

# Developing a model and the tools to measure community resilience

## Final Report

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Torrens  
Resilience Institute



An Australian Government Initiative



Report prepared by the Torrens Resilience Institute.

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## PART B

Community Disaster Resilience Toolkit



# PART A: Executive Summary

## Aim and scope

This project supports the vision of the 2009 Council of Australian Governments (COAG) National Disaster Resilience Statement and the National Disaster Resilience Strategy by developing a tool to measure community resilience to all hazards. This will enable local policy makers to establish priorities, allocate funds and develop emergency and disaster management programs more effectively. The use of the measurement tool and balanced Scorecard will help identify the degree to which communities are able to build their resilience because they:

- (1) foresee and/or acknowledge threats and risks;
- (2) work with the emergency services and other agencies;
- (3) have a sense-of-community and social capital; and
- (4) take collective responsibility to reduce the socio-economic impact of disruptive events, emergencies and disasters.

## Context of tool development

This project was undertaken in several stages by the Torrens Resilience Institute (TRI), working with a Project Advisory Group and a Project Working Group. A careful review of existing community resilience models led to the development of a definition and model of community disaster resilience, and a Scorecard to measure community disaster resilience with a set of guidelines. A review of the literature informed the achievement of these key deliverables. The definition, model and Scorecard were reviewed and refined with the help of two communities before a final version was trialled in four communities across Australia (Northern Territory, South Australia, Queensland, Western Australia).

The feedback from these communities was then used to finalise the development of the definition, model, Scorecard and guidelines for use by communities interested in measuring their resilience to disasters from all hazards.

## Key Deliverables

This project has delivered on:

- Literature review
- Definition of community disaster resilience
- Model of community disaster resilience
- Community Disaster Resilience Scorecard Toolkit

# SECTION ONE: INTRODUCTION

## 1.1 Background

This is the final report on developing a model and tool to measure community disaster resilience funded by Commonwealth Government National Emergency Management Program (2011/2012).

On 7 December 2009 the Council of Australian Governments (COAG) agreed to adopt a whole-of-nation resilience based approach to disaster management which recognises that a national, coordinated and cooperative effort is required to enhance Australia's capacity to withstand and recover from emergencies and disasters.

The National Strategy for Disaster Resilience (February 2011) sets out how the nation should aim to achieve the COAG vision. It emphasises that disaster resilience is not solely the domain of emergency services; rather it involves society as a whole.

The project was implemented by the Torrens Resilience Institute. The Institute comprises the University of Adelaide, Cranfield University, Flinders University and the University of South Australia. The institute aims to be a national and international centre in excellence through the development of advanced thinking in the concept of resilience.

## 1.2 Project Aim and Scope

This project supports the vision of the 2009 COAG National Disaster Resilience Statement and the National Disaster Resilience Strategy (February 2011) by clarifying the definition of community disaster resilience and developing a tool for communities to measure their disaster resilience to all hazards. The community using this tool will be better able to build resilience because it:

- (1) foresees and/or acknowledge threats and risks;
- (2) works with the emergency services and other agencies;
- (3) has a sense-of-community and social capital; and
- (4) takes collective responsibility to reduce the socio-economic impact of disruptive events, emergencies and disasters.

### 1.3 Terms and Definitions

For the purposes of this project:

- a. The term community refers to a geopolitical community such as a town, district or local government area.
- b. A disruptive event is an unwanted situation, which has the potential to become an emergency or even a disaster.
- c. An emergency is an event, actual or imminent, which endangers or threatens to endanger life, property or the environment, and which requires a significant and coordinated response.
- d. A disaster is a condition or situation of significant destruction, disruption and/or distress to a community.
- e. Resilience – A community is resilient when members of the population are connected to one another and work together, so that they are able to function and sustain critical systems, even under stress; adapt to changes in the physical, social or economic environment; be self-reliant if external resources are limited or cut off; and learn from experience to improve itself over time. Community resilience is more than the resilience of individuals, families or specific organisations, though all of those are key components of community resilience.

A summary of the key acronyms used in this report is provided in Appendix 1.

### 1.4 Project Advisory and Working Groups

#### *Advisory Group*

The Advisory group is a national group with a broad perspective drawn from national, and state government level and consisted of:-

- Mr Beattie C., Chief Officer – State Emergency Services (South Australia).
- Ms Burgess ML, Project Officer – Community Engagement Sub-Committee National Emergency Management Committee (Brisbane).
- Mr Collett C., Assistant Secretary – Emergency Management Policy Branch Attorney-General's Department (Canberra).
- Ms Frittum J., Manager Policy and Strategy – [SA Fire and Emergency Services] (SAFECOM).
- Mr Holt J., Project Officer – Community Engagement Sub-Committee National Emergency Management Committee (Brisbane).
- Ms Hunt S., Assistant Secretary – Emergency Management Policy Branch Attorney-General's Department (Canberra).
- Mr Hyatt N., Senior Policy Officer – Infrastructure and Emergency Management (South Australia).
- Mr McLoughlin T., Manager Policy and Strategy – [SA Fire and Emergency Services] (SAFECOM).
- Ms Speechley C., Policy Manager – Department of the Premier and Cabinet (Adelaide).

## **Working Group**

The members of the Working Group were drawn from the Universities that comprise the Torrens Resilience Institute as well as other complementary government and sector experts. They were chosen from different specialties to contribute their varied expertise, to assist with the development of the definition of community disaster resilience and the key elements of a model and criteria for the Scorecard. The members of the Working Group include:-

- Mr Boyd S., Manager of Community Development - Adelaide Hills Council.
- Dr Burrows L., Lecturer - School of Education, Flinders University.
- Mr Button C., Manager of Health and Regulatory Services - Adelaide Hills Council.
- Dr Cottrell A., Senior Lecturer - James Cook University, Human Geography.
- Associate Professor Delpachitra S., Finance - Business School, Flinders University.
- Mr Duldig P., Director – IT Services, University of Adelaide.
- Professor Griffith M., Structural Engineering - School of Civil, Environmental and Mining Engineering, University of Adelaide.
- Ms Malcolm F., Board Member - Queensland Council of Social Services.
- Associate Professor McIntyre J. – School of Social and Policy Studies, Flinders University.
- Mr McAslan A., Academic Staff – Centre for International Security and Resilience Cranfield University, England.
- Dr Mwanri L., Course Coordinator, Masters of Health and International Development - School of Public Health, Flinders University.
- Mr Packer G., Director of Studies - University of Adelaide.
- Dr Stehlik T., Senior Lecturer - School of Education, University of South Australia.
- Mr Wray L., Research Officer - Griffith University.

Reports on the progress and key deliverables of the project were provided to the Attorney Generals Department Project Lead. A presentation on the project was also provided to the National Emergency Management Committee Subcommittees: Community Engagement and the Risk Assessment and Mitigation.



## SECTION TWO: EVALUATION METHOD

The project design included a number of stages to achieve the key deliverables (See Table1).

**Table 1. Key Deliverables**

Milestones	Tasks	Completion
1. Scoping Study	Conduct a scoping study to clarify the key stakeholders, scope, approach, methodologies, deliverables and timings of the project.	Advisory and Working Groups established for the project.
2. Literature review of existing models	Examine the suitability and effectiveness of existing models for measuring the ability of human systems to cope and be resilient in the face of adversity.	Literature search undertaken and review provided to Working and Advisory Groups.
3. Develop definition and model of community disaster resilience	Develop a definition and model of community disaster resilience.	Community disaster resilience definition and model developed.
4. Develop tool for general use.	Build a tool using the model with measures and indicators for general use. A key part of this stage was the development of user-friendly guidelines and examples.  Using desktop exercises, the tool was applied to a range of indicative communities against a range of potential threats and disruptive events.	Draft Scorecard and measurements developed.  Guidelines, glossary and information sheet on data resources developed.  Draft Scorecard trialed in three sites, one rural and two metropolitan.
5. Field test tool in at least three States/territories	The tool and guidelines were field tested in four communities	Community trial sites in South Australia, Western Australia, Victoria, Northern Territory and Queensland.
6. Prepare final report	The final report completed and deliverables presented ready for distribution.	Final report presented October 2012.

## **2.1 Stage 1: Literature review**

The scientific and grey literature reveals a wealth of information, definitions, frameworks and models of community resilience. Many articles provide practical tools that can be used by communities to build their overall resilience to issues that may affect their health and wellbeing. Those articles that specifically consider community disaster resilience have a focus on individuals and community vulnerability and risk assessments. Despite the range and depth of material, there is no standard definition of community disaster resilience and no published validated tool that communities can easily use to assess their resilience in preparing for an emergency event at the community level, rather than the individual level.

The existing papers and reports collated by the literature review have made it possible for the project working group to compare models and frameworks and to tease out reoccurring themes and concepts to develop a tool that community members can use to measure community disaster resilience. By having such a tool that can be used at the community level the process of community engagement, including conversations and awareness about the hazards and risks in their local area will begin. This conversation provides a good first step to building community disaster resilience.

## **2.2 Stage 2: Development of a definition of community disaster resilience**

Through TRI's four partner universities, a range of experts who were members of the Working Group examined the suitability and effectiveness of the definitions and models from the literature and worked with the Project Team to define community disaster resilience.

Based on a synthesis of the data from the literature a definition of community disaster resilience was developed by the Project Team, Working and Advisory Groups.

## 2.3 Stage 3: Develop a model and tool to measure community disaster resilience

The model of community disaster resilience is based on sets of physical, organisational and social capital, which all communities possess to varying degrees and can be used to respond to one or more disruptive events. Four components of community resilience in an emergency or disaster were identified which the Working Group considered summarised resilience.

These are:

1. How connected are the members of your community?
2. What is the level of risk and vulnerability in your community?
3. What procedures support community disaster planning, response and recovery?
4. What emergency planning, response and recovery resources are available in your community?

This resulted in the development of a tool that consists of a number of components:

1. Community Disaster Resilience Scorecard. This Scorecard comprises detailed questions and assessments of each of the four components of disaster resilience. The choice of criteria is not an exact science. The selected criteria were developed from the best available evidence related to the four components of community disaster resilience. If a specific criterion were supported by the literature and provided a readily accessible data source it was used. In all other cases, the criteria were selected by best judgement of the experts on the Working Group with input from the Advisory Group.
2. A guideline that outlines the process for completion of the Scorecard.
3. Glossary of terms used in the Scorecard, ensuring consistent interpretation.
4. Resource sheet to assist the Community Scorecard Working Group to find data sources required to assess their community disaster resilience.

The Working Group considered five versions of the Scorecard. Version Five of the Scorecard was reviewed in one rural and one metropolitan council area in South Australia with members of the local government and community. This was to gain feedback on the components of resilience identified in the Scorecard, the flow of the different components, the language and the criteria used to score the level of community disaster resilience. The feedback was presented to the Working Group for further discussion and changes were made resulting in a final working draft, Version Six, being presented to the Advisory Group for the test site trial.

## 2.4 Stage 4: Testing the model and tool

The original proposal was to trial the tool with three communities in separate jurisdictions across Australia. Six communities expressed a willingness to participate, of which four in four jurisdictions completed the process. Two of the six communities willing to participate in the trial were unfortunately unable to do so within the time allocated for this stage of the project.

The Project Team with the Working and Advisory Groups identified a number of communities across the different Australian jurisdictions to be contacted to participate as a test site for the Scorecard. The communities represented a mixture of rural and metropolitan areas as well as those communities that had recently experienced a disaster and those that had not. With support of the Commonwealth Attorney Generals Department a letter was sent to the Mayor or Chief Executive Officer of the identified local government organisations seeking their support to participate in the trial.

The Project Team liaised with a representative from each participating local government service to provide more information about the project. Two Project Team members attended the first meeting of the Community Scorecard Working Group in each community to explain the process, note the response and any concerns or issues from the group. The Project Team also requested to attend the third and final meeting to evaluate the model, Scorecard and process with the local Community Scorecard Working Group.

## 2.5 Stage 5: Evaluation

Evaluate feedback from the test sites on the model and the tool.

The Project Team attended the third and final meeting to observe how the Community Scorecard Working Group used the Scorecard. They were asked whether or not they thought that the components in the Scorecard adequately assessed community disaster resilience. Hard copies of the evaluation form and a self-addressed envelope were left for members to complete and return to the Project Team. An electronic version of the evaluation form was also offered.

## SECTION THREE: OUTCOMES FROM TRIAL SITES

### 3.1 Evaluation findings

Four communities participated as trial sites from South Australia, Western Australia, Queensland and the Northern Territory. The support of local government personnel was consistently excellent in all communities participating as trial sites. This highlighted the importance of the local government's role in supporting this initiative by bringing the Community Scorecard Working Group together, providing the venue and in particular the personnel to coordinate the meetings and access information from the data bases, which many of the community members were unfamiliar with.

### Evaluation Questions

The following questions were explored with each trial site Community Scorecard Working Group.

1. Did you understand the objective/purpose of completing this Scorecard to assess the community resilience to disasters?

All communities had clearly understood the purpose of completing the Scorecard. They consistently stated that it was a worthwhile process for any community to undertake. The exercise had also improved the community members' understanding of the diversity of partners who play different but critical roles in supporting the resilience of a community to prepare for a potential disaster event.

2. Does the guideline and Toolkit provide clear explanation of what community disaster resilience is?

The majority of the trial sites felt the guideline and Toolkit provided clear information about the meaning of community disaster resilience and the different components of it. However, there was some general discussion about the term 'resilience' and what that means in the context of disaster response rather than as a general concept of resilience as a community. In addition, there was discussion on the use of the words 'disaster' verses 'emergency', in particular the communities' view of what a disaster may or may not be and their willingness to take the disaster definition seriously, especially if a community had not experienced a significant event that had disrupted or potentially disrupted its functioning.

To address these discussions it was recommended that the definition of 'resilience' remain as it is, but is highlighted at the very beginning of the Toolkit as well as within the Scorecard to emphasise the context of the tool and why it is important to build disaster resilience for any community. It was also suggested that within the guideline and the Scorecard that the term emergency be used as well as disaster.

### 3. Did you easily understand the guidelines/instructions provided to fill in the Scorecard?

All the communities easily understood the instructions provided to fill in the Scorecard. However, they wanted more explanation on the term 'community' and its boundaries and limits. This definition has now been provided in the guidelines.

The glossary and other supportive documents were perceived as comprehensive, though some admitted not having used them as the Scorecard was quite clear. Those who were not present at the first meeting of the Community Scorecard Working Group, when the process was explained by the research team, stated they were able to understand the objective and the process with the guidelines and instructions provided.

All communities stressed the importance of omitting 'technical emergency management terms' and to use lay language as far as possible throughout all parts of the Toolkit. There was also an emphasis from all communities that the Toolkit should be succinct, with the less to read the better.

The majority of the communities also felt the pictures used in the Toolkit were appropriate and meaningful, but suggested the addition of pictures of 'disasters' which were added to the final Toolkit.

### 4. Were you able to easily understand the different sections/items of the Scorecard?

The communities were able to understand the different sections of the Scorecard as being important components in the assessment of disaster resilience. The order of the sections was also considered to be logical. It was however suggested that the four components of resilience be introduced briefly at the front of the card and guideline, so that they can be seen quickly and be highlighted to 'stand out' using larger fonts at the top of each section of the Scorecard.

The questions under each of the four components on the Scorecard were thought to be important and relevant to the corresponding section. They felt it was a good mix of questions to be considered under each section. All communities mentioned that the questions facilitated good discussion in the group and some of the questions had not previously been thought about in relation to the preparation for an emergency or disaster.

The communities appreciated the inclusion of 'self-assessment' items on the Scorecard as it gave them an opportunity to hear the many views within the Working Group on some of the aspects of resilience.

The role of the Chair of the Community Scorecard Working Group plays an important part in making sure that all community members have an opportunity to participate equally in answering and scoring questions rather than allowing the 'expert' to dominate the discussion. Examples were given where the emergency personnel had indicated that an issue had been addressed and allocated a higher score, however the community members were not aware of or confident about these actions. Feedback was given by communities that this type of conversation was very informative and worthwhile for all involved.

**5. Are there any items in your opinion which need to be modified, if so what are they?**

The four sections of the Scorecard were discussed and some of the questions and measures were changed based on the feedback. In addition, it was expressed that providing examples in the case of several questions would help in explaining the item better. These changes were made to the final version of the Toolkit.

Commenting on the data sources, some felt the data were not easily accessible from the stated websites. They proposed the inclusion of direct links from the Scorecard to the relevant information page, where possible, rather than the website. This suggestion will become a recommendation along with the development of an electronic version of the Toolkit.

**6. Did you find this exercise useful to improve the resilience of your community in the event of a disaster?**

The communities strongly felt it was a good exercise, which improved their understanding of disaster resilience. Many were of the opinion that the initial exercise was a good starting point for them and the initial scores could be set as a benchmark to further improve their community's resilience. The communities felt the process shed light on a range of emergency preparation and planning activities conducted by the local council, emergency services as well as different areas such as the education and health departments, which they had not considered before.

They also appreciated the knowledge they gained about their local community in listening to the conversations from different personnel in the Community Scorecard Working Group and from accessing data sources during the exercise as they were previously unaware of some of the information that was available.

The communities thought that it was useful to have members from many different areas of the community on the Working Group. There was a lot of discussion in all communities about the importance of marketing this Scorecard to get the community more interested and involved.

It was mentioned that for some communities, the local government and emergency services were required to be involved in a number of emergency or disaster risk assessment and mitigation activities. The Scorecard could be seen as 'one more thing to do' if it was not marketed well. It was further suggested that all of the emergency or disaster requirements could be incorporated into one package including the resilience Scorecard to prevent any duplication, and to promote the complementary nature of these activities. Further discussion on this point recognised that one of the valuable key points with the Scorecard was the process of bringing different personnel together and having the conversations about their community as they complete the Scorecard.

**7. Were you able to identify actions to be undertaken to improve your community's disaster resilience?**

The communities all scored their resilience and identified at least one area that they would like to improve on, which otherwise they would not have thought of. Some of the activities were to be incorporated into the local council's 'Emergency Management Plans'.

#### 8. Do you agree that this tool is measuring community disaster resilience?

Many were of the opinion that the tool effectively measures the resilience of a community in disasters. While some argued that the Scorecard provides a comprehensive measurement, the Project Team have concluded that the measurement of resilience is complex and the Scorecard represents an “adequate” measure of communities’ disaster resilience. However, the positive response by communities to the items within the tool is very encouraging as it leads to the conclusion that the measures pass the “common sense” test of the community and are acceptable, and likely to drive change in communities.

#### 9. Any other comments

The process has brought together people from several fields and in some instances it was a good exercise to learn ‘who is doing what’. The communities stated that the composition of the working group is critical for the success of the process and wanted the final version to clearly indicate the different stakeholders that should be included. This was added to the introduction of the Toolkit as recommended. In addition, the process of completing the Scorecard with three meetings was seen as appropriate, though some thought it could be done in two meetings.

In addition, the communities felt strongly that further consideration should be given to attracting people from different areas within the community to be on the Community Scorecard Working Group, as it must not be seen as the council’s or emergency services activity and responsibility.

## 3.2 Conclusions

The testing of the Scorecard with a range of communities was extremely valuable as the feedback enabled the process and tool to be refined. This community friendly Scorecard is a workable tool for a community to measure its disaster resilience.

The definition of community disaster resilience was thought to be understandable and the four components of disaster resilience, their questions and criteria were considered appropriate measures of resilience at this time. The process was user friendly and the Community Scorecard Working Group enjoyed the discussions that the scoring generated, which proved to be just as valuable as the final score itself.

The outcome led to actions that will feedback into the cycle of quality improvement and resilience building for local government and the services participating in the Community Scorecard Working Group. The outcomes also need to be fed back into the community in a way that will engage their interest.

It was considered that the use of such tools would help identify the degree to which communities:

- (1) are able to foresee and/or acknowledge threats and risks;
- (2) work with the emergency services and other agencies, especially the local government to build disaster resilience;
- (3) have a sense-of-community and social capital.

The biggest challenge remains however to develop willingness by the community to take on a collective responsibility to reduce the socio-economic impact of disruptive events, emergencies and disasters. The use of the Scorecard will positively contribute to this challenge.



## SECTION FOUR: PROJECT KEY DELIVERABLES

This project produced a literature review, definition of community disaster resilience, designed a community disaster resilience model and a tool that is easy for community stakeholders to use, while keeping sufficient validity and rigour to enable a relatively effective and objective measurement of disaster resilience in a community.

All key deliverables for this project were achieved on time and within budget.

### 4.1 Literature Review

The literature review reveals a wealth of information, definitions, frameworks and models of community resilience. Many articles provide practical tools that can be used by communities to build their overall resilience to many issues that may affect their health and wellbeing. Those articles that focus specifically on community disaster resilience have a focus on individuals and community vulnerability and risk assessments. Despite the range and depth of material, there is no published validated tool that communities can practically use to measure their resilience in preparing for an event at the community level, rather than the individual level (See Appendix 2 for complete literature review).

### 4.2 Definition of community disaster resilience

The project assessed definitions and descriptions in scientific and grey literature and reached consensus through discussions within the Project Team, Working and Advisory Group members on the following definition. Beyond the resilience of individuals or individual organisations, your community will prove resilient in the event of a severe emergency or disaster when members of the population are connected to one another and work together, so that they are able to:

- function and sustain critical systems, even under stress;
- adapt to changes in the physical, social or economic environment;
- be self-reliant if external resources are limited or cut off; and
- learn from experience to improve over time.

### 4.3 Model: The Four Domains of Community Disaster Resilience

The model describes the identified four essential domains of community disaster resilience and is presented in Figure 1. It is argued that the four domains overlap and interact, making relatively equal contributions to building disaster resilience in the community. Should a domain be weakened, beyond its tipping point overall resilience will be affected. A balanced Scorecard approach addressing each domain will identify strengths and weaknesses in the key elements of each domain.

### 4.4 Final Tool

The final product of the project (PART B) includes five components:

- Community Disaster Resilience Scorecard guidelines.
- Working copy of the Scorecard
- Master copy of the Scorecard
- Scorecard Glossary of terms and data access resource sheet.
- Sample letters of invitation and draft agendas for the three meetings.



Figure 1. A model for community disaster resilience.

# Appendix 1

## Acronyms

- AGD Attorney-General's Department
- COAG Council of Australian Governments
- NSDR National Strategy for Disaster Resilience. This sets out how the nation should aim to achieve the COAG vision. It emphasises that disaster resilience is not solely the domain of the emergency services, rather it involves society as a whole: governments, local authorities, organisations in the private and public sectors, NGOs and volunteers, households and communities. The resilience of communities is particularly important.
- NEMC National Emergency Management Committee
- NEMP National Emergency Management Project
- TRI Torrens Resilience Institute was established by the Government of South Australia at the International University Precinct in Adelaide, South Australia to improve the capacity of organisations and societies to respond to disruptive challenges, which have the potential to overwhelm local disaster management capabilities and plans. The mission of the TRI is to assist the Federal and State Governments, the emergency services, organisations and civil society enhance their leadership and management capabilities, and thus enable them to prepare for, and respond better to, disruptive challenges. In addition to building national and community resilience within Australia, TRI assists the Federal and State Governments achieve their foreign policy and humanitarian objectives by developing resilient national capacities in the countries of South East Asia and the Pacific Rim.



## Appendix 2

May 2012

### ***Torrens Resilience Institute.***

Measuring Community Disaster Resilience: A Review of the Literature

National Emergency Management Plan: Project NP 1112-0015

### **Introduction**

Resilience is a concept that has recently found its way into human systems. Taken from the Latin word, *resilire*, which means 'to rebound' or 'to recoil', it had become an important concept in 19th Century British naval architecture and materials science, where it was used as a measurement of the comparative strengths of the various woods and materials used in the construction of the Royal Navy's warships. Scientist Robert Mallet worked on this concept and developed a measure, known as the modulus of resilience, for assessing the capacity of materials to stand up to adverse conditions. This measure has been used in other applications, notably the evaluation of the suitability of materials used for building homes and public infrastructure (McAslan 2010, p.2). Lately, however, resilience has been used with increasing frequency in areas and disciplines as varied as health, medicine, economics, information management, security, emergency management, and several fields among the various social sciences. It has been used in the analysis of individual human characteristics, as well as of human systems such as organisations, institutions and communities (Braes & Brooks 2010, p.15).

The National Emergency Management Plan (NEMP) funded project presently being undertaken by the Torrens Resilience Institute (TRI) is to develop a useful tool for measuring the resilience of Australian communities against disasters. The importance of strengthening local communities against disaster events by enabling them to determine how resilient they are against these adverse situations is critical. As noted in the Commonwealth National Strategy for Disaster Resilience it is important to build upon our existing emergency planning arrangements, to focus more on action-based resilience planning to strengthen local capacity and capability, with greater emphasis on community engagement and a better understanding of the diversity, needs, strengths and vulnerabilities within communities.

The National Strategy for Disaster Resilience goes on to say that community resilience can be defined in many ways. Rather than define disaster resilience, the strategy focuses on the "common characteristics of disaster resilient communities, individuals and organisations. These characteristics are: functioning well while under stress; successful adaptation; self-reliance, and social capacity. Resilient communities also share the importance of social support systems, such as neighbourhoods, family and kinship networks, social cohesion, mutual interest groups, and mutual self-help groups" (2011, p4). Furthermore the strategy identifies with the Insurance Council of Australia's (2008, p4) understanding of resilience "Communities that develop a high level of resilience are better able to withstand a crisis event and have an enhanced ability to recover from residual impacts. Communities that possess resilience characteristics can also arrive on the other side of a crisis in a stronger position than pre-event." The United Nations/International Strategy for Disaster Resilience (UN/ISDR) has defined resilience as a desirable property

of natural and human systems in the face of a range of potential stresses and hazards. This property involves the capacity of such systems to absorb the impact of such hazards and then recover or return to their original state (Klein, Nicholls & Thomalla 2003, p.35).

Disasters often occur in unexpected forms or magnitudes and in unexpected locations, making it impossible to prevent, defend or address all such threats. Thus resilience has become an increasingly important concept for community disaster management and recovery (Zhou, Wang, Wan & Jia 2012, p.22). This is especially important for Australia, not only because Australia's unique environment includes regular hazard events and incidents among its communities every year, but also because in recent times, many of these hazard events have been unanticipated, unusually massive, and have resulted in serious consequences against Australia's affected communities. The ability of an Australian community to measure and assess its own resilience thus contributes towards its ability to become stronger and better able to deal with, survive and recover from disasters.

## The Literature Search

The literature search was conducted from information published on measuring community resilience within the context of disaster preparation, response and recovery, focusing in particular on tools that have been developed to measure community disaster resilience. An exhaustive search had been conducted in a number of online databases to seek out relevant papers, book chapters, policy documents, and various other publications. The keywords used in this search consisted of two sets, namely, 'Measurement and Community Resilience' and 'Measurement tools and Community Resilience and Disaster'. The main databases searched, as well as the results obtained were:

- Pro-Quest Central:
  - o Measurement and Community Resilience: 3,964 results
  - o Measurement tools and Community Resilience: 2,369 results
- Springer Link:
  - o Measurement and Community Resilience: 5,797 results
  - o Measurement tools and Community Resilience: 2,909 results
- SAGE Journals Online:
  - o Measurement and Community Resilience: 2,024 results
  - o Measurement tools and Community Resilience: 823 results

These databases were chosen on the basis of the wide selection of subjects and topics to which they enable access. The searches were restricted only to scholarly articles and those that have been peer reviewed. The majority of the academic publications included in this review have been obtained from these databases. Most of the results obtained were duplicates among the data bases, or were not relevant to the community self-assessment focus of this project. Articles which had no content or clear relationship to the development of resilience measures were set aside. All in all, after having eliminated what was not needed, 65 relevant publications were included. .

Google was also searched for non-academic publications/ grey literature, and out of 193,000 results, 50 were selected as being the most relevant to this project. These were systematically reviewed and further numbers were eliminated from this review. Additional material suggested by the members of this project's working-group have also been reviewed, and if found relevant, were included here. The search continues and the literature review is regularly updated by TRI.

This literature review has contributed significantly to the initial considerations by the project working-group for developing the model and tool to measure community disaster resilience.

## **Some Initial Findings**

The literature describes various factors that relate to community resilience, though there is very little discussion about how to measure community disaster resilience, specifically prior to an event as an approach to disaster preparedness.

The themes that have emerged from the publication include using mathematical modelling to measure community resilience; components of community resilience; measuring social vulnerability, and frameworks for understanding community resilience.

## **Complex Mathematical Modelling**

A broad and general summary of the publications in this review seem to indicate that many academic publications, most of which are in the form of academic journal articles, devise models that require complex and sophisticated mathematical modelling and calculation of community resilience or one aspect of this such as infrastructure (Rose, A 2004; Arianoutsou M, Koukoulas S & Kazanis D 2011; Zobel CW 2011). Though these may be relevant from a theoretical perspective they are not tools that can be easily used by community members to measure and understand their degree of disaster resilience. Components of these models appear, however, in many other publications discussed below.

## Components of Community Resilience

Both published articles and the non-academic publications have numerous similarities, in that community resilience measures are a function of different components, characteristics or aspects of a community. In many cases, authors of these publications have arrived at similar or comparable components. Some authors call them 'capitals' such as social, economic, health, political, physical (Cocklin, C. & Dibden, J. 2005; Mayunga, J.S. 2007; Callaghan, E.G. & Colton, J 2008). Other authors call them 'aspects', 'resources', 'enablers', or 'outcomes'. There are differences in emphasis, focus, or prioritisation, but most publications have two or more similar components.

This literature has been the most useful in trying to draw out the comparable components that, if measured, give an indication of a much broader community resilience approach. An example of this comes from the work of Maguire & Cartwright (2008) who developed resilience criteria consisting of equity, quality, sustainability and ownership; in measuring resilience, they recommend in their Toolkit that its users think of their community-assets when evaluating their communities. These assets comprise of people and their skills, knowledge, experience and motivation, encompassing associations or groups of people working with common interests as volunteers, institutions or paid groups of people who are structurally organised. Community assets also include physical assets and the connections between these physical assets.

A different approach based on similar concepts is that proposed by Longstaff, P H., et al. (2010), in which resilience is identified through a social assessment tool that assesses the following connected issues: the

internal community structure, the community history and community vulnerabilities. The assessment of community resources and adaptive capacities are also included in this grouping of connected social issues. The value for measuring community connectedness emerges as one item that needs to be captured in a community disaster resilience tool.

Added to these examples of key concepts for understanding community resilience Hallegatte, S. (2011) takes a systems approach, which can be assessed through subsystems analysis using a number of community characteristics. The subsystems mentioned by Hallegatte (2011) include diversity, robustness, connectedness, functional cross-scale links and learning capacity.

These three examples demonstrate the different types of approaches the various authors have considered, but with similar concepts emerging. There is however not one usable published tool that measures community disaster resilience.

A number of other assessments and possible measures of resilience mentioned in the literature specifically relate to critical infrastructures, such as those designed for flood mitigation, water supply, information technology and buildings (Klein, R. J. T., Nichols, R. J. & Thomalla, F 2003; Tierney, K. & Bruneau, M. 2007; Hallegatte, S. 2008; Fekete, A. 2011; Frommer, B. 2011). These articles highlight the importance of having in place appropriate risk assessments for community disaster planning, response and recovery.

Many of the articles on building community disaster resilience discuss the concept of resilience building, at either an individual or community level, but after rather than before a disaster event (Cox, R.S. & Perry, K-ME 2011, Millen D 2011; Zobel, C.W. 2011) when prevention activities could aid a community to recover much more quickly.

## Measuring Social Vulnerability

There were a number of articles that sought to measure social vulnerability as an indicator of community resilience. This concept of vulnerability involves, not only specific disadvantaged groups within a community, but also there is a strong emphasis on socio-economic factors that may affect the quality of community resilience (Fekete, A., Damm, M. & Birkmann, J. 2009; Flanagan, BE., Gregory, EW., Hallisey, EJ., Heitgerd, JL. & Lewis, B. (2011). For the purpose of this project community the literature clearly supports vulnerability as an important consideration to be included within a community disaster measurement tool. In particular what is the level of risk and vulnerability in the community especially for those who do not speak English, are new migrants and the frail elderly.

## Frameworks for Understanding Community Resilience

Other articles and papers reviewed feature frameworks for better understanding the concept of community resilience. A number focus on processes or procedures that would measure community resilience (Centre for Community Enterprise 2000; Bay Localize 2009; James Cook University 2010).

Many non-academic papers, such as those published by non-governmental organisations (NGO's), civic organisations, or even a few academic writers and researchers, have designed models and tools that do not require sophisticated mathematical knowledge or skill to use (Emerald Community House 2011; Emergency Volunteering 2011)

## Summary

This project seeks to design a community disaster resilience measurement model with a tool that would be easy for non-academic community stakeholders to use, while keeping sufficient effectiveness and rigour to enable an objective measurement of disaster resilience in a community. The literature review reveals a wealth of information, definitions, frameworks and models of community resilience. Many articles provide practical tools that can be used by communities to build their overall resilience to many issues that may affect their health and wellbeing. Those articles that focus specifically on community disaster resilience have a focus on individuals and community vulnerability and risk assessments. Despite the range and depth of material, there is no published validated tool that communities can use to measure their resilience in preparing for an event at the community level, rather than the individual level.

The existing papers and publications in the literature review have made it possible for the project working group to compare models and frameworks and to tease out the reoccurring themes and concepts to develop a tool that community members can use to measure community disaster resilience. By having such a tool that can be used at the community level the process of community engagement, conversations and awareness about the hazards and risks in their local area will begin. This is the first step to building community disaster resilience.



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## PART B: Community Disaster Resilience Toolkit

# Community Disaster Resilience Scorecard Toolkit



Welcome to the Community Disaster Resilience Scorecard Toolkit. You are here because you are interested in helping your community to be prepared, respond and recover more effectively should an emergency or disaster occur. This resource has been designed for you as a part of the Australian National Disaster Resilience Strategy, especially for the use of communities interested in self-assessment of their potential resilience and to develop a springboard for an action plan to strengthen resilience.

This Toolkit has all of the pieces needed by the leader or coordinator of the process, and includes working materials to be distributed to community members participating in the process.

Working together to complete the Scorecard, you and fellow participants will learn more about your community and its resources, and will be stimulated to consider action steps that will stand you in good stead, not only in the face of disaster but on a day-to-day basis.

The process is not difficult, and the time investment is modest. The score you identify is for your use in taking ongoing actions to strengthen your community. We hope you will enjoy as well as learn.

***The Torrens Resilience Institute Team***

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## Introduction to the Toolkit

Emergencies and disasters can happen, almost any time or any place, and thinking ahead to recovery is important. That is why Australia has a National Disaster Resilience Strategy (<http://www.em.gov.au/Publications/Program%20publications/Pages/NationalStrategyforDisasterResilience.aspx>). Inland towns may not need to prepare for tsunamis or cyclones; floods generally do not happen far from watercourses; bush fires have happened in every state and territory of Australia. Epidemics or industrial and transportation emergencies (e.g., chemical leakage, fire, and train derailment) are possible. Every community in Australia, large or small, has some degree of vulnerability to disaster or large scale emergency, and could well be

surprised to discover that recovery is much more difficult than anyone thought. This Community Disaster Resilience Scorecard is your tool; an early step towards understanding which of the lines depicted below will be your town's story.



It is not possible to plan improvements without knowing where you are starting. The Community Disaster Resilience Scorecard is one part of the process necessary to help a community (a town, a regional council, a district) become more resilient in the face of major emergencies or disasters. This Scorecard may be of even greater help to a community that has not had recent experience with an emergency event than it is to those who live in areas with frequently occurring challenges such as flooding or cyclones.

The completed Scorecard will provide a point-in-time snapshot of some key measures important to resilience, providing guidance on aspects of community life that should receive attention in order to increase resilience and strengthen resilience over time. Using the Scorecard at annual intervals will allow you to track your progress on selected action areas, and to identify any new areas needing attention.

## **Definition of community disaster resilience**

Beyond the resilience of individuals or individual organisations, your community will prove resilient in the event of a severe emergency or disaster when members of the population are connected to one another and work together, so that they are able to:

- function and sustain critical systems, even under stress;
- adapt to changes in the physical, social or economic environment;
- be self-reliant if external resources are limited or cut off; and
- learn from experience to improve over time.

Some of the information needed to complete the Scorecard will come from official census or similar information, and one or more individuals may be tasked with gathering some of the needed information. However, the Scorecard should be completed through an interactive process that involves representatives of the local government and individuals from the community, including some who may not see issues through the same lens. The results should be widely shared as a part of the strategy to take action toward increased community resilience.

Each component of resilience is scored from 1 to 5, with 5 being the highest level of resilience. The scoring process is not a precise statistical process, but rather a best approximation of how each element fits into overall community resilience, and your best local judgement and knowledge are what counts. Where scoring is based on numeric information, such as a figure from the current census, the 1-5 range was established based on the current literature on the components of resilience. In most cases, a definition or an example of what might lead to each of these scoring levels is provided, and in all cases, there is an indication of where the information required to determine a score might be found. If there are local data sources such as an annual survey of residents that asked a relevant question or a recent post-emergency critique that addressed an item on this Scorecard, then use them. The glossary attached (Appendix 1) includes links to identified data sources.

Staff from the Torrens Resilience Institute who developed this Scorecard are available to answer questions as a community proceeds to use the Scorecard. Contact the TRI by email ([information@torrensresilience.org](mailto:information@torrensresilience.org)) or phone (08 82215440).

## Getting the Process Started

The decision to complete the Scorecard is usually made at the local government level, after consultation with key community members who may participate in the process, or be key sources of information. It is NOT a document to be assigned to a single individual or government department to complete. The geographic area to be included should be clearly defined at the outset, to facilitate use of census and other data sources, and identify the Working Group. It may be helpful to mark on a map and display both the community for which the Scorecard is being completed (the town boundaries) and the larger region or council to which this town relates. For a small to medium town, a Working Group of a dozen is sufficient; if the decision is to look at a region or district, the Working Group may need to be expanded to 20 or so to assure a range of perspectives and experiences are represented. At the regional or district level, it may be best to encourage all towns within the region to complete their own Scorecards before assembling a group to look at the area as a whole.

## Selecting Participants

The Scorecard is NOT a document for a single individual, or a single government agency, or a group of experts in emergency preparedness and management to complete; it requires discussion with a larger, more diverse group. Completing the Community Disaster Resilience Scorecard is best done by a Scorecard Working Group of 10 to 15 individuals, including some local government officials and a number of people recognised as leaders by groups within the community. It is particularly important that the Scorecard Working Group represent the whole community, considering geography, age, economics, social and ethnic groups, length of time in the community and similar factors. They should not be individuals who hold identical views about the community; having divergent perspectives engaged in the process will strengthen the outcomes.

A sample letter of invitation to the Working Group is included in Appendix 2 and indicates the expectation that it is a commitment to 3 meetings over 4-6 weeks.

The Chair of the Working Group will probably be identified prior to the first meeting, but may be selected by the members at their first meeting. The Chair should be someone who is able to encourage group discussion, negotiate agreement among those with divergent viewpoints, and keep the group on track within the expected timeline. The Chair's priority should be the process of the group rather than any one particular viewpoint about resilience or disasters.

The Chair should be responsible for assuring that the Master Community Disaster Scorecard is completed and available for use in planning any follow-up activities. A member of the Working Group may be asked to assist in preparing the final copy.

A sample letter of invitation to serve as Chair of the Working Group is included in Appendix 3.



## **Setting up the meetings**

The Working Group should be scheduled to meet in a convenient location that has comfortable seating in a round table arrangement, with water and possibly coffee/tea available. Late afternoon or early evening times may be best to accommodate the desired range of members. The Working Copy of the Scorecard should be available for every member of the group, and copies of the glossary and any other resource material you have identified in advance (such as a recent community planning document or community emergency plan) should be in the room.

## **Scheduling**

When organising the Community Disaster Resilience Scorecard Working Group, some key scheduling items to think about are:

- Initial invitation to Scorecard Working Group Members
- Selection of Scorecard Working Group Chair
- First Meeting: Initial orientation meeting (approximately 2 hours) for Scorecard Working Group (approximately 2 weeks after letters are issued). Familiarise the group with geographic community under consideration, the definition of community disaster resilience and go through the Scorecard to assign individuals to data gathering tasks (see next section).
- Second Meeting: Scoring meeting, (approximately 2 hours) during which gathered information is presented, and the group makes initial judgements about scoring individual items (approximately 2 weeks after orientation meeting)
- Third Meeting: Final review meeting (approximately 1 hour) during which Working Group members can share reflections on their draft scores, consider any additional information gathered from community members or other resources in the meanwhile and make final scoring decisions. (Approximately 2 weeks after the first scoring meeting). At this meeting initial action plans to strengthen resilience are also identified.

## **Scoring**

For each question on the Scorecard, the Scorecard Working Group must agree on a score, ranging from 1 (quite un-resilient, or in the red zone) to 5 (very resilient, the green zone). Where the item depends on reported statistical information such as the census, it is a matter of identifying the most current data and circling the score that best represents the local situation. For quite a few of the items, however, a consensus judgement is called for. The Working Group Chair must ensure that alternate perspectives on the score are expressed, and discussion allowed before determining the score. After completing a first draft of the Scorecard the Working Group members should think over and even discuss with friends and colleagues their views before the final score is assigned. This strengthens the process, and increases the likelihood that the score finally selected represents the potential resilience of the community.

**If there is substantial disagreement on the correct score, and there well may be, setting the score at a lower level (the less resilient level) rather than a higher one will be a more effective way of continuing to engage members of the community in strengthening resilience.**

Remember, the Scorecard results are not for anyone outside of the community: they are yours to use as a quality improvement and communication tool.





**Working Copy  
(for distribution to each member of the Working Group)**



**Community Disaster Resilience Scorecard for.....**

## Working Copy for .....



The Community Disaster Resilience Scorecard is one tool associated with the Australian National Disaster Resilience Strategy, as communities across Australia are being encouraged to take steps to strengthen community resilience in the face of disaster.

Definition of community disaster resilience: Beyond the resilience of individuals or individual organisations, your community will prove resilient in the event of a severe emergency or disaster when members of the population are connected to one another and work together, so that they are able to:

- function and sustain critical systems, even under stress;
- adapt to changes in the physical, social or economic environment;
- be self-reliant if external resources are limited or cut off; and
- learn from experience to improve over time.

This is your working copy of the Scorecard, and you should use it to think through how you would score each item so that you are ready to contribute to the Working Group process that will arrive at a final score for your community. Make notes, consult with neighbors, friends or co-workers, and explore the suggested information sources.

It will probably take 2-3 meetings to think through the items, arrive at agreement on the scoring, and identify those areas most in need of ongoing attention. Each component of resilience is scored from 1 to 5, with 5 being the highest level of resilience. In most cases, we have provided a definition or an example of what might lead to each of these scoring levels, and in all cases, we have provided some information on where you might look for the data or information required to complete the Scorecard.

Be an active participant in the process. Since the Scorecard is only one step in helping increase community disaster resilience, use it to point toward needed action. With that in mind, it is probably helpful to err on the side of a lower than higher score when it is difficult to decide on any one item.

# 1. How connected are the members of your community?

Question	Score					Information Resource
1.1 What proportion of your population is engaged with organisations (e.g., clubs, service groups, sports teams, churches, library)?	<b>1</b> <20%	<b>2</b> 21-40%	<b>3</b> 41-60%	<b>4</b> 61-80%	<b>5</b> >81%	<i>Census</i>
1.2 Do members of the community have access to a range of communication systems that allow information to flow during an emergency?	<b>1</b> Don't know	<b>2</b> Has limited access to a range of communication	<b>3</b> Has good access to a range of communication but damage resistance not known	<b>4</b> Has very good access to a range of communication and damage resistance is moderate	<b>5</b> Has wide range of access to damage-resistant communication	<i>Self-Assessment</i>
1.3 What is the level of communication between local governing body and population?	<b>1</b> Passive (government participation only)	<b>2</b> Consultation	<b>3</b> Engagement	<b>4</b> Collaboration	<b>5</b> Active participation (community informs government on what is needed)	<i>International Association for Public Participation (IAP2) Spectrum</i> <a href="http://www.iap2.org/associations/4748/files/IAP2%20Spectrum_vertical.pdf">http://www.iap2.org/associations/4748/files/IAP2%20Spectrum_vertical.pdf</a>
1.4 What is the relationship of your community with the larger region?	<b>1</b> No networks with other towns/ region	<b>2</b> Informal networks with other towns/ region	<b>3</b> Some representation at regional meetings	<b>4</b> Multiple representation at regional meetings	<b>5</b> Regular planning and activities with other towns/ region	<i>Self-Assessment</i>
1.5 What is the degree of connectedness across community groups? (e.g. ethnicities/sub-cultures/age groups/ new residents not in your community when last disaster happened)	<b>1</b> Little/no attention to subgroups in community	<b>2</b> Advertising of cultural/cross-cultural events	<b>3</b> Comprehensive inventory of cultural identity groups	<b>4</b> Community cross-cultural council with wide membership	<b>5</b> Support for and active involvement in cultural/cross-cultural events (in addition to previous)	<i>Self-Assessment tied to demographic profile; local survey to assess</i>

## 2. What is the level of risk and vulnerability in your community?

Question	Score					Information Resource
2.1 What are the known risks of all identified hazards in your community?	<b>1</b> No local focus or mapping on risk	<b>2</b> Local focus on single risk (e.g., fire) but no mapping	<b>3</b> Mapping of single local risk	<b>4</b> Widely available mapping of multiple potential sources of risk	<b>5</b> Widely available mapping includes low probability/high impact events	<b><i>Emergency Services resources and community information resources</i></b>
2.2 What are the trends in relative size of the permanent resident population and the daily population?	<b>1</b> Resident population is <20% of the daytime (worker) population	<b>2</b> Resident population is 21-40% of the daytime (worker) population	<b>3</b> Resident population is 41-60% of the daytime (worker) population	<b>4</b> Resident population is 61-80% of the daytime (worker) population	<b>5</b> Resident population forms >80% of the daytime (worker) population	<b><i>Census or ABS</i></b>
2.3 What is the rate of the resident population change in the last 5 years?	<b>1</b> >30%	<b>2</b> 20-29%	<b>3</b> 13-19%	<b>4</b> 6-12%	<b>5</b> <5%	<b><i>Census</i></b>
2.4 What proportion of the population has the capacity to independently move to safety? (e.g., non-institutionalised, mobile with own vehicle, adult)	<b>1</b> <20%	<b>2</b> 21-40%	<b>3</b> 41-60%	<b>4</b> 61-80%	<b>5</b> >81%	<b><i>ABS, local planning documents</i></b>
2.5 What proportion of the resident population prefers communication in a language other than English?	<b>1</b> >35%	<b>2</b> 25-34%	<b>3</b> 15-24%	<b>4</b> 5-14%	<b>5</b> <5%	<b><i>Census</i></b>
2.6 Has the transient population (e.g., tourists, transient workers) been included in planning for response and recovery?	<b>1</b> No transient populations included	<b>2</b> Transient populations identified	<b>3</b> <50% of plans include transient populations	<b>4</b> 51-75% of organisation plans include	<b>5</b> All plans include transient populations	<b><i>Local planning documents or local survey</i></b>
2.7 What is the risk that your community could be isolated during an emergency event?	<b>1</b> Not considered in planning	<b>2</b> Map of all access routes/means available to the population	<b>3</b> Map distributed with request to have personal plan if access is severely limited	<b>4</b> Percentage of population needing transport help identified	<b>5</b> Transport plan includes those without personal transport & support for incoming supplies	<b><i>Self-Assessment based on information accessible within community</i></b>

### 3. What procedures support community disaster planning, response and recovery?

Question	Score					Information Resource
3.1 To what extent and level are households within the community engaged in planning for disaster response and recovery?	<b>1</b> No expectation that households will plan for emergency	<b>2</b> Households get information about emergency planning	<b>3</b> Community education sessions are conducted to assist household emergency planning	<b>4</b> Collaboration occurs with households in planning the community's disaster response	<b>5</b> Active participation by households in planning community's disaster response	<i>Self-Assessment based on review of plans/local documents; may be augmented by local survey</i>
3.2 Are there planned activities to reach the entire community about all-hazards resilience?	<b>1</b> No planned activities	<b>2</b> Groups encouraged to do activities	<b>3</b> Translated materials/ distribution to identified groups at risk	<b>4</b> Occasional activities for selected groups	<b>5</b> At least annual cross-cultural community-wide all hazards activity engaging multiple organisations	<i>Self-Assessment based on local planning documents</i>
3.3 Does the community actually meet requirements for disaster readiness?	<b>1</b> Unknown level of awareness by community members	<b>2</b> Readiness requirements specified but not widely known	<b>3</b> Residents routinely informed about readiness requirements	<b>4</b> Requirements implemented when attention is called	<b>5</b> Community members act on requirements as commitment to resilience enforced	<i>Self-Assessment, use of local documentation, local survey</i>
3.4 Do post-disaster event assessments change expectations or plans?	<b>1</b> Emergency Services/Fire/Police only	<b>2</b> Post-event assessment shared at public meeting	<b>3</b> Post-event questions circulated to all parts of community	<b>4</b> Responses to questions collected and reported	<b>5</b> Post-event action plan based on responses includes all community elements (government/businesses/NGO's)	<i>Review of local post-event documents</i>

## 4. What emergency planning, response and recovery resources are available in your community?

Question	Score					Information Resource
	1	2	3	4	5	
4.1 How comprehensive is the local infrastructure emergency protection plan? (e.g., water supply, sewerage, power system)	<b>1</b> No plan	<b>2</b> Infrastructures identified but no protection plan	<b>3</b> Most individual infrastructure components have plans for some emergencies	<b>4</b> All Individual infrastructure components have all hazard plans	<b>5</b> Infrastructure system is integrated into an all hazards protection plan	<i>Local and state government emergency management planning documents</i>
4.2 What proportion of population with skills useful in emergency response/ recovery (e.g., first aid, safe food handling) can be mobilised if needed?	<b>1</b> <20% (mostly related to occupation)	<b>2</b> 21-40%	<b>3</b> 41-60%	<b>4</b> 61-80%	<b>5</b> >81% representing all subgroups	<i>Self-Assessment, reports from local organisations, local survey</i>
4.3 To what extent are all educational institutions (public/private schools, all levels including early child care) engaged in emergency preparedness education?	<b>1</b> No role known or identified	<b>2</b> Most schools provide emergency preparedness information to teachers and students	<b>3</b> Most schools provide emergency preparedness education to teachers, students and parents	<b>4</b> Emergency preparedness education with activities occurs in most schools with students, teachers and parents	<b>5</b> Most schools actively participate in emergency preparedness education at community level	<i>Documentation from schools about plans/activities</i>
4.4 How are available medical and public health services included in emergency planning?	<b>1</b> No idea or there are no services	<b>2</b> Expect to rely on existing local services	<b>3</b> Some local services are actively engaged in regional emergency planning	<b>4</b> All local services actively engaged in regional emergency planning	<b>5</b> Public health/medical systemic plan to support response and recovery in place	<i>Self-Assessment based on conversation with health resources</i>
4.5 Are readily accessible locations available as evacuation or recovery centres (e.g., school halls, community or shopping centres, post office) and included in resilience strategy?	<b>1</b> No inventory of places	<b>2</b> Some inventory of places, but locations not well-publicised	<b>3</b> Inventory of all places, but not assessed for suitability as an evacuation centre	<b>4</b> Sites stocked and known but not sufficient for estimated need	<b>5</b> Well-known, sufficient sites with water/ food/ information resources widely advertised and included in all planning	<i>Planning documents and public information records</i>
4.6 What is the level of food/water/fuel readily availability in the community?	<b>1</b> No idea	<b>2</b> Most households dependent on daily external food/ water/ fuel supply	<b>3</b> Most households have up to 2 days supply of food/ water/ fuel	<b>4</b> Most households have up to 4 days supply of food/ water/ fuel	<b>5</b> Most households have over 5 days supply of food/ water/ fuel	<i>Local plans plus local survey</i>





**Master Copy**  
**(to be completed at the conclusion of the process,**  
**on behalf of the group)**



**Community Disaster Resilience Scorecard for.....**

## Date Completed ..... Contact Person .....

This Scorecard is one tool associated with the Australian National Disaster Resilience Strategy, as communities across Australia are being encouraged to take steps to strengthen community resilience in the face of disaster. Each component of resilience is scored from 1 to 5, with 5 being the highest level of resilience. The total score added up on the final page will identify whether your community is in the green zone (likely to bounce back), the red zone (very unlikely to recover, or recover quickly), or somewhere in between, a cautious amber zone.

For many items a consensus judgement must be made by the Working Group. The Working Group Chair must ensure that alternate perspectives on the score are expressed, and discussion allowed before determining the score. If there is substantial disagreement on the correct score, and there well may be, setting the score at a lower level (the less resilient level) rather than a higher one will be a more effective way of continuing to engage members of the community in strengthening resilience. Remember, this is your tool to use to help your community.



*Attach a map of the community and the surrounding region here as a reminder*

# 1. How connected are the members of your community?

Question		Score					Information Resource
1.1	What proportion of your population is engaged with organisations (e.g., clubs, service groups, sports teams, churches, library)?	<b>1</b> <20%	<b>2</b> 21-40%	<b>3</b> 41-60%	<b>4</b> 61-80%	<b>5</b> >81%	<i>Census</i>
1.2	Do members of the community have access to a range of communication systems that allow information to flow during an emergency?	<b>1</b> Don't know	<b>2</b> Has limited access to a range of communication	<b>3</b> Has good access to a range of communication but damage resistance not known	<b>4</b> Has very good access to a range of communication and damage resistance is moderate	<b>5</b> Has wide range of access to damage-resistant communication	<i>Self-Assessment</i>
1.3	What is the level of communication between local governing body and population?	<b>1</b> Passive (government participation only)	<b>2</b> Consultation	<b>3</b> Engagement	<b>4</b> Collaboration	<b>5</b> Active participation (community informs government on what is needed)	<i>International Association for Public Participation (IAP2) Spectrum</i> <a href="http://www.iap2.org/associations/4748/files/IAP2%20Spectrum_vertical.pdf">http://www.iap2.org/associations/4748/files/IAP2%20Spectrum_vertical.pdf</a>
1.4	What is the relationship of your community with the larger region?	<b>1</b> No networks with other towns/ region	<b>2</b> Informal networks with other towns/ region	<b>3</b> Some representation at regional meetings	<b>4</b> Multiple representation at regional meetings	<b>5</b> Regular planning and activities with other towns/ region	<i>Self-Assessment</i>
1.5	What is the degree of connectedness across community groups? (e.g. ethnicities/sub-cultures/age groups/ new residents not in your community when last disaster happened)	<b>1</b> Little/no attention to subgroups in community	<b>2</b> Advertising of cultural/cross-cultural events	<b>3</b> Comprehensive inventory of cultural identity groups	<b>4</b> Community cross-cultural council with wide membership	<b>5</b> Support for and active involvement in cultural/cross-cultural events (in addition to previous)	<i>Self-Assessment tied to demographic profile; local survey to assess</i>

Connectedness Score:

25% (5-10)

26-75% (11-29)

76-100% (20-25)

## 2. What is the level of risk and vulnerability in your community?

Question	Score					Information Resource
2.1 What are the known risks of all identified hazards in your community?	<b>1</b> No local focus or mapping on risk	<b>2</b> Local focus on single risk (e.g., fire) but no mapping	<b>3</b> Mapping of single local risk	<b>4</b> Widely available mapping of multiple potential sources of risk	<b>5</b> Widely available mapping includes low probability/high impact events	<b>Emergency Services resources and community information resources</b>
2.2 What are the trends in relative size of the permanent resident population and the daily population?	<b>1</b> Resident population is <20% of the daytime (worker) population	<b>2</b> Resident population is 21-40% of the daytime (worker) population	<b>3</b> Resident population is 41-60% of the daytime (worker) population	<b>4</b> Resident population is 61-80% of the daytime (worker) population	<b>5</b> Resident population forms >80% of the daytime (worker) population	<b>Census or ABS</b>
2.3 What is the rate of the resident population change in the last 5 years?	<b>1</b> >30%	<b>2</b> 20-29%	<b>3</b> 13-19%	<b>4</b> 6-12%	<b>5</b> <5%	<b>Census</b>
2.4 What proportion of the population has the capacity to independently move to safety? (e.g., non-institutionalised, mobile with own vehicle, adult)	<b>1</b> <20%	<b>2</b> 21-40%	<b>3</b> 41-60%	<b>4</b> 61-80%	<b>5</b> >81%	<b>ABS, local planning documents</b>
2.5 What proportion of the resident population prefers communication in a language other than English?	<b>1</b> >35%	<b>2</b> 25-34%	<b>3</b> 15-24%	<b>4</b> 5-14%	<b>5</b> <5%	<b>Census</b>
2.6 Has the transient population (e.g., tourists, transient workers) been included in planning for response and recovery?	<b>1</b> No transient populations included	<b>2</b> Transient populations identified	<b>3</b> <50% of plans include transient populations	<b>4</b> 51-75% of organisation plans include	<b>5</b> All plans include transient populations	<b>Local planning documents or local survey</b>
2.7 What is the risk that your community could be isolated during an emergency event?	<b>1</b> Not considered in planning	<b>2</b> Map of all access routes/means available to the population	<b>3</b> Map distributed with request to have personal plan if access is severely limited	<b>4</b> Percentage of population needing transport help identified	<b>5</b> Transport plan includes those without personal transport & support for incoming supplies	<b>Self-Assessment based on information accessible within community</b>

Risk/Vulnerability Score:

25% (7-13)

26-75% (14-28)

76-100% (29-35)

### 3. What procedures support community disaster planning, response and recovery?

Question	Score					Information Resource
3.1 To what extent and level are households within the community engaged in planning for disaster response and recovery?	<b>1</b> No expectation that households will plan for emergency	<b>2</b> Households get information about emergency planning	<b>3</b> Community education sessions are conducted to assist household emergency planning	<b>4</b> Collaboration occurs with households in planning the community's disaster response	<b>5</b> Active participation by households in planning community's disaster response	<i>Self-Assessment based on review of plans/local documents; may be augmented by local survey</i>
3.2 Are there planned activities to reach the entire community about all-hazards resilience?	<b>1</b> No planned activities	<b>2</b> Groups encouraged to do activities	<b>3</b> Translated materials/ distribution to identified groups at risk	<b>4</b> Occasional activities for selected groups	<b>5</b> At least annual cross-cultural community-wide all hazards activity engaging multiple organisations	<i>Self-Assessment based on local planning documents</i>
3.3 Does the community actually meet requirements for disaster readiness?	<b>1</b> Unknown level of awareness by community members	<b>2</b> Readiness requirements specified but not widely known	<b>3</b> Residents routinely informed about readiness requirements	<b>4</b> Requirements implemented when attention is called	<b>5</b> Community members act on requirements as commitment to resilience enforced	<i>Self-Assessment, use of local documentation, local survey</i>
3.4 Do post-disaster event assessments change expectations or plans?	<b>1</b> Emergency Services/Fire/Police only	<b>2</b> Post-event assessment shared at public meeting	<b>3</b> Post-event questions circulated to all parts of community	<b>4</b> Responses to questions collected and reported	<b>5</b> Post-event action plan based on responses includes all community elements (government/businesses/NGO's)	<i>Review of local post-event documents</i>

Procedures Score:

25% (4-8)

26-75% (9-16)

76-100% (17-20)

## 4. What emergency planning, response and recovery resources are available in your community?

Question	Score					Information Resource
	1	2	3	4	5	
4.1 How comprehensive is the local infrastructure emergency protection plan? (e.g., water supply, sewerage, power system)	<b>1</b> No plan	<b>2</b> Infrastructures identified but no protection plan	<b>3</b> Most individual infrastructure components have plans for some emergencies	<b>4</b> All Individual infrastructure components have all hazard plans	<b>5</b> Infrastructure system is integrated into an all hazards protection plan	<i>Local and state government emergency management planning documents</i>
4.2 What proportion of population with skills useful in emergency response/ recovery (e.g., first aid, safe food handling) can be mobilised if needed?	<b>1</b> <20% (mostly related to occupation)	<b>2</b> 21-40%	<b>3</b> 41-60%	<b>4</b> 61-80%	<b>5</b> >81% representing all subgroups	<i>Self-Assessment, reports from local organisations, local survey</i>
4.3 To what extent are all educational institutions (public/private schools, all levels including early child care) engaged in emergency preparedness education?	<b>1</b> No role known or identified	<b>2</b> Most schools provide emergency preparedness information to teachers and students	<b>3</b> Most schools provide emergency preparedness education to teachers, students and parents	<b>4</b> Emergency preparedness education with activities occurs in most schools with students, teachers and parents	<b>5</b> Most schools actively participate in emergency preparedness education at community level	<i>Documentation from schools about plans/activities</i>
4.4 How are available medical and public health services included in emergency planning?	<b>1</b> No idea or there are no services	<b>2</b> Expect to rely on existing local services	<b>3</b> Some local services are actively engaged in regional emergency planning	<b>4</b> All local services actively engaged in regional emergency planning	<b>5</b> Public health/medical systemic plan to support response and recovery in place	<i>Self-Assessment based on conversation with health resources</i>
4.5 Are readily accessible locations available as evacuation or recovery centres (e.g., school halls, community or shopping centres, post office) and included in resilience strategy?	<b>1</b> No inventory of places	<b>2</b> Some inventory of places, but locations not well-publicised	<b>3</b> Inventory of all places, but not assessed for suitability as an evacuation centre	<b>4</b> Sites stocked and known but not sufficient for estimated need	<b>5</b> Well-known, sufficient sites with water/ food/ information resources widely advertised and included in all planning	<i>Planning documents and public information records</i>
4.6 What is the level of food/water/fuel readily availability in the community?	<b>1</b> No idea	<b>2</b> Most households dependent on daily external food/ water/ fuel supply	<b>3</b> Most households have up to 2 days supply of food/ water/ fuel	<b>4</b> Most households have up to 4 days supply of food/ water/ fuel	<b>5</b> Most households have over 5 days supply of food/ water/ fuel	<i>Local plans plus local survey</i>

# Community Disaster Resilience Score for: .....

Each section is scored at the bottom of the page. Now that all parts are done, add up all points from the individual elements.

	Red Zone	Caution Zone	Going Well
<b>Overall score</b>	<b>25% (22-33)</b>	<b>26-75% (34-98)</b>	<b>76-100% (99-110)</b>
Connectedness	25% (5-10)	26-75% (11-19)	76-100% (20-25)
Risk/Vulnerability	25% (7-13)	26-75% (14-28)	76-100% (29-35)
Procedures	25% (4-8)	26-75% (9-16)	76-100% (17-20)
Resources	25% (6-11)	26-75% (12-24)	76-100% (25-30)

<b>Connectedness</b>	
<b>Risk/vulnerability</b>	
<b>Procedures</b>	
<b>Resources</b>	
<b>TOTAL SCORE:</b>	

If your overall score is the number 99 or higher, your community is likely to be extremely resilient to any disaster. If your overall score is below the number 33, your community is likely to suffer greatly in a disaster or have great difficulty recovering. Pay careful attention to the scores in the four components of resilience. If the individual scores in one area tend to be much lower than in the other three, that aspect of resilience should probably be the highest priority for community action.

***All scores can be very useful in highlighting those aspects of resilience that most need attention from community members, leaders and decision-makers.***

## Reviewing the Scorecard and Next Steps

At the final meeting of the Working Group, the Scorecard total score will identify the likely resilience of the community, and the total for each of the four components will identify the component area(s) most in need of attention. Based on that, the members of the Scorecard Working Group, the local government and other community members may undertake one or more of the following steps:

- Dissemination and discussion of the Community Disaster Resilience Score with community members.
- Development of a Community Resilience Action Plan to raise the score for any items in the red or amber scoring areas. Particular attention should be paid to any items about which there was substantial disagreement on scoring level during the Working Group process.
- Provision of information to all local businesses, organisations and families about steps that would raise the score over time, with encouragement to follow through on the recommended actions.
- Development of a plan for community-level surveys that provide more detailed information about components of the Scorecard, such as ways in which transient community members are being included in plans, or the level of meaningful volunteerism in the community.
- Decision about when to repeat the Scorecard process (probably 12 months).

## Appendix 1: Glossary

**ABS** – Australian Bureau of Statistics, Australia’s independent and official statistical organisation. Accessible at <[www.abs.gov.au](http://www.abs.gov.au)>

**All-hazards** – The approach to planning for potential emergencies and disasters that is inclusive of any type of incident, natural or manmade, that warrants action to protect life, property, environment, and public health or safety, and to minimise disruptions of government, social, or economic activities.

**ANDRS** – Australian National Disaster Resilience Strategy, the national policy behind the Community Disaster Resilience Scorecard, with a goal of making all of Australia resilient when faced with any type of disaster. The complete strategy is accessible at <[http://www.coag.gov.au/coag\\_meeting\\_outcomes/20110213/docs/national\\_strategy\\_disaster\\_resilience.pdf](http://www.coag.gov.au/coag_meeting_outcomes/20110213/docs/national_strategy_disaster_resilience.pdf)>

**Australian Community Indicators Network** – The extensive group of organisations linking data at the state and local level to enable monitoring of change in communities. Accessible at <<http://mc2.vicnet.net.au/home/acin/web/Frontpage.html>>

**Australian National Disaster Resilience Framework** – The conceptual basis for the ANDRS, accessible at: <<http://www.em.gov.au/Publications/Program%20publications/Pages/NationalDisasterResilienceFramework.aspx>>

**CENSUS** – The Census provides a snapshot of the nation, with data available at the postal code level. Data are kept by the ABS and are accessible at <<http://www.abs.gov.au/census>>

**Community** – A group of people living together within defined geographical and geopolitical area such as a town, district or council.

**Communication Systems** – Any technically supported network that allows people to maintain contact when not in physical proximity, such as land line and mobile telephone systems, internet-based system, radio or walkie-talkie systems.

**Connectedness** – The degree to which social cohesion and support are offered from one member of the community to another.

**Daily Population** – The number of individuals in the community during the usual work day. This includes commuters coming into the community for daily work activities, but does not count members of the resident population who leave the community regularly for daily work activities.

**Emergency services** – Government and volunteer organisations established to promote and ensure public safety, including police, Country Fire Service (CFS), State Emergency Services (SES), and St. John Ambulance.

**Engaged (Community Engagement)** – The extent to which the members of a community are involved in projects which are beneficial for the local society.

**Health resources** – The complete spectrum of organisations and workers providing services directed toward maintaining or improving health status and responding to illness or injury, including hospitals, mental health workers, general practitioners, public health workers, ambulance, community nurses and allied health professionals.

**IAP2 Spectrum** – A model developed by the International Association for Public Participation to measure the level of public participation within a community. Accessible at <[http://www.iap2.org/associations/4748/files/IAP2%20Spectrum\\_vertical.pdf](http://www.iap2.org/associations/4748/files/IAP2%20Spectrum_vertical.pdf)>

**NBN** – National Broadband Network, the network of high speed broadband connections aimed at assuring internet access to all Australian premises.

**Outreach** – The degree to which an organisation or government takes action to make programs and information easily accessible within the community.

**Post-event assessment** – The systematic gathering and critiquing of information regarding the preparation for an impending disaster event, the damage done by the event, the immediate response to the event, and the steps taken to return to the pre-event or higher level of functioning



**Resident Population** – Individuals or families living full-time in the community (both home owners and renters)

**Resilience** – A community is resilient when members of the population are connected to one another and work together, so that they are able to function and sustain critical systems, even under stress; adapt to changes in the physical, social or economic environment; be self-reliant if external resources are limited or cut off; and learn from experience to improve itself over time. Community resilience is more than the resilience of individuals, families or specific organisations, though all of those are key components of community resilience.

**Social index** – Any numerical scale used to compare social variables with one another or with a reference number.

**Social media** – Web-based and mobile technologies or applications used for the purpose of communication and networking with others.

**Socio-economic Indicators** – Linked information maintained by ABS on social situation and economics that can inform policy-making and decisions. Accessible at <[http://www.abs.gov.au/websitedbs/D3310114.nsf/home/Seifa\\_entry\\_page](http://www.abs.gov.au/websitedbs/D3310114.nsf/home/Seifa_entry_page)>

**Transient Population** – People who stay or work in a place temporarily or for a short time, including but not limited to travellers, tourists, temporary workers, students, conference or rally attendees.

**TRI** – Torrens Resilience Institute, a collaboration of the University of Adelaide, Flinders University, University of South Australia and Cranfield University established to improve the capacity of organisations and societies to respond to disruptive challenges which have the potential to overwhelm local disaster management capabilities and plans. Information accessible at <<http://www.torrensresilience.org>>

## Appendix 2: Sample letter of invitation to the Scorecard Working Group

Dear XXX:

[Town name] is interested in assuring the highest possible level of community resilience, should an emergency or disaster strike. As a beginning step, it is important to identify our current level of resilience, and those areas in which we should take action. To that end, we will be completing the Community Disaster Resilience Scorecard, recently developed by the Torrens Resilience Institute in partnership with the National Emergency Management Committee. The Scorecard is not a report to anyone outside our community, nor will we be compared to other communities: it is a tool for our use as we work together toward resilience.

You are invited to become a member of the {town name} Disaster Resilience Scorecard Working Group, which will have its first orientation meeting on day/month at XX o'clock at [location]. Your commitment would be participation in this orientation, plus two additional meetings over the next 6-9 weeks. The first two meeting will be no more than two hours in length and the final meeting approximately one hour long. In addition, you may be asked to help locate important information about our community between meetings.

I hope that you will accept this invitation. If you have questions before making a decision, please contact me or XXXX, who is coordinating the effort for us. Thank you for your ongoing contributions to our community lives.

Sincerely,

## Appendix 3: Sample letter of invitation to Working Group Chair

Dear XXX:

Thank you for agreeing to serve on the [town name] Disaster Resilience Scorecard Working Group. I hope that you will accept this further invitation to serve as Chair of the Working Group. Your knowledge of our town and your ability to help a group stay on target and on time make you an ideal candidate for this role.

As you know, the Working Group will be meeting just 3 times over the next few weeks. As Chair, you would be expected to help the group members focus on the issues raised by the Scorecard, use clear terminology (avoiding acronyms), assure that the viewpoints of all members are heard, facilitate consensus on the score to be assigned to each element, and summarise the areas of greatest concern for future action.

You may also be asked to present a summary of the Working Group's final decisions to the [town council/town meeting/other] following the final meeting of the Working Group.

I hope that you will accept this role. If you have any questions, please contact me or XXXX, who is coordinating the effort for us. Your ongoing efforts on behalf of the residents of [town] are greatly appreciated.

Sincerely,

## Appendix 4: Sample agendas for Working Group Meetings

1. DRAFT AGENDA: MEETING ONE (ORIENTATION)
  - I. Welcome and introductions
    - o Introduction of working group chair by Mayor
  - II. Overview of Community Disaster Resilience
  - III. Introduction of the Scorecard purpose
  - IV. Brief Review of Scorecard
  - V. Decisions about data gathering/assignments
  - VI. Other discussion
2. DRAFT AGENDA: MEETING TWO (FIRST SCORING MEETING)
  - I. Welcome and review of introductions (if needed)
  - II. Reminder of purpose of Scorecard
  - III. Plan for discussion of items
    - a. Announce item
    - b. Ask for show of hands on score
    - c. If all agree, move on
    - d. If disagree, allow up to 10 minutes for discussion
    - e. If still unable to agree, identify the range of desired scores and leave for final meeting
  - IV. Discuss each item in turn
  - V. Identify any items on which agreement was not reached
    - a. If further information would be helpful, identify someone to gather needed info
    - b. Request thoughtful consideration by all prior to final meeting
  - VI. Adjournment
3. DRAFT AGENDA: FINAL SCORING MEETING
  - I. Welcome and review of purpose of Scorecard for community
  - II. Quick review of all items on which agreement was reached at prior meeting
  - III. Discussion of items on which agreement was not reached:
    - a. For any item on which agreement cannot be reached, score at lowest level under consideration
  - IV. Calculate numeric score for each component of the Scorecard, and the overall score
  - V. Identify those areas that most suggest limited or lack of resilience, and discuss action steps that can be taken to strengthen those areas, with assignments
  - VI. Determine timeline for any selected follow up activities
  - VII. Determine best method for sharing Scorecard information with the community
  - VIII. Evaluation of the Scorecard
    - a. Introduction of the self-assessment sheet and request Scorecard Working Group members to send it to TRI within a fortnight in the envelop provided
    - b. Group discussion on the evaluation of the Scorecard
  - IX. Thanks to all and adjournment.



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