners’ decisions to provide financial aid to workers, and charities post disaster (Bin & Edwards, 2009). Research has shown that social capital is connected to better post-disaster outcomes, with people with high levels of social capital faring better on a number of health indicators, than those with low levels of social capital (Adeola & Picou, 2012; Wind, Fordham, & Komproe, 2011).

Aldrich (2009) suggests that social capital serves three core functions in disaster response and recovery:

First, social ties can serve as “informal insurance,” allowing victims to draw upon ready-made support networks for financial, physical, and logistic guidance (Beggs, Haines, and Hurlbert 1996). Second, more politically active and better connected communities can better mobilize to present their demands to and extract resources from authorities (Olson 1965). Finally, embedded networks raise the cost of “exit” from a community and increase the probability that residents will use “voice;” following a disaster, better connected residents are more likely to articulate their demands to authorities and work together to overcome obstacles to recovery (Hirschman 1970) (p. 7).

There are three types of social capital which are directly related to disaster preparation, management and recovery; bonding, bridging and linking. Bonding social capital describes the close and intimate horizontal ties people have with family and friends and these relationships are often characterised by high levels of demographic similarity (Aldrich & Meyer, 2014; Babaei, Ahmad, & Gill, 2012). Disaster research shows that
most people will have some form of bonding social capital to draw on during disasters, and this is usually the first place they will source support (Hawkins & Maurer, 2010; Winkworth et al., 2009). People with high levels of bonding capital are more likely to receive warnings, prepare, have family to rely on for practical and emotional support, are less likely to need external support, and are more join collective responses and take political action (Aldrich & Meyer, 2014; A. Brunie, 2010; Hawkins & Maurer, 2010; Nakagawa & Shaw, 2004; Shepherd & Williams, 2014). Bonding social capital is particularly important for people with low income as resources can be pooled during times of disaster (Hawkins & Maurer, 2010), but it is important to remember that many vulnerable families and individuals have low bonding social capital and their close contacts may also have limited resources (Meyer, 2013). Australian research showed that some disaster survivors felt very let down when their bonding networks did not respond as they expected (Winkworth et al., 2009).

_Bridging social capital_ describes more heterogeneous horizontal associations, such as acquaintances developed through organisations such as sporting, community and social groups (Aldrich & Meyer, 2014; Babaei et al., 2012). People are more likely to access diverse and unique resources from bridging relationships and particularly in the longer term when family/friend resources are exhausted (Aldrich & Meyer, 2014; Hawkins & Maurer, 2010; Winkworth et al., 2009). For example, a case study of flooding in Moora, Western Australia, showed that “relationships with local institutions such as utility providers and government entities (Agricultural Department and Main Roads) were strengthen by the fact that employees were also members of the community” and employees often went above and beyond their job descriptions to help their community (Smith & Boruff, 2011).

_Linking social capital_ refers to the vertical ties between individuals or groups and those with explicit, formal or institutionalized power or authority, including individuals in positions of power and the institutions themselves (Aldrich & Meyer, 2014; Babaei et al., 2012; Szreter & Woolcock, 2004). Nakagawa & Shaw’s (2004) earthquake research in Japan and India showed the strength of bonding capital immediately post earthquake, but also highlighted that weak political linkages (and leadership) ultimately slowed post disaster recovery and reconstruction. It also appeared that a lack of local authority and community trust in emergency services resulted in poor linkage social capital in the Moora case study (Smith & Boruff, 2011). The adage that _bonding capital helps people get by, but bridging and linking social capital helps them get ahead_ was evident
in Hawkins and Maurer’s (2010) study. They found many instances of the importance of these types of social capital in finding out about, and gaining access to resources, but their research also highlights that socioeconomic status and race discrimination may still be barriers to the realisation of certain networks. Additionally, having knowledge of, and access to, external sources of support, does not necessarily negate negative experiences in these interactions (Hawkins & Maurer, 2010). Finally, Meyer’s (2013) research showed that many people did not understand the importance of bridging and linking networks in times of crisis believing they would rely predominantly on bonding social capital.

It should be noted that this review has focused on social capital – the quality of diverse horizontal and vertical links within the community – because this is the term/concept most oft cited in current disaster policy and planning literature. Social capital does not separate the individual from the community, by the virtue of the aforementioned linkages. Some might suggest that social capital contributes to a collective capital – or the strength of the community – which is an important concept to keep at the fore. The concept of communitarian or ecological social capital has been variously linked and debated in relation to social capital and it is beyond this review to examine these concepts in depth, but it is important to consider a broader macro focus relevant to the disaster frame. Communitarian or ecological social capital is generally described in terms of the following five components:

- community networks: number and density of voluntary, state, and personal networks;
- civic engagement: participation and use of civic networks;
- local civic identity: sense of belonging, of solidarity and of equality with other members of the community;
- reciprocity and norms of cooperation: a sense of obligation to help others, along with
- a confidence that such assistance will be returned; trust in the community (Whitley & McKenzie, De Silva et al., & Putnam in Ledogar & Fleming, 2008, p. 2)

Community capitals

Social capital is but one of the capitals cited in the literature. There is a growing interest in the different types of capitals evident in a community, and how these interact at times of disaster (Mayunga, 2007; L. A. Ritchie & Gill, 2011; Smith & Boruff, 2011). Flora and Flora’s (1993) Community Capitals Framework, cites seven types of
capital: natural, physical, economic, human, social, political, and cultural. The theory is that “communities can recover using various forms of internal resources or capital which promotes resilience and therefore a capacity to absorb shocks to the system and ultimately facilitate recovery” (Smith & Boruff, 2011). Regardless of the definitions of the types of capital, research continues to show that it is the strength, quality and activation of the links between these capitals that ensure an effective disaster response, and this will be the focus of the final section of this review.

*Risks associated with social capital*

There are some individual and community risks associated with high social capital that should be acknowledged before proceeding. Research after Hurricane Katrina showed that:

those who were more socially embedded [with the exception of those exhibiting high levels of social capital in the form of faith-based engagement] carried the greatest load with respect to helping the displaced population, thus experiencing more stress. But over time, the most socially-involved then snapped back from their stressful experiences more rapidly than isolates. This confirms that over the course of stressful events, social involvement first exposes people to more stress, but as time passes, provides them a significant buffer against negative psychosocial experiences (Weil et al., 2012, p. 110).

This research highlights the need for disaster work to be shared across formal and informal networks to prevent the unnecessary burden or burnout in particular sections of the population (Weil et al., 2012). Additionally, Ganapati’s (2012) research about the 1999 Turkish Earthquake, showed that social capital may perpetuate gender based inequalities in times of crisis, and while this study should not be generalised to other countries, this premise is worthy of consideration in relation to gendered disaster planning in Australia (and particularly the gendered burden of care).

In the broader context, there is a risk that social capital is conceived by policy makers as an achievement, rather than an ongoing process and dialogue, where communities often require external resources to support this process (Australian Red Cross, 2013; Scolobig et al., 2015). Others suggest external support comes with risks also. “For instance, partnership with government may neutralize community’s potential benefits. Government funding or pre-certification could undermine the independence and autonomy
of community organizations—and along with that, their moral authority over, and loyalty of, their members” (Patterson et al., 2010, p. 139). Murphy (2007) says that it is also important that the emphasis on social capital, shared responsibility and self-reliance is not aligned with austerity measures where local communities carry the burden of budget cutting. Traditional top down models – and their assumptions about sharing of information and lines of communication – may be difficult to shift in the public sector, causing conflicts between parties who are working in potentially different ways, and with different expectations of each other (Scolobig et al., 2015). Even in communities with strong social capital, relationships and networks might remain quite hierarchical, or there may be pockets of strong social capital and areas with fewer connections, so it is imperative acknowledge that resources can be distributed inequitably (Murphy, 2007). In disaster situations, “a ‘pattern of neglect’ may emerge in which black, older or less educated victims are excluded from [the more] altruistic [sections] of communities” (Kaniasty & Norris in Murphy, 2007, p. 303). Finally, in an emergency context, strong social capital can also result in emergency workers being viewed as outsiders and evacuation instructions by those personnel may not be adhered to (Smith & Boruff, 2011, p. n/p).

Resilience

Social capital contributes to individual and community resilience (Aldrich & Meyer, 2014). Resilience is an important concept in disaster research and management because; (i) increasing individual resilience is known to reduce the likelihood of health and mental health complications post disaster, and (ii) community resilience can be used as an indicator of effective organizational behavior and disaster management (Norris et al., 2007). Individual resilience is often understood as “good adaptation under extenuating circumstances; a recovery trajectory that returns to baseline functioning following a challenge (Butler, Morland, & Leskin, 2007, p. 402), while community resilience can be understood as, “the ability of community members to take meaningful, deliberate, collective action to remedy the effect of a problem, including the ability to interpret the environment, intervene, and move on” (Pfefferbaum, Reissman, Pfefferbaum, Klomp, & Gurwitch, 2005, p. 349). While resilience is often understood as the capacity to ‘bounce back’ after a setback, some argue that resilience must be extended beyond restoration in disaster recovery, where disasters are framed as “opportunities not only to better prepare, to do it better, adapt and be proactive ... but also to radically innovate” (Aldunce, Beilin, Handmer, & Howden, 2014, p. 263; Winkworth et al., 2009).
Norris et.al.’s (2007) review of the literature identified four primary sets of networked resources essential to disaster preparation and recovery: Economic Development, Social Capital, Information and Communication, and Community Competence. They suggest that community resilience is dependent on (i) the availability of diverse economic resources and opportunities, which is particularly important for low income groups, (ii) social capital which offers resources, support, nurturance, place attachment and civic engagement, (iii) information and communication that provides practical information as well as meaning to the experience through narrative means, and (iv) community competence which refers to the capacity to make community decisions and take collective action. Considering the evidence cited in this paper to date, the author would suggest that – while interlinked – social capital is prime to securing, establishing and maintaining the other three resources.

The Council of Australian Governments suggests that a disaster resilient community is one where:

- people understand the risks that may affect them and others in their community
- people have taken steps to anticipate disasters and to protect themselves their assets and their livelihoods
- people work together with local leaders using their knowledge and resources to prepare for and deal with disasters
- people work in partnership with emergency services, their local authorities and other relevant organisations before, during and after emergencies
- emergency management plans are resilience-based, to build disaster resilience within communities over time
- the emergency management volunteer sector is strong
- businesses and other service providers undertake wide-reaching business continuity planning that links with their security and emergency management arrangements
- land use planning systems and building control arrangements reduce, as far as is practicable, community exposure to unreasonable risks from known hazards
- following a disaster, a satisfactory range of functioning is restored quickly (Council of Australian Governments, 2011, p. 5). Note this is an abbreviated version of COAG’s features.
Key stakeholders in civic society

As discussed previously, there is a strong and growing consensus in Australia that social capital is core to effective disaster preparedness, response and recovery (e.g., Australian Red Cross, 2013; Council of Australian Governments, 2011). The potential roles of community members and community organisations are well recognised within this frame, where evaluations of previous disasters have highlighted the need to identify and utilise the existing relationships, networks and structures these services can utilise in times of emergency (e.g., Bruce, 2014; Caniglia & Trotman, 2011; Parliament of Victoria, 2010b; QCOSS, 2011; Taylor & Goodman, 2015). A review of the disaster literature provides some insight into the array of government and non government organisations potentially involved in disaster processes; e.g., nursing homes (Saliba, Buchanan, & Kington, 2004), libraries and information centres (Featherstone, Lyon, & Ruffin, 2008; Rattan, 2013), businesses (Bin & Edwards, 2009), schools (Akama & Chaplin, 2013; Boon et al., 2012; Lazarus et al., 2003), and general practitioners and allied health care providers (Johnson & Gaskins, 2013; Purcell & McGirr, 2014; Wilson, 2011; Zakour & Harrell, 2003). However, this section focuses on key stakeholders typically considered to be embedded in civic society, and gives a brief overview of their potential and realised contributions to disaster management (as represented in current academic, policy and planning literature).

Community members may be considered sources of trustworthy advice about disaster status. Interviews with residents in Kilmore East after the 2009 Black Saturday bushfire indicated that 22% viewed family and friends as their primary source of information leading up to evacuations, and 26% were triggered towards action by families and friends rather than an official warning (G. Elliott & McLennan, 2011). Akama & Chaplin’s (2013) research identified a number of roles enacted by individual community members in relation to bushfire preparedness including: agents of social change, gatekeepers and community champions. Additionally, disaster literature has long recognized the role of community in disaster response and recovery, with individuals usually the first responders in an emergency (Aldrich & Meyer, 2014; Bruce, 2014). While community members have always had a role in disaster management, this has been increasingly recognised as valid and valuable by official channels (Bruce, 2014). Community members often become more cohesive in response to disaster (Whittaker, Handmer, & Mc Lennan, 2014). For example, community members were significant contributors to weeks of cleaning up of mud after the 2011 Queensland floods (Caniglia & Trotman,
2011; Hartel & Latemore, 2011; Rowlands, 2013). Interestingly, research observations emanating from Australian local government authorities suggested that “there was an inverse relationship between the level of affluence of the community and the likelihood of their involvement [during a bushfire disaster]- the higher the affluence, the lower the engagement. Some saw those community members with higher levels of education as having greater expectations of council officers, but seeming to take less personal responsibility” (Taylor & Goodman, 2015, p. 5).

Supporting, and sometimes intersecting with, the disaster literature is a growing body of understanding about the potential roles of previously homogenously defined vulnerable groups – as sound sources for building and maintaining social capital – including young people and the elderly. For example, Peek (2014) advocates for young people being core contributors to disaster planning, citing examples of involvement in the US and saying that “young people have invented for themselves some extraordinary contributions to disaster recovery, from mobile phone apps to organised, volunteer workforces” (p. 59). Most importantly she suggests that young people have time and energy that most adults do not have, as well as creativity and insider knowledge. This is reiterated in a recent article from Myanmar about a youth volunteer programme to prepare communities for potential disaster (Phyu, 2014). These ideas are in stark contrast to the primary literature which tends to refer to children and young people as recipients of disaster information and training, or difficult to recruit into disaster interventions (Wisner, 2003). While older people are primarily defined as in need of extra care and attention during disaster periods, and recipients of the benefits of social capital, there is a significant body of literature illustrating the significant contributions older people can and do make to social capital within community (e.g., Collom, 2008; Gallagher, 2012; Heenan, 2010), some advocating for older people to be more involved in disaster management due to their willingness to participate, time, networks and experience (Howard, Blakemore, & Bevis, 2015), and some examples of the inclusion of older people in planning for emergency, e.g. the American Red Cross sponsored Disaster Preparedness: By Seniors for Seniors document (American Red Cross, n/d).

There are also some examples of workers using their professional or work related skills to support disaster preparedness and recovery (Bin & Edwards, 2009; Maon, Lindgreen, & Vanhamme, 2009; Regional Australia Institute, 2013; Waugh & Streib, 2006). Simo and Bies (2007) cites numerous examples of individuals
using their skills to support others in a US recovery period (e.g. lawyers giving free advice or more literate community members helping survivors to fill out forms). Businesses have regularly been cited as contributors of goods, services and personnel during periods of recovery (Maon et al., 2009). Businesses outside of the disaster zone might be significant providers of donations to charities (Bin & Edwards, 2009), while those residing in the community are often viewed as the drivers of renewed economic recovery (Regional Australia Institute, 2013).

While community organisations (such as community centres, neighbourhood centres, other Non-Government Organisations) are rarely the prime focus of discussion or research in Australian disaster management, there is sound evidence about their utility in building social capital (Bullen & Onyx, 2005; SA Centre for Economic Studies, 2013). The Council of Australia Governments (2011) recognises that “many not-for profit organisations have experience and expertise in areas including community engagement and education, and various facets of service provision. Importantly, their existing networks and structures reach far into communities, and can effect real change” (p. 9). There is some good Australian and international evidence about these types of organisations being used as information and service hubs, brokers of services, conduits for the distribution of resources and donations, providers of outreach services and meals, developers of information kits and organisers of volunteers during disaster periods (BCDA et al., 2011; Caniglia & Trotman, 2011; Simo & Bies, 2007; Tasmanian Government, 2014), and some evidence of these types of services filling unexpected gaps in Governmental service (Webber & Jones, 2013), as well as emerging to replace government services that were absent or inadequate during disaster (Simo & Bies, 2007). Additionally, research shows that when NGOs are self-funding or less restricted by funding requirements they can be much more flexible and responsive to immediate needs (Webber & Jones, 2013).

One of the strongest rationales for using community organisations is their existing relationships with community members, and indigenous knowledge that can be used to identify and support vulnerable individuals and groups (Asian Disaster Preparedness Centre, 2006; Mora, Thomas, Nankivell, & Flude, 2014). “Observers have frequently pointed out that local faith-based, volunteer, nongovernmental organizations have been much more flexible and adaptive in the work of recovery” (Appleseed in Patterson et al., 2010, p. 129), and there is evidence that community development responses quickly emerged from neighbourhood
and community centres after the 2011 Queensland floods (Caniglia & Trotman, 2011). Tocqueville argued “that community organizations are more effective than agents of central government—more flexible, adaptive, rapid, thorough, and consistent—not only because they have local knowledge, but also because they have an interest in a common good, of which a central government and its atomized, self-interested individual petitioners are incapable” (cited in Patterson et al., 2010, p. 130). Additionally, there is evidence that some community members will shun traditional mental health services post disaster, often congregating in more informal settings such as neighbourhood and recovery centres, as well as attending community events, to debrief and gain support (Rowlands, 2013; Winkworth et al., 2009). However, there are threats to community contributions and the maintenance or development of social capital when formal networks fail to recognise, work collaborative with, or override these relationships (Taylor & Goodman, 2015).

Interestingly, the call for community members and community services to be the key drivers of social capital and particularly disaster preparedness, is rarely exemplified beyond this recognition. In a significant review of the formal and informal disaster literature, there was minimal specific coverage of: How communities engage and activate informal and formal networks in disaster recovery; Who they are effectively engaging with (and what community members might be overlooked or difficult to access); How effective they are in creating and more importantly sustaining these relationships; What contributions they are actually making – and could potentially make – in the preparatory, response and recovery periods, and; What support they might require to engage and intervene effectively.

**Activating collaborative relationships and processes**

Current Australian disaster management policy stresses that communities must be involved in their own safety and community development principles are imperative in building and activating informal and formal networks towards increasing social capital and resilience (Council of Australian Governments, 2011). With full recognition that ‘no one size fits all’ this section examines a body of literature to distil core understandings about the activation of collaborative relationships and networks in the disaster context (at the individual, household, organisational and community levels). It includes recommendations from government as well as community documents, alongside academic sources. While there is a consensus in the literature that formal
and informal networks are essential to effective disaster management (e.g., Comonwealth of Australia, 2013; Frandsen, Paton, & Middleton, 2013; Kuhlicke et al., 2011; Peterson & Besserman, 2010; Scolobig et al., 2015; Waugh & Streib, 2006; Webber & Jones, 2013), there is very little empirical evidence about the ways that these networks are activated towards the disaster planning and recovery. This absence is also acknowledged in the literature (Peterson & Besserman, 2010; L. Ritchie et al., 2011; Webber & Jones, 2013). Rather the literature consists primarily of theoretical and principle based commentaries, case studies (often of organisations with pre-determined disaster roles such as Red Cross), post-disaster reflections and reports on existing community strategies or programs. This probably reflects the difficulty in observing and measuring such a complex phenomenon, but it might also speak to the relatively new emphasis on social capital and resilience in disaster management, and the status of researching community organisations, frontline professionals and community members. The literature’s focus on ‘what could be achieved’, ‘what we should be aiming for’ and ‘a discrete example of what we did’ tends to limit the depth provided and the conclusions that can be made in the following section, but it does provide a basis from which to think about activating informal and formal networks within context.

**Principles of activating formal and informal collaborative community networks**

- Resilient communities are built on strong informal and formal networks and ties
- All individuals and communities have strengths and resources
- All members of community have insider knowledge that must be acknowledged in policy and acted upon in planning
- Consultation is essential
- Knowledge is co-created
- Trusting relationships are vital
- Vulnerable populations should be prioritised
- Community develop approaches are most likely to empower communities, build social capital and resilience
- Communities have the resources to make decisions and take responsibility
- Power and responsibility for risk related activities is shared
• Collaborative relationships need to be activated and strong before, during and after disaster
• Governments should support existing community resources, rather than replacing them with bureaucratic structures
• Governments must support community strategies and programmes that focus on social capital and resilience, in principle and resourcing.

Lessons from the literature about activation

Mapping and assessing current networks, resources, risk and vulnerabilities

First, “it is a mistake to assume that a response can be completely scripted or that the types of resources that are available can be fully catalogued” (Waugh & Streib, 2006, p. 134). However research evidence suggests that it is much easier for organisations who already have some degree of community knowledge and connection, as well as associated planning, to commence service during times of disaster (Webber & Jones, 2013). One of the most cited ways to commence the activation of collaborative community networks is through mapping; Communities are incredibly complex, so mapping is important to commence an understanding of disaster related needs and resources (Federal Emergency Management Agency, 2011). An initial way of understanding a community’s social capital, potential resilience and an organisation’s position within disaster management is to assess the networks that currently exist (Murphy, 2007), and this should be beyond the official organisational charts that often overlook the complexity of informal and formal relationships (Peterson & Besserman, 2010). Kapucu (2005) suggests that it is important to understand how organisations and networks are embedded, because this will have consequences for function during disaster. For example:

some organizations may act as “bridges” between groups (boundary spanners). Other organizations may have all of their relationships within a single clique (locals). Some actors may be part of a tightly connected group, while others are completely isolated from this group (p. 45).
It is important to understand what is meaningful about these networks and how they work in order to partner with relevant people and organisations, and engage effectively across community (Commonwealth of Australia, 2013).

Knowing about a community, its resources and it potentiality is essential to operating well in a community, harnessing resources towards planning for a disaster and especially mobilising a disaster response (Commonwealth of Australia, 2013). This includes mapping and understanding key resources such as people, organisations, businesses, programmes, networks and physical infrastructure (Commonwealth of Australia, 2013; Simo & Bies, 2007; Smith & Boruff, 2011). Many communities already have strong resources and relationships that can serve as the basis for ongoing development (Simo & Bies, 2007). It is important to understand, acknowledge, respect and tap into what already exists. For example; “knowing someone who knows another who can solve a problem is almost as good as being acquainted directly with the action person” (Kneale in Peterson & Besserman, 2010, p. 1). Additionally, Akama and Chaplin’s (2013) research showed that individuals (and one might also presume organisations) do not always realise or publicise their strengths or resources, so time and deliberation needs to be dedicated to this task. This review would also suggest that it is important for organisations (and particularly mappers) to understand what are potentially useful resources in a disaster. For example, recent Australian research showed that a key resource was staff who were “flexible and could cope with chaos and lack of formal structure” (Webber & Jones, 2013, p. 266).

The literature also suggests that it is important to map domains of risk and vulnerability in a community, again including people, organisations, businesses, programmes, networks and physical infrastructure (Aldrich, 2010; Federal Emergency Management Agency, 2011; Pearce, 2003; Scolobig et al., 2015). Pellin (2007) warns that all-encompassing concepts of community and rushed community development responses can mask and perpetuate social heterogeneity and power relations, so it is important to dedicate time to mapping disadvantage and vulnerability. The community’s needs are often a sound starting point for mobilising action (Scolobig et al., 2015). Some suggest that individuals and communities need to fully understand the risks in their society in order to, “face up to them, safeguard their rights, make informed choices and take active part in decision making processes (Scolobig et al., 2015, p. 4).
Build and nurture inclusive and diverse alliances

Building *inclusive and diverse alliances* is often cited as a most effective way to increase efficiency and effectiveness across a number of domains (Allen, 2007; Britton & Clark, 2000; Kapucu, 2005; Kuhlicke et al., 2011; Murphy, 2007; Simo & Bies, 2007). “A community focus may be culturally oppressive if members experience social pressure to abide by cultural norms and rules that are not truly shared” (Pelling, 2007, p. 378). Therefore inclusivity of all members of a community, and particularly from vulnerable group members, is important to gain vital nuanced knowledge about the issues in the community, perceptions of risk and how to address them specifically and appropriately (Abbott & Porter, 2013; Burke et al., 2012; Comonwealth of Australia, 2013; United Nations International Strategy for Disaster Reduction, 2012). People must be encouraged to be involved and share insider knowledge (Peek, 2014). Stark and Taylor’s (2014) research suggests “that local participation can lead to nuanced lesson-learning exchanges post-crisis that subsequently enhance pre-crisis preparations” (p. 304).

Allen’s (2007) research shows:

that the strongest and most effective citizens’ groups have the following: (1) alliances with well-organized national and multi-national environmental and social justice groups, (2) have enrolled the support of activist and independent scientists and professional experts to work on their behalf, and (3) are cross-class and multi-ethnic in composition (p. 158).

A number of authors and researchers reiterate Allen’s (2007) claim about the importance of having multiple voices and multidisciplinary knowledge informing and contributing to community disaster planning and intervention (Britton & Clark, 2000; Scolobig et al., 2015; Simo & Bies, 2007). Murphy (2007) says that disaster committees and groups should be “composed of all ‘potentially useful community organisations.’ This would include representatives from local volunteer and relief groups, industry, hospitals and neighbouring jurisdictions” (p. 304). For example Scolobig’s (2015) research shows that scientists and experts have a significant role to play because they provide “relevant knowledge for decision making”, including “technical options that corresponded to the different perspectives held by the participants” (p. 7). Maon (2009) states
that disaster relief efficiency can be improved when local agencies have had exposure to business practices of supply chain management.

The importance of alliances beyond the community and into societal arenas like government and business is well recognised in the literature (Federal Emergency Management Agency, 2011; Murphy, 2007; Scolobig et al., 2015). There is also a growing awareness of the importance of alliances with other communities. For example, Australian research recommends that bushfire preparedness activities take place across community boundaries, with the realisation that these communities might be called upon to respond collaboratively to an emergency in one or both geographical areas (Frandsen et al., 2013). Importantly, “these formats permit the mutual leveraging of resources and the blending of public, nonprofit, and private attributes in ways that might not be possible in more traditional structural arrangements” (Kapucu, 2005, p. 36).

Finally, “social capital thrives in an environment where residents [workers and organisations] believe in their efficacy” (Aldrich, 2010, p. 11). So while resources need to be mapped and activated and opportunities need to be made for inclusive and diverse networks, the strengths of individuals, organisations and networks need to be continually recognised, acknowledged and developed. A community development approach to disaster works best when it builds upon and continues to nurture the competencies of collaborators (Bryson et al., in Simo & Bies, 2007). Peterson and Besserman (2010) also suggest that the failure of networking often lies in lack of nurturance: “Following an exercise or training, we walk away with a fist full of business cards and/or a notebook with phone numbers, but fail to nurture and maintain these frail connections” (p. 10).

**Determine a role and purpose for your organisation**

It is important that organisations (and to some degree social groups, families and individuals) assess their role and purpose within the disaster framework. The activation of collaborative formal and informal networks towards disaster planning and relief relies on accurate information about roles, purposes and capacities of it members (Commonwealth of Australia, 2013; Simo & Bies, 2007). It is therefore important to realistically assess organisational capacity, direct this to internal decision-making and communicate this to networks (Simo & Bies, 2007). For example, the organisation might have the capacity to raise, develop and prepare a large volunteer base in a non-disaster period, but does it have the capacity to support it with adequate supervision.

during an active disaster period? If organisations are planning to divert worker resources at times of disaster, they might need to plan and make arrangements for back filling (Webber & Jones, 2013).

**Transparency, truthfulness and trust**

Authors conclusively state that trust is essential to collaborative networks and successful disaster management (e.g., Aldrich, 2010; Australian Red Cross, 2014; L. M. Miller, 2007; Parker et al., 2009; Waugh & Streib, 2006). Research has shown that people make decisions based on the trustworthiness of the source and they do not heed disaster warnings if they do not trust officials (Australian Red Cross, 2014; Parker et al., 2009). Research also shows that trust brings about swift activation of networks and relationships (Aldrich, 2010; Simo & Bies, 2007). While trust can take time to develop, ongoing collaboration has been shown to increase it (Kapucu, 2005; Peterson & Besserman, 2010). Scolobig (2015) also suggests that a professional attitude of humility contributes to trust.

Transparency and truthfulness has also shown to be very important towards improving and maintaining trusting networks, and particularly relationships with community members (Pearce, 2003; Scolobig et al., 2015). Pearce (2003) suggests that “the public’s right to information is a fundamental feature of democracy and is essential to disaster preparedness” (p.217). For example, public involvement in consensual decision-making is important, but it can often contribute to delays, and this needs to be explained to participants honestly (Pearce, 2003). Additionally, community members have the right to know when their input will contribute to a decision and when it might be considered, but possibly over-ruled, by other parties or evidence (Pearce, 2003). Community members should be fully aware of the realistic benefits they are likely to expect from long-term engagement in disaster related activities (Scolobig et al., 2015).

**Prioritise Effective Communication**

While good communication is cited as imperative to building and maintain collaborative networks in community development literature, the importance of sound communication strategies and competencies is also mentioned in the disaster literature (Manjo & Baker, 2007; Mendonca et al., 2007). There “has been an increasing interest in applying negotiation, facilitation and mediation techniques to the public participation process” (Pearce, 2003, p. 220), and some call for disaster related organisations to train their staff in
communication skills and collaborative networking (Pearce, 2003; Peterson & Besserman, 2010; Waugh & Streib, 2006). Additionally, collaborative approaches quite often result in conflictual situations, so “local authorities engaging in participatory people centred approaches may require specialised training in conflict resolution, engagement, deliberation exercises and processes” (Scolobig et al., 2015, p. 8). Peterson and Besserman (2010) suggest that organisations and the individuals within them must dedicate time to frequent open communications to understand and improve collaborative networks.

Sound communication has also been cited as important in raising public awareness about disaster risks, preparedness and responsibility, and encouraging community members to join disaster-related networks (Pearce, 2003; Scolobig et al., 2015). This might include the translation of complex technical information into suitable materials for public distribution (Scolobig et al., 2015). There is increasing evidence that didactic communication (i.e. fliers and talks), while often effective in raising awareness about disaster risks and management, are not particularly effective in mobilising action (Stark & Taylor, 2014). However, participatory, experiential and locally embedded education tends to works well to stimulate engagement with community as well as increase knowledge (Eriksen & Prior, 2011; Kuhlicke et al., 2011). Kuhlicke et al., (2011) suggest that the advantages of this type of education include a “positive influence on risk perception, behaviour, engagement as well as on social and mutual learning”, it “acknowledges the relevance of underlying values and norms and aims at gradually eliciting and exchanging these values” and “increases trust in governing organisations” (p. 810).

Online communication is also increasingly recognised as a significant tool that can be used to increase, support and expand collaborative networks for disaster preparedness and recovery (Palen, Hiltz, & Lui, 2007; Peterson & Besserman, 2010; Scolobig et al., 2015). Palen et al.’s (2007) work shows how a number of online forums developed in the preparedness and post-disaster stages in the US. For example, there were “countless forums generated by the public following Katrina to find missing people and to offer and seek shelter, employment, and other forms of relief” (Palen et al., 2007, p. 56). They added, “The reach of the Internet expands opportunities for public involvement, where those geographically removed from the disaster—and therefore with the critical resources of time, money, electrical power, and working computers and telephones
in hand—can offer assistance” (Palen et al., 2007, p. 57). Manjo and Baker (2007) also suggest that collaborative technologies have significant potential for effectiveness of cross-organizational communication.

Bring people together to build social capital and attend to disaster management

The literature on person-centred disaster management stresses the importance of bringing people together to build social capital and attend to disaster preparation and management (Aldrich & Meyer, 2014; Peterson & Besserman, 2010; Simo & Bies, 2007; Smith & Boruff, 2011; Winkworth et al., 2009). These are not mutually exclusive activities, but both task-oriented and social activities should be given dedicated time. Research shows that regular structured community meetings develop trust between community members and organisations (Aldrich & Meyer, 2014; Simo & Bies, 2007; Smith & Boruff, 2011). Additionally, social and community events are important in networking and community cohesion:

- church services, memorials, community barbeques or picnics, or activities for dads or young people; and
- creative interventions such as encouraging writing stories, poetry, art, drama, and musical events, all serve the purpose of facilitating people getting together, sharing their experience, and talking over their plans and hopes for the future (Rowlands, 2013, pp. 26-27).

Structured activities have also been shown to be very important in recovery and rebuilding processes (Winkworth et al., 2009). One way of increasing attendance at, and involvement in, planned activities and spontaneous meetings is attention to, and the development of, spaces that are community friendly, attractive, safe and accessible (Aldrich, 2010; Aldrich & Meyer, 2014).

Recognise and challenge existing ideologies and ways of practising

Kapucu (2005) notes that “network organizations reflect a qualitatively different form of governance structure than the bureaucratic hierarchies they are beginning to replace” (p. 35). Traditional responses to disaster have relied on technical capacities and hierarchical arrangements with strong accountability mechanisms; arrangement highly incompatible with new collaborative ideals (Waugh & Streib, 2006, p. 138). During times of crisis emergency responders and operational units may distrust the intentions in community organisations
and members, “lack confidence in the volunteers skills and resources, fear that volunteers may endanger themselves or others”, be “concerned that volunteer may get into way of professional responders, and fear that there may be legal liability for volunteers’ actions” (Waugh in Kapucu, 2005, p. 39). Therefore it is imperative that communities and formal emergency service responders work to educate and understand each other’s capacities and intentions, as well as challenge remnants of the previous arrangements and ideologies (Australian Red Cross, 2014; Scolobig et al., 2015). Scolobig et al’s (2015) analysis: shows that changing responsibility allocation and expectations between the authorities and the public involves a long process, which must be supported by adequate resources, but also political will, legislative frameworks, knowledge, and willingness to collaborate in new and different ways”.(Scolobig et al., 2015, p. 2)

Finally, Pelling (2007) says that a community development approach can maintain the status quo as much as a top down approach if power is held by certain groups, so it is imperative to include different voices and challenge power relationships in an ongoing way.

**Formalise networks and agreements**

As indicated in the previous section, hierarchical structures and processes often remain the default position when there is an emergency, so it is important to proactively formalise individual organisational disaster management plans and network agreements, including consensus in relation to accountability and outcomes (Frandsen et al., 2013; Staley et al., 2011; Stark & Taylor, 2014; Webber & Jones, 2013). Meyer’s (2013) research in the USA highlights that many organisations have very little contact or collaborative disaster planning, but are expected to ‘emerge’ in response to disasters. Community based organisations work well when adhering to their core missions, but are often characterised by *disorganised organisation* during disaster periods when they are required to step up, adapt, and respond to incredibly difficult circumstances (D. S. Miller, 2011). Staley, Alemagno and Shaffer-King (2011) recommend that existing organisational relationships need to be formalised prior to disaster events, because there is often an overlap when services are working with potentially vulnerable community members. This will maximise resourcing during disasters and also ensure that clients are not getting repeated disaster preparedness messages, which could cause stress (Staley et al., 2011). Scolobig et al. (2015) also consider it important “to establish communication pathways, formal
accountability frameworks that inform how data generated in one agency can improve decisions made in another” (p. 5)

**Tailor interventions**

There are a number of recommendations and examples in the literature about the importance of adapting and personalising materials, programmes and activities to increase networks with diverse and particularly vulnerable groups (Burke et al., 2012; Commonwealth of Australia, 2013, p. 8; Eriksen & Prior, 2011; Frandsen et al., 2013; Scolobig et al., 2015) For example, Erikson and Prior’s (2011) Australian research found that:

One reason for the poor translation of risk information materials into actual preparation may be attributed to the diversity of people now inhabiting wildfire-prone locations in peri-urban landscapes. These people hold widely varying experiences, beliefs, attitudes and values relating to wildfire, which influence their understanding and interpretation of risk messages – doing so within the constraints of their individual contexts (p. 612).

People learn and engage differently and this research demonstrated that community members and groups need to be understood so that specific and nuanced messages are delivered alongside mainstream ones. As referred to previously, this necessitates inclusionary practices when developing responses and resources, which would likely include multi-lingual products, culturally specific materials and using trusted and culturally appropriate spaces for meetings and programmes (Burke et al., 2012; Hansen et al., 2013). It might mean using existing groups as a starting place to connect and educate in a personalised and context specific way (Baker & Cormier, 2013). It might mean the use of small groups and population specific educators (Eisenman et al., 2009). Hansen et al. (2013) also suggest that the general community should be made aware of the factors that make some groups vulnerable so that their assistance can be harnessed as support.

**Ongoing process of renewal and evaluation**

Engaging communities and activating informal and formal networks is a long-term and ongoing process that needs commitment, attention and evaluation across the disaster lifecycle (Britton & Clark, 2000; Commonwealth of Australia, 2013; Simo & Bies, 2007). Communities continually evolve and change so
processes, programmes and networks need ongoing monitoring for relevance (Commonwealth of Australia, 2013; Simo & Bies, 2007). Additionally, communities need to keep abreast of latest research and technology to inform their responses (Britton & Clark, 2000), as well as evaluating their effectiveness (see AECOM, 2013).
References
Arnberg, F. K., & Melin, L. (2013). Can demographic and exposure characteristics predict levels of social support in survivors from a natural disaster? *PLOS ONE, 8*(6), e65709.


Brunie, A. (2007). Household disaster preparedness: Assessing the importance of relational and community social capital (Doctor of Philosophy), University of North Carolina, Chapel Hill, University of North Carolina.


Houghton, R., Wilson, T., Smith, W., & Johnston, D. (2010). “If there was a dire emergency, we never would have been able to get in there”: Domestic violence reporting and disasters. *International Journal of Mass Emergencies and Disasters, 28*(2), 270–293.


QCOSS. (2011). Submission to the Queensland floods commission of inquiry. Retrieved February 24, 2015, from


Appendix B

Interview questions

1. Tell me a bit about how long you have lived/worked in this area?
2. What experiences, if any, have you had with natural disasters either here or in other places?
3. What kinds of preparations have you made, if any, for a natural disaster eg fire, flood, storm.
4. Thinking about your own support networks, who do you most rely on to provide you with support. How do they provide support?
5. How regularly, if at all, are you in contact with your neighbours? What kind of contact do you have with them usually?
6. Could you tell be about any times you have experienced community members coming together and working on something important to the community eg in a crisis, to help a particular community member, to improve community infrastructure or the environment? (prompt: What happened? Who was involved? How long did it go for?)

Recent Disaster

1. Could you tell me about you experience of the recent storms? What happened for you? What were the impacts for you and your family?
2. Who were you most in contact with in the first 24 hours after the storms?
3. Who were you most worried about during the storms?
4. Who, if anyone, did you check on as soon as you could after the storm? Why?
5. What contact, if any did you have with neighbours in the first 24 hours after the storm?
6. What if any assistance, or support did you received from neighbours during of after the storm?
7. What, if any, assistance or support did you provide to neighbours during of after the storm?
8. How did you find out what was happening during the first 24 hour after the storm?

9. Tell me about anything different you noticed about community life during the aftermath of the storm when the power was down. (Prompt: What was different? Why? How did you act differently? What did you notice about the movements and behavior of other community members?)

10. Tell me a bit about the time post storm when there was no power? What did you do? Who were you in contact with and why?

11. How, if at all did emergency services assist or provide support to you or your neighbours during or after the storm?

12. Which, if any services did you use during or immediately after the storm. (include shops, banks, take away food places etc.)

13. What did you notice about the ways in which emergency services and community members worked together on local damage or issues during or after the storm?

14. Comparing your experience with the recent storms with a past experience of natural disaster (eg 2007 floods, bushfire at Catherine Hill Bay, other), how were things the same in your recent experience? How were they different?

Recovery

15. In the months since the storms, what has helped you and your family recover and get back to normal?

16. How, if at all has your relationship changed with neighbours or other community members since the storms?

17. How, if at all, have you changed your planning or thinking about getting prepared for a natural disaster?

18. Is there anyone you know or know of, who was alone during and after the storms? What support did they receive and from whom?

19. How do you think community members could work together to plan for natural disasters in future?
20. What were the biggest challenges for you and your family immediately after the storm? What have been the challenges in the months since the storm?

21. If you could change 3 things about the way this local community prepared for and responded to natural disasters, what would you change?

Interview Schedule for Service providers

1. Tell me about your role and the service/organisations you work for.

2. Could you describe the role the organisation has in preparation, response and recovery from natural disasters?

3. What are the policies and processes the organisation has in place to respond to natural disasters?

4. How, if at all, does your role or that of your organisation connect with local communities in natural disaster planning and response?

5. Which other organisations and services do you work closely with in natural disaster planning and response?

6. In the recent storms, how did you and your organisation mobilise its resources to respond to community needs and issues?

7. How did you and your organisation communicate with those you work with eg clients, stakeholders, community members?

8. What were the major challenges for your organisation and you as a worker in responding to the needs of your clients during and after the recent storms?

9. Since the storms, what, if anything, has changed in the way the organisation plans for natural disasters?

10. Since the storms, what, if any, new relationships and connections have you or your organisation developed to better plan for natural disasters?

11. Since the storms, what if any, new connections have you or your organisation developed with local community members to assist with better natural disaster planning?
12. What would you change about the way organisations work together to improve natural disaster planning, response and recovery at a local level?

13. What would you change about the way organisations work with community members to improve natural disaster planning, response and recovery?

14. Describe 3 ways in which you think those most at risk during a natural disaster could have been better supported before, during and after the recent storms.

15. What would a well coordinated and community based natural disaster planning, response and recovery process include as essential?
Appendix C

Focus group questions

1. Could you share with the group who you are, how you came to participate in this focus group, and where you see your role in natural disaster planning in this community?
2. How did the recent storms impact on you?
3. What were the major impacts of the recent storms on this community?
4. Could you describe any experience you had of community members working together well during and after the storms?
5. Could you describe any experience of services/organisations working well with community members in response to the impacts of the storm?
6. Thinking about those most at risk during and after the storms, what, in your experience, was in place to effectively support these groups eg those living alone, people with a disability, people on local incomes, frail older people.
7. In natural disaster planning, response and recovery, describe the key role and priorities for organisations and services.
8. In natural disaster planning, response and recovery, describe the key role and priorities for community members at a neighbourhood or broader local level.
9. If you could improve the way in which organisations and community members work together in natural disaster planning, response and recovery, what would you do? What are the priorities?
10. What are some of the ways in which organisations/services could change to work more effectively with community members before during and after natural disasters?
11. What are some of the ways in which community members could work more effectively with organisations, and emergency services before, during and after natural disasters?
12. If this local community had a well co-ordinated and community led natural disaster planning, response and recovery process in place, what would it look like? (Prompts: What would it include? How would things be different?)
Bibliography