Resilience Planning for Natural Hazards in New Zealand

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Abstract

We live in times with a heightened sense of uncertainty and constant reminders of the risk of extreme natural hazard events, as evidenced by the 2010-2011 Canterbury earthquake series. *Resilience planning* is rapidly gaining salience as a promising approach for dealing with the complex challenge of uncertainty and escalating natural hazard risk. Yet, it is not clear what resilience planning means, beyond the assumption that it is good to be resilient and that we should plan to build resilience in practice. Despite the lack of clarity, there is a growing number of scholars exploring the approach, its potential and benefits. It is, however, in its conceptual stage and has yet to be widely adopted in planning practice, in New Zealand or elsewhere.

This begs the question that this thesis aims to explore: What are the barriers and opportunities for effectively institutionalising resilience planning and how can it be operationalised in planning practice in New Zealand? This question is explored through a case study analysis of experiences in the Waimakariri District in Canterbury after the 2010-2011 earthquake events.

The key findings of this research show there are nine barriers to institutionalising resilience planning (community priorities; cost versus benefit; high vulnerability; knowledge; leadership; responsibilities; time/timing; the legislative setting; and silos). The research revealed that each of these barriers will challenge resilience planning and its institutionalisation at different stages of the planning process. The barriers must first be overcome to allow for the operationalisation of the resilience planning characteristics through actions for practice. Opportunities for institutionalising resilience planning so as to overcome the barriers and allow it to become a reality in practice were explored. The opportunities included, for example, the following: the earthquake experiences; heightened awareness and interest in resilience planning; the recovery and rebuild period; relationships and connections made; ensuring a concerted effort and focus on resilience planning; undertaking vulnerability assessment; and placing focus on the culture of resilience planning. Six resilience planning characteristics required for operationalisation in practice were identified (leadership; social capital; social learning; community; reflection; and innovation). Based on these findings, a framework is proposed to institutionalise and operationalise resilience planning in New Zealand. The application of this framework will assist in shaping current thinking and planning practice and enable choices that will ultimately build more resilient, sustainable communities in the face of uncertainty and escalating natural hazard risks.

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Chapter 1
Introduction

1.1 Introduction

For millennia, communities have lived with the risk of natural hazards on a daily basis. It is increasingly becoming recognised that the probability of disasters occurring is not as low as it once was. Rather, the number of disasters arising from natural hazard events has increased with startling frequency over the last decade due to a combination of populations at risk and climate-driven perils (Gregg & Houghton, 2006; Kunreuther & Michel-Kerjan, 2010). There is growing acknowledgement that we have entered into a new era of natural hazards which differ to those previously dealt with. Many natural hazard risks today are framed as 'unpredictable', inconceivable', 'hypercomplex', 'unstable' and 'chaotic' (Lagadec, 2009). New Zealand's population is highly exposed and vulnerable to a variety of natural hazards, which is the product of its physical landscape and the concentration of people living in high-risk localities exposed to natural hazards, many of which are exacerbated by climate change (Glavovic, 2010; Lagadec, 2009; ODESC, 2007).

New Zealand's high-risk hazard landscape is exemplified in the Canterbury region. The 2010-2011 Canterbury earthquake series and recent flooding events across the region are timely and prominent examples reinforcing the harsh reality of the vulnerable and exposed hazard environment in which New Zealander's live. The Canterbury region has provided a timely reminder for this country of the risks we face due to out hazard landscape; we have been awakened to the sheer destruction and devastation that natural hazards can and do have on our communities. The hazard experiences in Canterbury of late highlight the importance of resilience planning for New Zealand communities. The need to translate resilience planning into practice has quickly come into focus as a result of the Canterbury experience. Resilience planning is being framed as the new way forward for dealing with natural hazards as it is never known when another community might bear the brunt of natural disaster devastation like Canterbury.

This thesis will aim to advance understanding about resilience planning. It will explore the conceptualisation of resilience planning and how the emerging concept can be constructively framed, institutionalised and operationalised in New Zealand, including the barriers and opportunities identified through a case study of the Canterbury experience and, in particular, the Waimakariri District. It proposes therefore to develop a best practice framework for resilience planning in New Zealand. Resilience planning is the focus of this research as it provides a unique opportunity to be explored for the future of natural hazards planning which has not yet received much attention in order to help brace, strengthen and improve current planning strategies. Emphasis is placed on taking a direct departure away from the current trends of traditional planning practice and research, into a new way of managing natural hazard risk which encourages and strives towards vibrant hazard resilient communities. It has been noted that the attitudes that made many communities successful in the past are precisely those that are most likely to constrain them in the future unless new ground-breaking solutions are

provided (Lagadec, 2009). The resilience planning focus in this case stands as the key innovative solution to be explored.

The desire to live in vibrant hazard resilient communities is increasingly coming to the forefront in the current public and professional discourses (Glavovic, 2010). While this desire is recognised as important, it is too often being inadvertently avoided and undermined as traditional planning approaches fail to reduce natural hazard risks. Despite longstanding planning practice and scholarly knowledge, the traditional planning approaches for natural hazards which have been meticulously built and relied upon in the past are causing concern, as they are becoming inadequate, ineffective and less relevant on their own in coping with the challenge hazard environment today (Lagadec, 2009). There is growing support therefore for the need and importance to shift our thinking and planning practice for natural hazards planning. As Saunders (2012) noted, *"If we continue to do what has always been done, with the same mindset we will end up with the same result"* (pp23). Responding in the business as usual way will not address the current problems. In New Zealand, it has taken the devastation and destruction of the 2010-2011 Canterbury earthquake series to begin to shift the thinking surrounding the current natural hazards planning practice. Greater attention needs to be given to developing and adopting new approaches to natural hazards planning. The contemporary nature of natural hazards framed by exposed growing populations and profound global change will benefit from the promising direction of the evolving resilience planning concept.

Resilience planning constitutes an emerging, alternative approach for planning for natural hazards; one that could address the limits and failings of current approaches and the challenges being experienced by communities who need to reduce the natural hazard risks they face. Resilience planning is described by leading planning scholars such as Davoudi (2012) as being pertinent to our time as it provides a robust and compelling framework for addressing disaster risk that has yet to be considered in current planning strategies. It is a heavily contested domain, but is gaining attention as it continues to develop into a dynamic new direction for planning. A growing core of scholars are framing resilience planning as a fresh, innovative line of thinking, which is relevant and timely (Davoudi, 2012; Shaw, 2012; Wilkinson, 2012). The current work, support and attention on resilience planning to date is primarily conceptual. As such, there has been no practical focus for resilience planning's application to be explored in detail within the scope of natural hazards in the New Zealand context. Consequently, there is a need to turn the current theory into practice to enable communities, such as those in Canterbury, to better address the risks arising from earthquakes and more recent flooding events. Drawing upon current literature and the pivotal lived experience of communities in Canterbury, this thesis will explore how resilience planning can be translated into everyday practice.

1.2 Aim and Objectives

This research intends to bridge the gap between the conceptualisation of resilience planning and its practical institutionalisation and operationalisation in New Zealand. In essence, the aim and research question of this thesis is:

"What are the opportunities and barriers to institutionalising resilience planning and how can it be operationalised in New Zealand in light of the Canterbury earthquake experience? A case study of the Waimakariri experience".

To achieve this aim, the objectives of this research are to:

1. Explore what resilience planning is and the current understanding of the concept in the literature and in New Zealand;

2. Explore the relationship between prevailing practice and 'best practice' resilience planning in New Zealand and, in particular, the Waimakariri District;

3. Identify barriers and opportunities to institutionalising resilience planning in New Zealand based on lessons learned from experience in the Waimakariri District;

4. Develop a framework for operationalising resilience planning to bridge the gap between its conceptualisation in a way that is adaptable and beneficial for New Zealand communities;

1.3 Methods

This research will utilise two main research methods – a literature review and case study. To learn from real-world experiences we need case studies and thorough literature reviews. This is fundamental as resilience planning is newly emerging and has not been subject to practical investigation and application in New Zealand. Therefore, it requires detailed in situ exploration that a combination of case study analysis and literature review can provide (Yin, 2003). The conceptualisation of resilience planning will be explored primarily through a review of the literature. One primary geographic case study will be utilised to learn lessons from the 2010-2011 Canterbury earthquake experience: the Waimakariri District. The data for the case study analysis will be sourced from key informant interviews and document analysis. The two sources of case study data will ensure a wide range of depth and understanding is gained about opportunities and barriers for institutionalising and operationalising resilience planning in New Zealand.

Key informant interviews will be conducted as the primary means of data collection for this case study. Interview guidelines will be prepared to cater for the range of participants being interviewed, thus ensuring a reflection of the different experiences, knowledge and roles of those being interviewed in relation to resilience planning and the Canterbury earthquake

experiences. The interviews will be conducted with a variety of key informants directly involved in natural hazards planning, the Canterbury earthquakes recovery process and the Waimakariri District.

Document analysis will be conducted as a supplementary means of data for this research. The document analysis will focus mainly on key legislation and planning provisions in New Zealand that are relevant to natural hazard risk reduction in the Waimakariri context. Document data will be obtained through a critical review and systematic evaluation of planning and resilience-related documents.

The interview and document data will be analysed through content analysis, which O'Leary (2010) describes as interpreting meaning in text. The analysis will follow the steps described by O'Leary (2010), namely: 1. Organise the data; 2. Code the data into themes; 3. Search for patterns and points of connection; 4. Build themes; 5. Build and verify theories; 6. Draw conclusions. The research methods outlined will be described in further detail in Chapter 2.

1.4 Thesis Outline

The chapters are organised as follows:

Chapter 1 introduces this research. It provides a brief overview of the current issues, practice and climate for natural hazards planning, and the aim and objectives for this research. It also briefly describes resilience planning. Furthermore, it briefly describes the research methods employed to meet the aim and objectives.

Chapter 2 presents a detailed account of the research methods employed in this research, namely the literature review and case study analysis. Document analysis and key informant interviews were used to gather data for the case study analysis.

Chapter 3 reviews current literature on resilience planning and natural hazards planning more broadly. The key focus is to distil understanding of the concept of resilience planning and identify best practice as a basis to explore how this practice is being and could be applied in New Zealand. This chapter provides the scholarly context for this study and identifies the key gaps in current scholarship.

Chapter 4 describes the case study setting and presents the data obtained from the document analysis. The data is summarised with respect to the questions explored and key emergent themes are identified.

Chapter 5 analyses the results described in Chapter 5 and integrates the findings of the interviews, document analysis and literature review. The discussion is set in the context of the research questions outlined earlier in this chapter.

Chapter 6 distils the key findings of this research and provides recommendations for the future of resilience planning in practice in New Zealand. Finally, it will identify the contributions this research has made to the resilience planning field of scholarship.

Chapter 2
Methods

2.1 Introduction

The aim of this chapter is to outline and discuss the design and methods employed for this research. The chapter will describe the methods, data collection and analytical approach utilised to investigate 'resilience planning' in New Zealand in order to achieve the aims and objectives of this research.

The basis for this research was a literature review and case study. Different types of data were collected in order to undertake the case study. The research design, methods, data collection and data analysis process will be outlined and discussed throughout this chapter, as well as the ethical considerations taken into account in conducting this research.

2.2 Research Design and Methods

This research focuses on resilience planning and specifically how to operationalise resilience planning by overcoming barriers and unlocking opportunities for its practical institutionalisation and operationalisation. The data gained will be analysed with the aim of providing useful insight and a meaningful framework for use in New Zealand. As such, this thesis was undertaken with the use of the following methods and data collection approaches:

- Literature review
- Case study based on:
    - Key informant interviews; and
    - Document analysis.

This combination of research methods was selected as they allow for extremely rich, detailed and in-depth information to be gained (Berg, 2007). Resilience planning is a newly emerging and developing field with only limited scholarship and information available to date. As it is a new approach in the planning field, it is primarily conceptual and has not yet been subject to practical investigation and application in New Zealand, although the concept is increasingly under consideration. Hence the value of exploring resilience planning's application in practice.

As this research aims to move resilience planning towards practical application through learning from the real-world experiences in Canterbury, it was considered that the research methods outlined above (literature review and a case study based on interviews and document analysis) were the most valuable, relevant and appropriate paths to support this research. The following sections will provide details of the methods employed.

2.3 Literature Review

The review and findings of literature was utilised to provide the direction for the thesis and input into the case study methodology. The purpose of a literature review is to provide a comprehensive and critical review of existing relevant scholarly works on the topics covered in the research (Berg, 2007). Literature reviews are used to develop the research position, provide a means to justify the necessity of exploration, set the context of the research within existing works, create a direction and path for new research and to support the development of any new findings which will be a new contribution to the field (Berg, 2007).

The purpose of reviewing the literature was to: i) develop an understanding of the concept of resilience planning; ii) understand where resilience planning and the current scholarship is at; iii) gain an understanding on how resilience planning is operationalised; and iiii) identify resilience planning's best practice principles based on international and local scholarship and practice. To achieve this, four key areas of scholarship relevant to resilience planning needed to be reviewed including: planning for natural hazards (e.g. current approaches, paradigm shifts in thinking); resilience (e.g. definitions, resilience perspectives, resilience characteristics); resilience planning (e.g. conceptualisation, criticism and support); and best practice principles for resilience planning. For each area of interest for the review, literature was searched for, recorded, reported on and critiqued in order to gain an understanding of the current state of knowledge surrounding resilience planning and to critically examine where there was scope and potential for new exploration for this thesis (see Chapter 3). This provided an opportunity to critique the current state of resilience planning in order to provide the context for this research and the case study, in particular.

The search for literature for the review was undertaken via an extensive electronic search on the Massey University Library website and databases for keywords relating to resilience planning (e.g natural hazards, planning, resilience) and key authors (e.g. Dos Santos and Partidario, Berkes, Davoudi). The electronic search was conducted to draw out all relevant and useful material directly relating to and or discussing resilience planning. Sources for the literature review for this research based on the electronic search process included peer-reviewed journal articles, textbooks, reports, and conference papers. The results of the literature review can be found in Chapter 3, and are incorporated within Chapter 5. All literature reviewed was recorded in Endnote, a reference management software.

2.4 Case Study Analysis

Case studies are about depth, they support a process of digging deep and delving into detail to thoroughly gain understanding of experiences, interactions, processes and lived experiences being explored (O'Leary, 2010). The case study methodology is defined by Berg (2007, pp.283) as:

"… an approach capable of examining simple or complex phenomena, with units of analysis varying from single individuals to large corporations and businesses; it entails using a variety of lines of action in its data-gathering segments, and can meaningfully make use of and contribute to the application of theory".

A case study allows for the exploration and understanding of complex social phenomena through comprehensive description and analysis of a case and is useful in retaining the holistic and meaningful characteristics of real-life events (O'Leary, 2010; Yin, 2003). The case study methodology keeps attention focused on a particular topic and refers to either a single or multiple case conditions in which the approach is undertaken (O'Leary, 2010). Berg (2007) explains that case studies are particularly useful and have in the past been heavily relied upon when attempting to bridge the gap between conceptual studies and practice. As bridging the gap with respect to resilience planning is the aim of this research, and the study is framed by asking a 'what' and 'how' exploratory question, a case study method was a relevant approach to employ (Berg, 2007; Yin, 2003). In undertaking case study research, Yin (2003) notes the importance of appropriate research design. The case study research design based upon Yin's (2003) four constructs can be found in Appendix 1.1.

Case study analysis utilises a range of research methods, data collection techniques and a variety of sources in order to gain a wide and deep range of information (Berg, 2007). For this case study, two techniques were used: key informant interviews and document analysis. These qualitative approaches were selected because their primary goal according to O'Leary (2010) is to gain an intimate understanding of topics, places, people, and situations through rich engagement with the reality being studied. Furthermore, interviews and document analysis together enable the researcher to delve into real-world complexities in order to truly understand lived experiences and processes, which is central to this research.

One primary case study was undertaken. The Waimakariri District, located in the Canterbury region, was selected as the primary case study area for the reasons outlined below:

- The district has experienced the devastating impact of natural hazard events during the 2010-2011 earthquake series and is currently facing a challenging rebuild and recovery period (Collins, Glavovic, Johal, & Johnston, 2011; Vallance, 2013);
- There is a distinct period of change occurring in the district and within council structures in regard to natural hazards management and perceptions as a result of the earthquake series;
- The geographic scale of the district makes it manageable for the scope of this thesis;
- The Waimakariri District has been associated with being a 'best practice' example in its recovery efforts since the earthquakes (Collins et al., 2011; Vallance, 2013);
- It is a highly engaged and proactive district on many levels from the Council to community with the recovery process. They have also demonstrated positive actions

and steps towards resilience and resilience planning post-Canterbury earthquakes (Collins et al., 2011; Vallance, 2013);

- The author had lived through the earthquake experience in Canterbury, and so was familiar with the recovery challenges and struggles in the region.

The data collection and analysis process for this research are outlined in the following section.

2.5 Data Collection

Case study data for this research as outlined above was collected through two sources of evidence: key informant interviews and document analysis. This section outlines how the data for each source was collected.

2.5.1 Document Analysis

Document analysis was carried out as a secondary method for data collection for this case study research. Document analysis is particularly important and applicable to case studies (Bowen, 2009), and is an indirect form of data collection which is undertaken via the systematic reviewing or evaluating of documents and their content (O'Leary, 2010). This approach to data collection was chosen because it would complement and add another angle to the key informant interview data collected for this research. It also provided a useful means to: i) reveal to what extent current policies, plans and legislation are including, providing for and recognising resilience planning; ii) show how resilience planning is treated in the relevant documents; and iii) reveal opportunities to include resilience planning principles and practices in planning provisions and give it more attention in planning practice.

The document analysis was conducted following the collection of data through O'Leary's (2010) process by which relevant documents are: 1) collected; 2) reviewed; 3) interrogated; and 4) analysed. For further information on each stage of the document analysis process see Appendix 1.2.

The 'ice-breaking' questions for the initial review stage of the document analysis process included the following:

- What is the document's title?
- When was it published?
- When was it last updated?
- What type of document is it?
- What is its purpose?

The questions used for the document interrogation stage of the analysis process were:

- What key principles of resilience are evident?
- What key resilience planning characteristics are included and provided for?
- In the context of resilience planning or resilience, is it evident who is responsible for carrying out the characteristics and if so who?

- What emphasis is given to including and/or utilising resilience or resilience planning?
- Is resilience discussed as a measure that will improve a community's capacity to deal with, cope and prepare for future natural hazard events?

The results of the initial review and document interrogation questions can be found in the tables in Appendix 6A and 6B, respectively.

The documents analysed were focused on key natural hazards relevant legislation and planning provisions in New Zealand and in particular, the Waimakariri District. The documents analysed were chosen for review because they are the leading documents guiding planning practice in New Zealand, and as such can be considered as shaping resilience planning in this country. The documents chosen for review and analysis included:

- The Resource Management Act 1991 (RMA);
- The Local Government Act 2001 (LGA);
- Civil Defence and Emergency Management Act (CDEMA);
- Canterbury Earthquake Recovery Authority (CERA) provisions;
- Waimakariri District Plan;
- Waimakariri 10 year Long Term Plan (LTP).

These documents are all from an authoritative source being published by either a government department or the Waimakariri Council. As such, they are readily publicly available on the internet or from the relevant agency or organisation. This made each of the documents convenient and easy to use for this research as the relevant data is accessible and there are no sensitive issues to be considered regarding their use that would require ethical consideration.

2.5.2 Interviews

One of the most valuable sources of information for case study analysis is interviews (Yin, 2003). Interviews are conversations with a primary purpose of gathering information (Berg, 2007). The aim and purpose of the interviews were to ascertain key informants' views of resilience planning, how to operationalise it, and the associated barriers and opportunities to its practical institutionalisation from a Waimakariri District perspective.

Focused semi-structured interviews were undertaken through one-on-one conversations with key informants. For more detailed information on focused interviews and the interview process utilised for this research see Appendix 1.3. The key informant interviews were conducted with participants within the district and wider Canterbury region who could provide informed perspectives on, and contribute useful information about, resilience planning. Interviews were conducted with a variety of key informants identified and selected based upon the Waimakariri case study location and the extent of their direct involvement in the earthquake experience and recovery process, especially with respect to matters related to resilience planning. Ten key

informant interviews were conducted with those involved in both formal and informal roles relevant to the recovery and rebuild in Canterbury and resilience planning. The essential make-up of the key informant interviewees was: planners; academics; individuals involved in community-based organisations; Waimakariri District Council staff with different roles and responsibilities; and regional and central government agencies and officials. This number and range of people made sense given the scope of my research and the range of strategically positioned key informants in the Waimakariri District.

Copies of the interview questions are included in Appendix 4. Each participant was provided with a background information document (see Appendix 3) prior to the interviews in order to provide general information about the research process, purpose and intentions, to detail their rights as participants and to provide the time for each individual to decide whether or not they would like and be able to participate. The interview questions were pre-circulated through the background information document to allow each participant to prepare for the interview. Before each interview, the participants were asked to sign a consent form (see Appendix 5). Interviews varied in time from 45- 90 minutes. All interviews were recorded (with consent from each participant) to allow for concentration and active discussion of the topics without the need to try to write down all the responses during the interview. The interviews were then transcribed and copies made available to participants upon request.

2.6 Ethical Considerations

The ethical procedures of Massey University were followed for this research, including the completion of a low-risk notification form for approval by the Massey University Human Ethics Committee, a background information sheet on the research for all participants information, and a participation and interview recording consent form. A Massey University ethics questionnaire about this research was undertaken prior to beginning interviews to establish if there were significant ethical issues for conducting this research (see Appendix 2 Ethics Approval Form).

Key ethical issues were given consideration directly for the interview process being carried out for this research. The ethical considerations for this research included informed consent and awareness of the sensitivity surrounding the 2010-2011 Canterbury earthquake series. The Massey University ethical guidelines provide that participation in any research must be voluntary and researchers should obtain prior consent. To ensure this, and that participants gave informed consent to being involved in the research, a background information document was pre-circulated to all participants so that an informed decision could be made about their participation and that every individual was aware of what the research entailed and what would be required of them as potential participants. Following this, consent was sought from each participant.

The general sensitivity surrounding the Canterbury earthquake experience was an area that required further ethical consideration for this research. The earthquakes remain an emotional

and sensitive topic for many. As the researcher lived through the Canterbury earthquakes personally, there was a high level of awareness around the key issues and emotions being faced. It was recognised that undertaking research in a disaster affected region has important ethical implications in terms of the potential imposition on people who may have been traumatised, i.e. emotionally or physically harmed by the earthquake events. This was taken into account and considered carefully in selecting key informants and in framing interview questions. This research was designed to ensure that focus was on the professionals involved in the earthquake response and recovery and their experience and opinion about current planning practice and the rebuild process as opposed to personal trauma and concerns which may cause emotional harm or distress (i.e. the focus was on the roles of individuals in Waimakariri as opposed to personal or family circumstances). This approach reduced the prospect of ethical concerns as a conscious effort was made to avoid interviewing disaster victims about their personal experiences.

Finally, the privacy and confidentiality of individuals, institutions, workplaces, ethnic groups and other minorities must be respected as outlined in the Massey University ethical guidelines. The privacy and confidentiality of the participants was ensured in this research to protect all participants. In transcribing the interviews and presenting the findings, all participants' names and specific job titles remain confidential and were not specified.

2.7 Data Analysis

The data collected for this research through interviews and documents were analysed using content analysis, which is:

> *"… careful, detailed, systematic examination and interpretation of a particular body of material in an effort to identify patterns, themes or meanings"* (Berg, 2009, p338).

Content analysis is a research technique to determine the presence of certain topics and words by studying and evaluating the details and content of a particular form of data. Determining and constructing meaning and significance of particular lines of information within documents is the central focus of a content analysis, which is undertaken through the sorting and coding of data to reveal common themes, patterns and points of significance. This data analysis approach was chosen because determining strong patterns and significance of i) the barriers, ii) the opportunities, and iii) the best practice characteristics for resilience planning is central to the success of this research and being able to meaningfully begin to transition resilience planning towards practical application.

Qualitative content analysis, as O'Leary (2010) notes, is about drawing apart and discovering themes that run through raw qualitative data and then establishing what those themes mean. The key informant interview and documentation data were analysed through a systematic process based upon O'Leary's (2010) framework of interpreting meaning in speech and text.

Data was categorised and coded to assess for any themes and patterns to be identified to construct meaning for the set question of this research. For more information on how this process was carried out, see Appendix 1.4. The results and findings of the research are discussed in Chapters 4 and 5.

2.8 Conclusion

This chapter has outlined the approaches chosen and used to carry out this research and the research design process that was undertaken. To achieve this research as shown, two methods were utilised of a literature review and case study. Data for the case study was collected through key informant interviews and document analysis. All data gained was analysed through content analysis in order to create meaning from the data.

By utilising the methodology described in this chapter, the findings of this research outlined in later chapters were derived in a robust and reliable way. Chapter 3 presents the review of resilience planning literature.

Chapter 3
Literature Review

3.1 Introduction

This chapter provides the context and the scholarly foundation for the following chapters, set within the wider context of promoting vibrant, hazard resilient and sustainable communities. The purpose of this chapter is to review scholarship on the nature and practice of resilience planning. The aim is to identify key factors for operationalising and institutionalising resilience planning in New Zealand. It provides an overview of natural hazards planning, followed by a critical review of resilience planning and the key related concepts to date and, in particular, insights about best practice principles for resilience planning. It provides a theoretical context for why current resilience planning scholarship needs further development and exploration to improve future prospects for effective practice.

3.2 Key Concepts

This review of literature will enter into a complex terrain of key ideas and topics that are linked to and inform resilience planning. There are a number of key concepts which are central in the discussion of resilience planning and natural hazards planning more broadly including: natural hazards, disasters, risk, sustainability, resilience and vulnerability. The concepts are evolving, contested and defined in variable ways. While the focus of this thesis is on resilience, these other terms need to be understood to appreciate the nature and practice of resilience planning.

Natural hazards and *disasters* are terms which are often confused and used interchangeably. However, the two concepts are not synonymous. *Natural hazards* are natural processes, such as earthquakes or extreme weather events, that 'could' potentially threaten the things that people value such as life, developed property, personal possessions, plants, animals and the environment (Gregg & Houghton, 2006; Haque & Etkin, 2007). *Disasters* are extreme events that a group, community or society cannot cope with using their own resources, thus necessitating external assistance (Gregg & Houghton, 2006; Haque & Etkin, 2007). A natural hazard is just a naturally occurring event, whereas a disaster occurs when people are unable to cope and their lives and livelihoods are severely disrupted.

The concept of *'risk'* is continually evolving and there is a range of different perceptions on what risk means, what it is comprised of and how it should be managed. The concept of risk is an important consideration in any discussion, study or work relating to natural hazards and disasters. Together, risk, natural hazards and natural disasters are often a source of confusion as the concepts are lumped together and presumed to have the same meaning. However, the notion of risk differs from the previous concepts. It is used in many different fields, notably risk assessment and management. Two framings of 'risk' inform how the term is used in this thesis, in line with contemporary natural hazards scholarship: risk is the combination of the probability of an event and its negative consequence (Burby, 1999; Glavovic, 2010; Van Asselt & Renn, 2011). It can also be defined as the intersection of a physical peril and social vulnerability (Wisner, 2004). The greater the exposure of populations and individuals to natural hazards, and the higher the vulnerability of a community or individual, the greater the 'risk', or likelihood of

negatively being effected by a hazard event and resulting negative consequences (Eiser et al., 2012; Wisner, 2004). It is important to recognise that not all dimensions of risk – as in probability and consequence – can be quantified and this shapes how to assess and manage different risks. This recognition, namely that not all 'risk problems' can be reduced to a technical probability-consequence analysis, is an important consideration in framing the risk reduction endeavours and resilience planning that is discussed further later on.

Resilience is an evolving concept that has gained more focused attention in recent times. There are many different perceptions and understandings of resilience, what it is and what it means to people, and as such is a hazy and unclear concept to many. For the purpose of this thesis, resilience can be broadly defined as the ability of a system to absorb episodic shocks or extreme events and disturbances, self-organise to rebound or bounce back to a desired state, and learn from past events in order to adapt for the future (Ahern, 2011; Berkes, 2007; Miller, 2010; Turner, 2010). As resilience is a key focus of this thesis, it will be elaborated further later in the literature review in Section 3.6.

Vulnerability is another core concept applied and discussed in relation to natural hazards and disasters. Is central to the concept of risk and is often considered to be the 'flipside' of resilience. Like the other key terms, vulnerability is an evolving concept and has become prominent across a variety of different fields. Vulnerability is often perceived and discussed as being the flip side of resilience; if you are not resilient you are vulnerable and vice versa. However, the issue with this common conception of vulnerability as the scholarship demonstrates is that it is an overly simplistic way of looking at vulnerability and similarly resilience. Broadly speaking, vulnerability is the degree to which a system, individual, community or population is susceptible to harm. It can be translated as the identification of those at risk (those with high levels of exposure and vulnerability) as having the potential to be disrupted or harmed (Berkes, 2007; Haque & Etkin, 2007; Wisner, 2004). It refers to the characteristics and circumstances (factors including physical, social, economic and environmental) of a community or system that makes it susceptible to the damaging effects of a natural hazard (Miller, 2010; Turner, 2010). It is important to note that in this context, vulnerability is not being discussed as something which is static and stable, but rather something which is constantly changeable and evolving.

Sustainability is a central term in the natural hazards field and associated discussions and has also been directly linked to the concept of resilience. The concept has evolved over time and will continue to evolve in the future. However, it too is often used in conflicting and contested ways. The Brundtland Commission (Brundtland Commission, 1987) defines sustainability as providing a high quality of life and resources for present and future generations – it is about meeting the current needs of society and keeping options open to meet the needs of future generations. Sustainability seeks to reconcile ecological, social, cultural, economic and

environmental dimensions of well-being. As such, it provides an overarching ideal and construct for what communities strive for. Resilience is thus directly linked to sustainability because resilient communities are more likely to secure outcomes that are sustainable; sustainability prospects become more viable when communities are resilient.

3.3 Natural Hazards Landscape

We live in times of pronounced change, turbulence and unpredictability, with natural hazards contributing to this environment of dynamism and uncertainty that faces communities across New Zealand. For instance, the rate of incidences of disasters (including the Canterbury, Chile and Haiti earthquakes) is increasing, so too are vulnerability levels as increased populations are becoming exposed to such events. This coupled with chaotic and complex climate change-driven perils is leading to pronounced and compounded natural hazard risk, which is making times today more turbulent than in previous eras. Accordingly, practical measures are needed to understand and address this volatility to foster the safety, security and pursuit of stability of the present and future communities. Natural hazards planning scholars recognise the importance and value of disaster risk reduction in the face of escalating natural hazard risks. There is growing awareness of this imperative globally, but turning this awareness into practical action remains elusive (Burby, 1999; Glavovic, 2010; Gregg & Houghton, 2006; Haque & Etkin, 2007; Lagadec, 2009).

3.4 Natural Hazards Planning – Promise and Potential

A large well-established body of literature outlines the role that planning should and can have in the natural hazards field. Effective natural hazards planning can dramatically influence how communities cope and deal with the impacts of extreme events (Burby, 1999; Mileti, 1999). Planners have a delegated responsibility to plan for the future of our cities as Saunders (2013) suggests, ensuring they are uncompromised by forces such as natural hazards and the associated risk (see Chapter 1: Introduction). As such, planning is often described as an 'opportune tool' for reducing or even eliminating the associated risk of natural hazards. This view is supported and substantiated through Mileti's description of the *"promise of natural hazards planning"; "by planning for and managing land use to accomplish sustainable hazard mitigation, disasters – though not wholly eliminated – can be reduced to a scale that can be borne by the government, communities, individuals and businesses exposed to them"* (Mileti, 1999, pp155-156). The great potential associated with natural hazards planning, Glavovic et al. (2010) argues, lies in the pivotal role it can play by:

- Helping communities to better understand disaster risk;
- Facilitating prudent decisions that foster community safety and avert or reduce disaster risk; and
- Building resilient, sustainable livelihoods.

As Godschalk (1998) and Miller et al. (2010) note, natural hazards will continue to occur and the impacts felt for years to come, and hence the imperative to realise the promise and potential of natural hazards planning.

While planning is recognised and accepted as the most promising approach for tackling rising natural hazard risk, scholars are increasingly noting that this potential and promise has yet to be fully realised (Glavovic, 2010; Godschalk, 1998; Miller, 2010). Recent large-scale disasters such as the Indian Ocean tsunami (2004), Hurricane Katrina (2005), the Sichuan earthquake (2008), the Myanmar cyclone, 2008; the Haiti earthquake, 2010; the BP oil spill (2010) and the Canterbury earthquakes 2010-2011 provide compelling evidence of the failure to realise the full potential of natural hazards planning to date (Kunreuther & Michel-Kerjan, 2010). This is illustrated by the Hurricane Katrina experience which revealed that, for three centuries, choices were made in New Orleans that paradoxically increased disaster risk, chiefly because of a failure to implement effective risk avoidance and resilience planning strategies (Burby, 1999; Kates, Colten, Leatherman, & Laska, 2007). Despite the prevalence of knowledge about the benefits of such planning, Kates et al. (2007) highlighted the continual development, rebuilding and expansion across New Orleans including in areas dependent on the levees for protection in order to make the land 'safe'. This illustrates Burby's 'safe development paradox',[1] where land and highly exposed at risk areas in New Orleans were continuously attempted to be made safe so residential development could occur, for example, through hurricane protection works and levees (Burby, 2006). However, this in turn only made the community more susceptible when a big enough event occurs, which it did in the case of Hurricane Katrina. As a result, as seen in New Orleans as Burby (2006) argues, there is a continued never-ending cycle of evermore unsafe urban spaces and communities. Despite knowledge of the need to avoid putting people in harm's way, we have continued to do so, and the consequences are evident in disaster after disaster that continue to occur globally.

This myopia and the safe development paradox is also evident in the New Zealand context. After the Canterbury earthquakes it was revealed that the seismic and liquefaction risk was known for more than 20 years, and yet it was not effectively planned for. Subdivisions and development were approved on liquefaction-prone soils across the region and as a result people were put at risk despite clear evidence of these risks (CAENZ, 1997; MacFie, 2011). These two examples are echoed in many other settings and demonstrate that communities are put at risk and may be devastated by extreme events as a result of the inadequacies of prevailing planning practice and the failure to realise the promise of natural hazards planning.

3.5 Current Natural Hazards Planning Approaches – Trajectories and Paradigm Shifts

Within the context of natural hazards, there is a wide variety of guidance available to shape planners' knowledge and practice. My review of the relevant literature reveals three

[1] Trying to make hazardous areas 'safe' for development through mitigation measures, such as levees, alongside officials failing to take the necessary actions to protect communities.

predominant approaches for managing the natural hazard risks facing communities: emergency management, natural hazards planning and resilience planning. There has been a paradigm shift in thinking and practice from emergency management to natural hazards planning and a second paradigm shift is emerging in the transition from natural hazards planning to resilience planning. Different drivers have shaped the evolution and changes in thinking and planning practice. Each of these approaches, the different drivers and rationale for the paradigm shift from one to the other, will be discussed in the following sections.

3.5.1 Trajectory 1: Emergency Management

Emergency management has been the 'field of practice' traditionally relied upon and trusted for dealing with, managing, coping and planning for natural hazards and the associated risk (Burby, 1999; Glavovic, 2010; Godschalk, 1998; Mileti, 1999; G. F. White, 1945; G. F. White et al., 1958). Historically, emergency management has been a field dominated by 'response' or 'reactive' thinking; acting and responding immediately before or after an event has occurred (Burby, 1999; Mileti, 1999). The traditional reactive and response measures were and remain to be an important and legitimate approach today. It is beneficial in reducing risks and helping communities deal with emergencies and disasters (Burby, 1999; Godschalk, 1998). As Mileti (1999) noted, emergency management is a necessary *ingredient* in addressing and alleviating the potential destruction and suffering from natural hazard events.

In practice, emergency management has been centered around mitigation and response measures. It is based upon a series of 'best practice' approaches and techniques, which are evident in the literature and practice, including the use of the following measures (Burby, 1999; Glavovic, 2010; Godschalk, 1998; Mileti, 1999; G. F. White, 1945; G. F. White et al., 1958):

- *Warning systems:* This measure is the oldest way of preparing for an anticipated extreme event, such as a hurricane, and is an essential component in helping cope and reduce losses (Mileti, 1999). Warning systems are based upon hazard assessments to provide warnings from hours to days ahead of hazard events. There are two key types of warning systems: one which works immediately preceding the onset of a hazard event (e.g. local alarms that sound when flood waters are rising); and secondly, warning systems that are used well before an event takes place by letting people know the particular areas effected by hazards (e.g. flood maps) (Mileti, 1999).
- *Emergency relief:* The focus is on providing relief after an event has occurred and is critical in response processes. Examples of emergency relief include water supplies, evacuation centers or welfare centres.
- *Insurance:* Used to reduce financial loss and ease reconstruction and recovery efforts. Insurance is a useful practice measure in relieving the financial burden on disaster victims and taxpayers through helping to compensate losses. It can reduce the specific risks faced by each individual and provides necessary assurance for land and property owners. Insurance can reduce the disruption from hazard events through enabling

people to get compensation in order to ease and speed up the recovery and rebuild process.

- *Building standards and safety:* A key measure based upon constructing the built environment in such a way as to withstand the impacts of natural hazard forces through building, engineering, design and infrastructure codes and protective structures (e.g. dams, levees and seawalls) to reduce the risk of being effected. This measure relies upon building standards being met based upon a level of risk which is predicted and calculated. It is a primary means of controlling or limiting the impact of hazards and to protect vulnerable structures and make them hazard proof.

It is commonly recognised that for emergency management to be beneficial and reduce the risk of being effected by natural hazards, a combination of the techniques outlined above need to be used (Burby, 1999; Godschalk, 1998; Mileti, 1999).

Despite reactive emergency management being the cherished, trusted and useful approach, there are significant limitations and troubling questions encompassing the traditional measures that have arisen. The series of limitations have been widely discussed, known and apparent for a long time, according to Glavovic (2010) and Lagadec (2009), because reliance on emergency management measures alone has failed to stem the rising toll of disasters. The limitations of traditional emergency management practice include the following (Glavovic, 2010; Godschalk, 1998; Mileti, 1999; G. F. White, 1945; G. F. White et al., 1958):

- Proactive measures before an event occurred are not taken or addressed to improve outcomes before an event – it does not consider how taking actions before an event might help to avoid or reduce the disaster risk faced by communities;
- Warnings are unreliable – even when and if warnings are issued, communities and individuals are not always going to respond and react to them;
- Fosters complacency – there are concerns that simply relying on reactive measures creates a mindset of been there done that – we had an event and managed to respond and rebuild so why do anything different, why invest in anything more?;
- Response efforts do little, as they do not address the underlying drivers and root causes of the issues and reasoning behind why the communities were disrupted and affected by an event, for instance, the causes of social vulnerability that create the very conditions that predispose communities to disasters such as poverty. It does not address the vulnerability and risk of communities, which could positively change the outcome. Emergency management creates patterns of continually doing and relying on the same approaches and measures and not tackling the real problems, and as such creates and supports a vulnerability cycle;
- Building standards and codes provide useful protection when extreme events are below or at the standards and measures set. However, if an extreme event is greater than what is anticipated and provided for, this approach is not adequate and inevitably fails. Quickly it does little more than lull people into a false sense of security. This ties into the safe

development paradox (Burby, 1999) where exposed land is made safe to occupy and develop through measures such as building codes and standards, but in turn this makes areas and people more susceptible if it is already highly exposed and an extreme event exceeds design standards;

- Relief and insurance after an event are useful, but do not change the outcomes of hazard events, and again may cause false sense of security and even encourage people to settle in places at high risk because their risk is subsidised.

In many instances the emergency management mitigation activities, as Mileti (1999) asserts, simply postpone losses that could be more devastating when extreme events occur. Emergency management relies upon measures to reduce the impact of extreme events, but does not keep people out of harm's way. As events are at times more extreme and severe than anticipated the consequences can be more disastrous than emergency management plans, procedures, techniques and designs alone can provide for. A more proactive approach that could help to reduce the impact of extreme events would be one that avoids putting people in harm's way in the first place. Consequently, there is a need to go beyond traditional emergency management practices and construct new paths of thinking and planning (Haque & Etkin, 2007). While emergency management is necessary, it is designed and focused for a 'predictable' and relatively static natural hazards environment where mitigation is a positive and desirable trend for reducing disaster risk disasters but is simply not sufficient or adequate on its own. By the 1990s, increasingly attention was focused on proactive mitigation for natural hazards. While the response and reactive components of emergency management remained in use, a new process was needed which would be fed by proactive anticipatory measures which bring in a new focus on avoiding disaster impacts.

In parallel to the growing recognition of limitations within emergency management and the need to address this, a paradigm shift towards 'natural hazards planning' emerged in the 1990s with a shift in focus from reactive responses to more proactive avoidance approaches (Burby, 1999; Lagadec, 2009; Mileti, 1999; Pearce, 2003). This marked a transitional shift of focus from mitigation to avoidance and sustainable hazard mitigation. This shift does not replace emergency management, but rather builds upon it by promoting more proactive approaches to enable communities to understand disaster risk and make pre-event decisions that promote safety and sustainability through measures of avoidance, vulnerability reduction and risk reduction (Burby, 1999; Mileti, 1999). Emergency management on its own does not and would not provide for this, thus necessitating the transition to natural hazards planning.

3.5.2 Trajectory 2: Natural Hazards Planning

The paradigm shift towards natural hazards planning in some ways has been a parallel development to the emergency management approach. Much of this shift came to the forefront in the 1990s through leading scholars such as Mileti and Burby in academic literature, but forerunners to this shift were predominant in early scholarship by White in the 1930s. Natural

hazards planning placed a new proactive line of focus on the concepts of avoidance, risk reduction, sustainability and the social dimension of vulnerability – fundamentally using planning to keep people out of harm's way 'before' an event occurs (Burby, 1999; Haque & Etkin, 2007; Lagadec, 2009; Mileti, 1999; Wisner, 2004).

Lagadec (2009) notes that the shift towards proactive natural hazards planning critically focuses attention on breaking through the traditional emergency management approach to produce new responses to natural hazard risk. As some natural hazards are inherently 'wicked problems',[2] the newfound shift towards a more proactive style of planning for natural hazards is very beneficial and favourable (Burby, 1999; Lodge, 2009; Mileti, 1999). There are many perceived important benefits for communities stemming from natural hazards planning including (Glavovic, 2010; Lodge, 2009):

- Natural hazards planning holds the promise of being able to foster sustainable hazard mitigation and ensure the safety and protection of communities towards the threat of natural hazards before an event occurs;
- Reducing the risk of disasters by helping communities to avoid development in exposed locations;
- Helping communities understand disaster risk, inform pre-event decisions on infrastructure location and physical development, and design resilient buildings and infrastructure;
- Empowering communities to work together, address social vulnerability to improve sustainability and reduce the potential impacts of disasters;

Inherent in natural hazards planning, which is significantly different to emergency management thinking, is the core concept of sustainability. Natural hazards planning strongly promotes eliminating disaster risk to keep people out of harm's way, increasing hazard awareness, understanding and preparedness through proactivity in order to foster sustainability. Natural hazards' planning is based upon a combination of 'best practice' approaches and techniques in order to achieve sustainable, safe communities. The physical domain of natural hazards planning rely upon the following techniques in practice (Burby, 1999; Glavovic, 2008, 2010; Mileti, 1999):

- Land use plans: Founded upon sustainable development through planning for development in alternative, less risky hazard-prone areas. Land use plans are utilised in order to identify and rule out land unsuitable for communities. It strives to keep people out of harm's way through measures of location (avoiding hazard-prone risky areas) and design (safe building and construction in hazard-prone risky areas).

[2] 'Wicked problems' are a key notion in planning literature. As Rittel and Webber (1973) noted they are ones that are unstructured, overlapping and relentless where there is no definitive formulation of such problem; the problems are essentially unique and as such every solution to a wicked problem is a 'one shot' operation. Wicked problems have no boundaries or any stopping rule which frames the changing nature and unpredictability of large-scale hazard events which create disasters today (Rittel & Webber, 1973).

- Hazard mitigation plans:[3] Focus on how to mitigate hazard impacts. They work through measures such as directing new buildings and infrastructure away from harm and relocating vulnerable structures and land uses to less risky locations.
- Zoning: Is used as a key technique in avoiding the risk associated with natural hazards. Zoning is applied in practice through the setting of specific rules about where development will and will not be allowed and how development is take place.

In the social domain of natural hazards planning, there is reliance upon key approaches of building and fostering sustainability through reducing vulnerability in practice. As such, it works through measures of addressing pre-event vulnerabilities (economic, political, environmental, informational and social) through identifying those at risk, promoting sustainable development via resource access, poverty reduction, increased equity and increased capability to participate in order to reduce vulnerability and improve sustainability (Haque & Etkin, 2007; Lagadec, 2009; Lodge, 2009; Wisner, 2004). The process of prevention, mitigation and preparedness takes place in light of the extent and different types of vulnerability present. Both best practice techniques in the physical and social domain are used before events as proactive measures to ensure that vulnerability and risk from natural hazards are both addressed and minimised to the fullest extent. As argued by various scholars, for natural hazards planning to be effective in practice it must address the whole picture, and as such the approaches of avoidance and risk reduction must take place alongside and work with the social dimensions of vulnerability (Haque & Etkin, 2007; Lagadec, 2009; Lodge, 2009; Wisner, 2004). In other words, in parallel with the focus on sustainable hazard mitigation through planning provisions as indicated above by the likes of Burby, increased attention has been recently placed on social vulnerability through the works of different sociologists and development studies specialists including (e.g. Wisner and Haque and Etkin).

Natural hazards planning has become the dominant leading approach in theory for dealing with hazard events, risk reduction and realising the potential to avoid putting people in harm's way (Burby, 1999; Glavovic, 2010; Mileti, 1999). Despite this rise to prominence, translating theory into practice has proved elusive and there are limitations and issues with the approach:

- Natural hazards planning does not adequately address risk in practice, as risk is more complex than what the approach can and has provided for. There are tendencies in natural hazards planning to define risk upon 'probability-consequence' calculations which is not ample, as not all risk problems can be reduced to such quantitative measures. There is a difficulty in accurately estimating risk and the level of response efforts required, particularly as hazard events become more complex, vast and unpredictable. The danger of such mindset is that a single calculation does not provide

[3] Hazard mitigation and land use plans are relevant in the United States. In New Zealand, local authorities must produce District Plans, Regional Plans and Long Term Plans under the Resource Management Act and Local Government Act, so hazards must be incorporated in these comprehensive 'land use plans'. The New Zealand specific provisions will be elaborated on in Chapter 4.

an accurate assessment of risk, and as such communities will not be effectively prepared for hazard events. The ongoing list of disasters stands as testament to this.

- Practice is lagging behind theory: The reality is that proactive natural hazards planning, despite it being a keenly felt imperative, is not yet taking place in practice as such because there is limited evidence of it taking place effectively; the growing list of disasters reflects this failure to translate theory into practice.
- Failing to reduce risk as myopic perspectives challenges the core of natural hazards planning and what it strives to achieve. The sense of myopia in many communities globally, as Kunreuther and Michel-Kerjan (2010) argue, means that: often the upfront expenses and time of implementing natural hazards planning exceeds the believed short-run benefits; there are tendencies to only look a few years ahead, if not months; there is a lack of willingness to change and a lack of ability to identify and agree on common goals. Together these all pose as an issue and limitation for natural hazards planning; it does and will not work in practice with such mindsets present.
- People continue to be put in harm's way because of a desire to live in localities that are exposed to hazards such as the coast. Rapid population growth is being experienced, there is a demand for space to accommodate this and a level of ignorance existing that if people are in harm's way, it can be controlled through planning. Despite the promise of natural hazards planning, short-term concerns and private interests tend to trump longer-term considerations and public concern about safety and sustainability.

Communities, in spite of planning efforts, are still at risk and highly vulnerable to natural hazards. The cherished emergency management and natural hazards planning approaches are confronted with shortcomings and in parallel is the growing realisation that the current approaches are increasingly less effective than hoped for and seldom implemented successfully. Natural hazards planning and emergency management together are simply not working or robust enough on their own as they remain to be marginalised in practice by the various limitations outlined above. As Lagadec (2009) reports, planning experts are at the very limit of their knowledge and practice because of the dynamic change to the natural hazards landscape. The character of risk is changing as we enter a new era of hazards framed by profound complexity, turbulence, surprise, chaos and instability (Lagadec, 2009). Inherently, more people today continue to live in harm's way, which is increasing vulnerability. Despite this, an ignorant mentality exists believing that we can control, engineer and predict the hyper-complex hazard landscape. Particularly since the early 2000s, there has been a new line of focus on the predicament humanity faces in the anthropocene[4] through climate change, which is intensifying the unpredictability of natural hazards and escalating risk. New Orleans specifically brings this argument into context, as despite natural hazard planning efforts,

[4] 'Anthropocene' is a term referring to a period of time in which human activities have had a significant visible impact on the earth's environment and climate. This is relevant in this context in light of natural hazard risk, which has escalated alongside climate change-driven perils which are both directly influenced by human activities.

turbulence and surprise was witnessed through Hurricane Katrina. Current planning approaches in this instance, as Kates et al. (2007) recognised, were not adequate or sufficient in light of the disaster's unpredictability and complexity.

A major shortcoming of natural hazards planning is that it does not recognise or provide for addressing the new cosmology of natural hazards being faced today. While natural hazards planning is useful and necessary, the approaches provided are not sufficient alone as awareness has rapidly grown recognising that risk cannot be calculated and put down to probability-consequence metrics. Thinking has evolved beyond the early work of Burby, Mileti and White, for example, and the arguments of avoiding putting people in harm's way and relying on risk calculations, as its ineffectiveness is increasingly being witnessed by the rising number of devastating disaster events (Kunreuther & Michel-Kerjan, 2010). As such, there is another need to go beyond current practice and thinking and provide an approach which can respond to, and work amongst, the challenging hazard and risk environment (Lagadec, 2009). Focus has moved towards the resilience planning space, which offers an additional layer that builds upon principles of good emergency management and natural hazards planning, with an explicit focus on addressing the dynamic and complex nature of risk problems. Resilience is being framed as the new line of planning for natural hazards and risk, providing a positive trend forward of thinking and approaches that can address the manifested 'wicked' hazard problem today (Davoudi, 2012; Eraydin, 2010). The words of Sunzi (1999) summarise this: *"If you know neither the risk nor yourself, you are bound to be defeated in every battle" (pp23)*. In light of the changing and dynamic hazard environment, a transition towards new routes and paths to dealing with natural hazards is needed in order to redefine planning so as to support, brace and strengthen the current planning practice. Thus, necessitating resilience planning as a new trajectory to place integral focus on dealing with uncertainty, complexity and surprise framing the natural hazards landscape today.

3.5.3 Trajectory 3: Resilience Planning

Resilience planning is emerging as a third trajectory, which builds upon the earlier transition and insights from emergency management to natural hazards planning. The transition towards resilience planning represents a process of stepwise building where emergency management and natural hazards planning, while still necessary, are not sufficient on their own. Resilience planning is being held as the next step up to brace and support the current approaches which unfortunately have been unable to satisfy the needs and failed to deal with the increasing vulnerabilities of communities in regard to natural hazard risk (Eraydin, 2010). Resilience planning could offer a promising third generation of thinking, which provides a means as opposed to ends approach that reconsiders the 'substance of planning' so as to enhance the capacity to deal with the slow onset changes and sudden shocks from natural hazards (Eraydin, 2010). Resilience planning is based upon a process of not simply problem solving that traditional approaches focus on, but rather systematically dealing with and addressing the root causes and drivers of change that increase the vulnerability of communities to natural hazards

(Davoudi, 2012; Eraydin, 2010; Shaw, 2012; Wilkinson, 2012). This occurs through seeking to create flexibility and building a self-organisation capacity founded upon dynamicity, transformability, and adjusting that enables communities to not only adapt but also benefit from expected and unexpected disturbances (Eraydin, 2010). There is a distinct need for resilience planning for addressing the turbulence, uncertainty and unpredictability of the natural hazard risk environment in today's society. This is evidently framed by the nature of complex risks today that defy traditional planning and risk analysis focused on defining likely hazard impacts, evaluating treatment/planning options and prescribing a solution. In a world of turbulence and unpredictability, it is not possible to predict some events and consequences, and as such a different approach to planning for risk is needed, especially given the interconnected nature of the economic, social, demographic and political contexts. Resilience planning is a crucial new approach in this light that is needed to boost people's resilience and flexibility to the full spectrum of adversities they face. If we fail to shift from short-term post-disaster relief to longer-term proactive focuses for communities, we risk wasting and undermining the resilience that is increasingly being sought and required, thus necessitating the need for and importance of resilience planning (Haque & Etkin, 2007; Lagadec, 2009).

Resilience planning seeks to translate the new insights into practice. The essence of resilience planning is creating 'strong resilience' in communities, meaning they can learn, adapt and create new futures which would foster the desire for sustainability – hazard-resilient, sustainable communities become attainable. Accordingly, resilience planning as demonstrated provides a stark departure and point of difference to the earlier trajectories and perhaps a more useful and proactive framework for natural hazards, which previously has not been recognised or addressed. It is being praised by leading planning scholars as holding real potential and promise through its direction of seeking to work with, and adapt to, hazards and constructing a flexibility within communities to evolve when necessary in order to keep safe and minimise destruction, devastation and harm (Davoudi, 2012; Shaw, 2012; Wilkinson, 2012).

The transition towards the resilience planning paradigm is at present in a primarily conceptual phase. It is widely discussed and increasingly touted as being the new path forward, but it has yet to be seen or put into practice (Davoudi, 2012; Shaw, 2012; Wilkinson, 2012). There is a need to explore more effective approaches and useful solutions in natural hazards and planning practice is imperative; resilience planning provides a fresh new perspective to overcome the limits of emergency management and natural hazards (Berkes, 2007; Glavovic, 2010), and as such there is an increasing requirement to embrace proactive resilience planning (Berkes, 2007; Dos Santos & Partidario, 2011; Glavovic, 2010). The challenge remains how to translate resilience planning and its associated characteristics into practice.

Based on this review of past emergency management and natural hazards planning scholarship, I argue that resilience planning provides a new trajectory of thinking and practice

that is necessary to address the challenges of reducing disaster risk in the 21st century. As a point of departure, the concept of resilience will be explored further in the following section.

3.6 Resilience

Resilience is not a new concept. The concept has in the past four decades been a term increasingly employed and investigated (Martin- Breen & Anderies, 2011). Dos Santos and Partidario (2011) argue that the very essence of the concept of resilience is embedded within one of Charles Darwin's well-known expressions, *"It is not the strongest of species that survives, nor the most intelligent that survives; it is the one most adaptable to change"* (pp1520). While recognising that there are multiple definitions of resilience, it can broadly be defined as the intrinsic ability of communities and individuals to absorb shocks and disturbances, self-organise to rebound or bounce back to a stable state, and learn from events or shocks in order to adapt (Ahern, 2011; Berkes, 2007; Hutter & Kuhlicke, 2013; Miller, 2010; Turner, 2010). Communities are facing a variety of increasing pressures and rapidly changing circumstances. In response to these pressures and dynamic conditions, scholars are increasingly looking towards and using the concept in different fields: engineering, ecology, socio-ecological, psychology and community (Ahern, 2011; Berkes, 2007; Berkes & Ross, 2013; Dos Santos & Partidario, 2011; Glavovic, 2008; Mileti, 1999). Berkes and Ross (2013) note that resilience thinking is a valuable conceptual tool useful for dealing with change. As recognised by various scholars, the strategic notion of resilience is beneficial and highly useful (Berkes, 2007; Berkes & Ross, 2013; Dos Santos & Partidario, 2011; Martin- Breen & Anderies, 2011; Miller, 2010). The perceived benefits can be summarised as:

- Resilience is flexible and applicable and can be applied to cater for a diverse range of contexts;
- Resilience can be located and tailored within an appropriate context so that progress towards goals can be gauged (Mileti, 1999);
- It provides an opportunity for communities in different situations to develop their own understanding and use of resilience for the best means and outcomes for a specific environment.

Resilience is a complex multi-dimensional adaptive strategy, therefore the concept is highly useful and appealing in practice (Ahern, 2011). In the urban world, the concept of resilience is constantly being used, applied and tailored for an array of contexts in order to achieve and support diverse purposes and outcomes, which are explored below.

3.6.1 Resilience Perspectives

Resilience is a multi-faceted and multi-dimensional organising of cross-initiative objectives concept. Therefore, conceptions of resilience as outlined have been reinforced and recognised across a plethora of scholarship, reflecting a variety of perspectives (Berkes & Ross, 2013; Davoudi, 2012; Shaw, 2012; Turner, 2010). Martin-Breen and Anderies (2011) further note that over time the different fields of resilience thinking have generated their own definitions and uses of the concept relevant to the class of problems they address. Table 1 provides a comparison of

the different perspectives on resilience, and their positioning through distinctive principles and points of focus.

Table 1: Resilience Perspectives

Resilience perspectives	Principles	Focus on	References
Engineering	Return time, efficiency, bouncing back quickly, low distortion, resisting external forces, shocks and disturbances	Recovery, constancy, endurance, stability, equilibrium, normal state	(Dos Santos & Partidario, 2011; Folke, 2006; Martin- Breen & Anderies, 2011)
Ecological	Buffer capacity, withstand shock, maintain function, absorb disturbances, self-renewal and stability	Persistence, robustness, return time, long-term survival and functioning	(Berkes, 2007; Berkes & Ross, 2013; Folke, 2006; Handmer & Dovers, 1996; Mileti, 1999)
Social-ecological	Interplay disturbances and reorganise, sustaining and developing, ability to continually change and adapt, retaining essentially the same function, structure, identity and feedbacks	Adaptive capacity, learning, innovation, transformability, critical thresholds, systems as a whole, capacity to self organise	(Berkes, 2007; Berkes & Ross, 2013; Folke, 2006; Turner, 2010)
Psychology	Community and individual levels, coping with stress and adversity, rebound from adversity, identifying and building strengths, positive adaptation, bounce back	Recovery, adaptive capacity, stability reached and maintained, personal tolerance thresholds, social support, bouncing back, good outcomes	(Berkes, 2007; Berkes & Ross, 2013; Martin-Breen & Anderies, 2011)
Community	Overlaps ecology and psychology perspectives, strengths of a community to respond and cope with adversity through: social networks, people and place connections, flexibility, growth and self-organising	Response and recovery, problem solving, agency, innovation, leadership, capacity building and learning.	(Berkes & Ross, 2013)
Integrative	Integrative and there are complementarities between the different strands of resilience thinking; systems ability (communities and institutions) to come together and respond; adaptation and thriving in environments of change; builds on strengths	Targets all levels of resilience, enhancing collective capabilities to respond to change, problem solving, response, power and politics	(Berkes & Ross, 2013)

From the table it can be seen that resilience has emerged, expanded and converged across a range of approaches and addresses a diverse range of disciplines. The engineering, ecological social-ecological and psychological approaches to resilience emerged in parallel with one another (Berkes & Ross, 2013). Since the emergence of the four early perspectives, work was focused on different areas which subsequently saw the development of community and

integrated approaches to resilience which have each come about at different stages (Berkes & Ross, 2013). The evolution of the different resilience perspectives, as the table outlines, has seen a shift from notions of linear return to normal states and then to a more complex and organic way of thinking in the context of social-ecological systems. Resilience has now expanded and emerged within community, psychological and integrated approaches which recognises the pivotal role of power, politics and vulnerability, which were concepts previously ignored in the earlier strands (Berkes & Ross, 2013).

The resilience concept has further evolved to include a disaster and natural hazards perspective; today resilience is particularly relevant to disaster risk reduction and natural hazards planning. The number of declared disasters arising from natural hazard events is increasing worldwide and therefore in simple terms, disaster resilience is becoming prominent within the relevant literature and scholarship (Gregg & Houghton, 2006). Disaster resilience, as Berkes (2007) argues, provides an all hazards approach making it a dynamic way to now deal with natural hazards. Disaster resilience provides an important concept that can provide a more sophisticated context and approach to dealing with natural hazards and disasters today and the associated increasing risk (Martin- Breen & Anderies, 2011). A great deal of attention has been given in the literature to the characteristics and focus of disaster resilience. These are summarised as the following (Berkes, 2007; Haque & Etkin, 2007; Martin- Breen & Anderies, 2011; Mileti, 1999):

- Persistence;
- Adaptability
- Transformability;
- Rebounding from events;
- Learning from past events;
- Better manage and cope with shocks and adversities;
- Learning to live with change;
- Developing capacity to deal with risk and change instead of blocking it out;
- Bounce back stronger;
- Absorbing disturbances or adapting it;

Disaster resilience as Berkes (2007) and Dos Santos and Partidario (2011) similarly argue, allows for communities via these characteristics to live with the rising risk, threats, uncertainty and change brought on by natural hazards and other changes, surprises and trends including those relating to economics and demographics. Therefore, the disaster resilience perspective is pertinent to our time; it is at the heart of what is required to shape, change and protect individuals through to communities for the future natural hazards environment. The disaster resilience perspective is discussed within the literature as having two key parts: reactive resilience and proactive resilience (Handmer & Dovers, 1996; O'Hare & White, 2013). As Handmer and Dovers (1996), and similarly O'Hare and White (2013), argue reactive resilience approaches the future by strengthening the status quo and making present communities

resistant to change; it is based upon a quest for consistency and stability. Whereas proactive resilience (O'Hare & White, 2013) accepts the inevitability of change and tries to create a system that is capable of adapting to new conditions. This is supported by Holling (1973), Wildavsky (1998) and Conway (1978) who further note that reactive resilience is focused on understanding how past responses to disasters could be bettered with proactive resilience looking towards efforts to anticipate future stresses and shocks. In complex societies, and in the pursuit to achieve resilience in a natural disaster context, there should be according to Handmer and Dovers (1996) a mixture of the two in any given environment.

Despite the different perspectives of resilience thinking there are distinct similarities between the views of the foundational components for resilience including: overcoming adversities; rebounding or springing back after an event or major perturbations; the capability to return to a previous state; the ability to continue functioning given external shocks; the handling of large stresses; the ability to return to normal; absorbing shocks in order to avoid crossing a threshold into an alternate and possibly irreversible state; and regenerating after disturbances (Handmer & Dovers, 1996; Martin- Breen & Anderies, 2011; Miller, 2010; Paton, 2006).

3.7 Resilience Planning

Scholars and practitioners know that uncertainty looms high in the field of natural hazards and therefore a new approach is needed to cope with change and risk that cannot be predicted (Berkes, 2007). As introduced earlier, resilience planning is the newly emerging beneficial planning approach that seeks to deal with the challenges faced today due to increased natural hazard risk. A growing cadre of scholars are leading the way for resilience planning and comprehensively detailing strong support for the concept (Davoudi, 2012; Dos Santos & Partidario, 2011; Eraydin, 2010; Shaw, 2012; Wilkinson, 2012). Resilience planning, according to Davoudi (2012), Shaw (2012), Eraydin (2010) and Wilkinson (2012), is a significant and exciting prospect for planning as it provides a unique framework for addressing disaster risk and resilience in one integrated manner which is pertinent today to deal with the changing, unpredictable environment of natural hazards. The following sections will explore this new concept further, including what its key characteristics for practice are, what the barriers are to this planning approach and outlining a best practice framework for resilience planning based on the literature.

3.7.1 Resilience Planning Characteristics for Practice

Increased attention has been given in the literature to the defining characteristics needed in the pursuit of resilience and, in particular, creating resilient communities; it is becoming a useful goal especially in tandem with sustainable development in communities internationally (Glavovic, 2010). Resilient communities are deemed to be the aspiring goal of planning today (Glavovic, 2010). Communities are deemed resilient when they are able to cope with and learn from events or situations; they are able to adapt to changing circumstances and recover quickly (Glavovic, 2008). Striving to achieve this pursuit is the challenge of the new century (Puszkin-

Chevlin, Hernandez, & Murley, 2006). The resilience planning and disaster resilience literature demonstrates and explains the principal characteristics needed for the concept to be translated across into planning practice (Berkes, 2007; Berkes & Ross, 2013; Coafee, 2013; Dos Santos & Partidario, 2011; Glavovic, 2010; Murphy, 2007). These characteristics at a high level demonstrate the key qualities needed in order to enable resilience planning; they outline best practice for resilience planning. Table 2 outlines the characteristics and links to practice for resilience planning.

Table 2: Resilience Planning Characteristics

Characteristic	**Focus on**	**Reference**
Social learning	System of learning to develop and achieve shared visions; joint learning; learning through participation, debate, analysis, experimentation and review; learning from each other (different values and viewpoints); considering other views, knowledge and experience	(Berkes, 2007; Berkes & Ross, 2013; Davoudi, 2012; Dos Santos & Partidario, 2011; Shaw, 2012; Wilkinson, 2012; Hutter & Kuhlicke, 2013)
Leadership	Strong and engaged leadership	(Berkes & Ross, 2013; Miller, 2010; Shaw, 2012)
Reflexivity	Providing space for reflection; sharing lessons and using them; reflecting on abilities, failures, problems and success and adjusting practice based on this; learning from the past and previous experiences; reflexivity amongst different actors and institutions	(Berkes, 2007; Coafee, 2013; Davoudi, 2012; Dos Santos & Partidario, 2011; Miller, 2010; Shaw, 2012)
Innovation	New initiatives and proposals that would/could generate solutions; creativity; new answers to problems and challenges	(Davoudi, 2012; Dos Santos & Partidario, 2011; Miller, 2010; Shaw, 2012)
Communication	Building relationships; communicating between different groups; enhancing information flow; receiving, incorporating and transmitting messages; raising consciousness; communication across multiple scales; communicating to ensure even understanding and knowledge	(Berkes & Ross, 2013; Davoudi, 2012; Dos Santos & Partidario, 2011; Hutter & Kuhlicke, 2013; Miller, 2010)
Knowledge	Different knowledge and expertise; increasing knowledge levels; knowledge for problem solving; bringing together different kinds of knowledge to provide a more fuller and useful picture	(Berkes, 2007)
Nurturing diversity	Nurturing diversity in its various forms: ecological, social and political diversity; diversity of views and considerations of discussion in order to increase options; potential of bringing new thinking and expanding the role of information, education and dialogue	(Berkes, 2007; Wilkinson, 2012)
Governance	Good, flexible and adaptable governance structures	(Miller, 2010; Shaw, 2012)

Anticipation	Importance of being able to foresee the future, to perceive emergent disturbances and to identify early solutions signals and possible solutions; thinking about the future; anticipate early enough for avoidance to take place	(Coafee, 2013; Davoudi, 2012; Dos Santos & Partidario, 2011)
Strong social capital	Good social networks; community norms and social networks; strong horizontal and vertical integration within communities and institutions; networks built upon more strong than weak ties, particularly relationships; financial, physical and human capital; high levels of support	(Berkes, 2007; Berkes & Ross, 2013; Davoudi, 2012; Miller, 2010; Murphy, 2007; Shaw, 2012)
Ongoing planning initiatives	Continual planning efforts; updating and renewing planning initiatives; keeping planning efforts current	(Davoudi, 2012; Dos Santos & Partidario, 2011)
Participatory approach	Ensuring authentic participation and collaboration across all individuals and groups within communities and institutions; community role in planning and decision-making processes	(Davoudi, 2012; Dos Santos & Partidario, 2011; Glavovic, 2008)
Long-term vision	Visionary approach; looking beyond the immediate or short-term focus	(Coafee, 2013; Glavovic, 2008)
Prioritising empowerment	Building upon local knowledge and capabilities to increase social learning, strengthening local institutions	(Glavovic, 2008)
Adaptive capacity	Adapting and adjusting; adapt and respond to change and disturbances; adapt to a new normal; flexibility; adapt to surprise and changing circumstances	(Berkes, 2007; Davoudi, 2012; Dos Santos & Partidario, 2011; Glavovic, 2008; Miller, 2010; Shaw, 2012; Wilkinson, 2012)

As Table 2 highlights, there is a good understanding amongst the current literature of the characteristics needed in order to put resilience planning into practice. As Davoudi (2012) argues, when these characteristics are linked into practice, resilience will be achieved. The scholarship defines high-level ideas about the required 'good' resilience planning characteristics, but the lower level of information about how these characteristics can be operationalised through actions into real-world planning is yet to be provided for in the literature. Miller et al. (2010) supports this and argues that there are few examples that document how resilience should explicitly be incorporated into practice and policy. O'Hare and White (2013) further suggest that the practical application and articulation of resilience planning remains to be considerably unclear. While there is a growing body of research developing our understanding of resilience, there is little guidance on *"how this understanding is adopted and practically applied"* (O'Hare & White, 2013, pp254-255) to planning practice. Further research is required into how the current thoughts of resilience can be translated into practice in order to successfully achieve resilience and reap the associated benefits.

Within the literature, the characteristics provided as being necessary for linking resilience planning into practice discussed and presented with differing levels of focus. Another way of comprehending the characteristics is in regard to the predominance and level of attention given to each. Table 3 presents the key characteristics for putting resilience into practice outlined above and the frequency of citation amongst the key scholars.

Table 3: Most Commonly Cited Characteristics for Resilience Planning

	Dos Santos et al	Berkes	Miller et al	Berkes & Ross	Turner	Murphy	Glavovic	Davoudi	Davoudi et al	Wilkinson	Shaw	Hutter & Kuhlicke	Coafee
Social learning	*	*	*	*	*			*	*	*	*	*	
Leadership			*	*							*		
Reflexivity	*	*	*					*			*		*
Innovation	*		*					*	*		*		
Communication	*	*	*	*					*			*	
Knowledge		*											
Nurturing diversity		*								*			
Self-organisation	*		*		*			*				*	
Anticipation	*								*				*
Governance			*								*		
Social capital		*		*		*		*			*		
Ongoing initiatives	*							*					
Participatory approach	*						*	*					*
Long-term vision							*						*
Prioritising empowerment							*						
Adaptive capacity	*	*	*				*	*		*	*		

The above scholarship shows that some characteristics central to resilience planning including, social learning, social capital and communication are given more attention than others. The characteristics that, while recognised, have to date received less scholarly attention include leadership, innovation, knowledge, nurturing diversity, anticipation, governance, ongoing planning initiatives, participatory approach, long-term vision and prioritising empowerment. Despite some best practice characteristics for resilience planning appearing more predominantly across the leading scholarship, all the features are connected and have a role to

play in the resilience planning process. In order to enable these characteristics there are a set of actions that would be required for resilience planning so as to operationalise it. The question is can these characteristics, which people have recognised as being necessary, be turned into actions and made tangible for resilience planning? Despite this knowledge, the detail surrounding what actions are needed to turn the characteristics into practice in the context of resilience planning is yet to be discussed and explored in the literature as the tables above outline.

3.7.2 Conceptual Phase

Despite the empirical evidence available from research to date exploring resilience planning and its benefits, no context specific research has been conducted exploring the practical viability, institutionalisation and operationalisation of resilience planning (Davoudi, 2012; Wilkinson, 2012). Resilience planning currently is in a primarily conceptual phase and is lacking any practical action to date (Davoudi, 2012; Shaw, 2012; Wilkinson, 2012). Wilkinson (2012) notes that *"there is surprisingly a lack of scholarly research and publications about how this notion of resilience planning can be pursued in practice"* (pp320). This is a significant gap in the current literature internationally and, accordingly, presents as a significant opportunity for exploring how resilience planning can be transitioned from its conceptual state into practical action. New Zealand specific research conducted by Cowan and Simpson (2011), Mamula-Seadon et al. (2012) and Vallance (2013) all commonly discuss the Canterbury earthquake experience, which demonstrates the compelling need to work out how to bridge this gap in order to better inform future decisions and planning around natural hazards. As such, the challenge that remains is how to operationalise resilience planning through its key characteristics and improve the application of planning for natural disaster risk. Dos Santos and Partidario's (2011) spark framework provides a good point of departure for beginning to think about resilience planning and how could work and fit into existing planning practice.

3.7.3 Resilience Planning and the Planning Cycle

For resilience planning to become a practical reality, it will have to become integrated into the planning process. Dos Santos and Partidario (2011) present a proposed 'Spark Resilience Planning Framework' which simply presents the four different components: 1. Structure (understand the system); 2. Story (analyse trajectory); 3. Scenarios (rethink future); and 4. Strategy (plan for change). Figure 1 presents the model for resilience planning and the planning system.

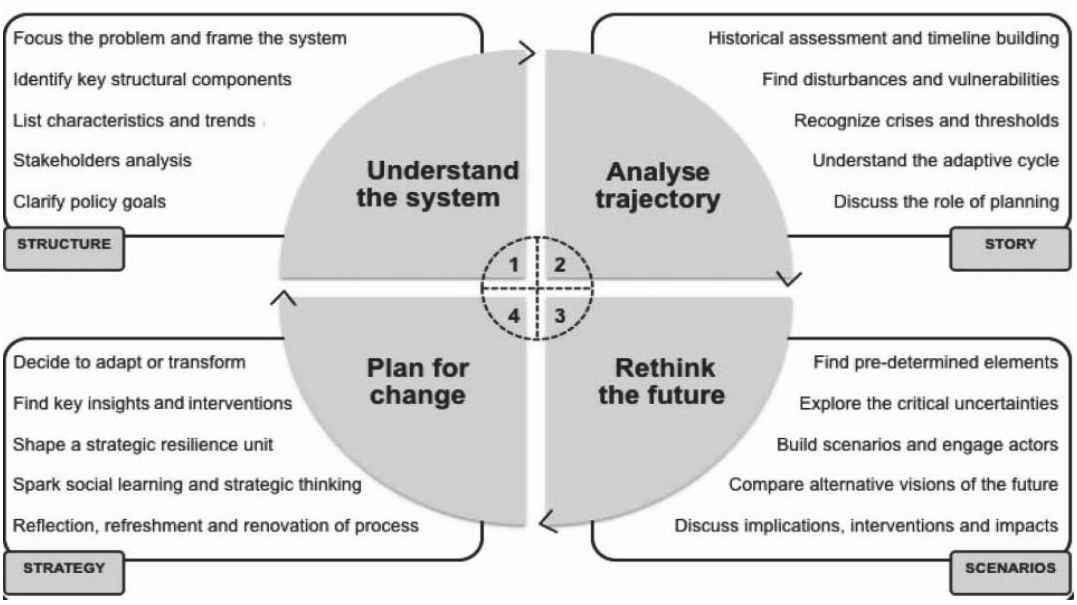

Figure 1: Spark Resilience Planning Framework (Dos Santos & Partidario, 2011)

Dos Santos and Partidario (2011) describe the first two stages of the framework to be based on learning and understanding about present and past systems and environments, the third stage being orientated to explore the future and rethink different options according to distinct plausible scenarios. The last and fourth stage is directed towards defining strategies for resilience planning. As Dos Santos and Partidario (2011) suggest, it provides a useful beginning step to exploring and understanding resilience planning and how it needs to work and fit in real-world planning. Such framework has yet to be applied or explored in the New Zealand context. Dos Santos and Partidario's framework is one scarce example available within the resilience planning scholarship to date. Within the literature there appears to be a growing range of support for resilience planning and its perceived benefits, but there is a lack of coherent models or frameworks and more importantly insight into what best practice is. This is unsurprising as resilience planning is still in the development phase (Davoudi, 2012) and it would be expected that frameworks would begin to emerge as the concept develops further.

Similarly to Dos Santos and Partidario (2011), Moser and Ekstrom (2010) identified the need for climate change adaptation to fit and work within the planning cycle. Figure 2 below outlines the model utilised in the climate change scholarship.

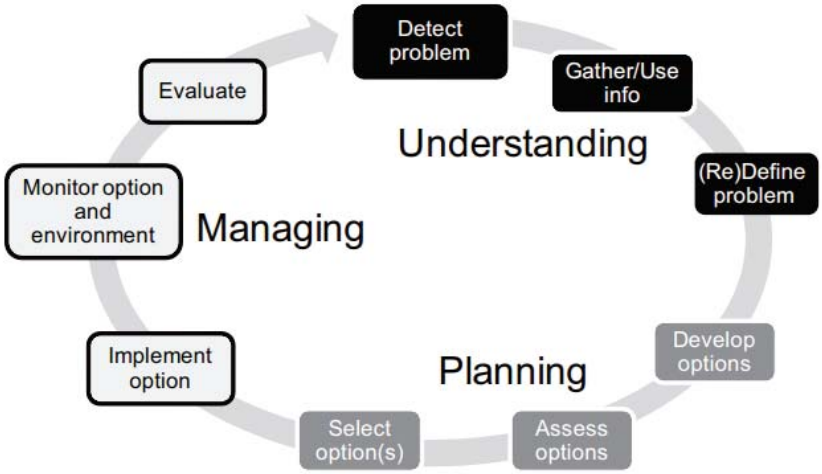

Figure 2: Stages of the Planning Cycle for Climate Change Adaption

As Moser and Ekstrom (2010) argue, for climate change adaption to be successful in practice, it needs to work and be integrated into the planning process of understanding, planning and managing. While not in the resilience planning context, this spark framework provides a meaningful starting point for thinking about resilience planning, the planning process and the different stages of the cycle in which it needs to be able to work within. Further research and work is needed into transitioning resilience planning into the next phase and producing a best practice framework that can be integrated and utilised in the planning processes outlined above. The operationalisation and transition of resilience planning from conceptualisation into a practical reality will be met with key barriers out in practice. The following explores what the barriers and criticisms of doing so may be.

3.7.4 Resilience Planning Barriers

For resilience planning and the best practice characteristics to be put into practice in the planning system there are inevitable barriers, which must be overcome. Despite this, the resilience planning literature does not clearly identify what the barriers are and how to overcome them. Resilience planning seeks to overcome spatial and social inequalities that make communities susceptible to natural hazards but there are potential generic barriers to realising such an outcome.

White (2013) argues that on the face of it resilience planning seems very rational. However, a barrier of the approach is that not everyone will be able or willing to accept and be a part of the resilience planning approach. Those with power and resources may be able to engage with influential resilience planning agendas, but vulnerable individuals and communities may find themselves disadvantaged and unable to engage (White, 2013).

According to Kunreuther and Michel- Kerjan (2010), societies and individuals are encompassed today by a myopic perspective, which ultimately challenges resilience planning and its aspirations in reality. While it is not discussed in a resilience planning context, it is inevitable

that the myopic state would pose similar challenges and issues for its reality in practical application. The myopic perspective means, according to Kunreuther and Michel-Kerjan (2010), that individuals are: ignorant towards natural hazards, misperceive risk, focus on the short term, fail to learn from the past and favour the status quo. Furthermore, communities and individuals have different priorities today and do not consider engaging in resilience planning for natural hazards high on their immediate priority list (Kunreuther & Michel-Kerjan, 2010). Resilience planning's practical application, feasibility and realism is challenged and comes heavily under question in light of the Kunreuther and Michel-Kerjan (2010) myopic perspective. Societies tend to disregard risk and fail to learn from the past, which inevitably challenges a new emerging approach like resilience planning and how viable it is in practice (Kunreuther & Michel-Kerjan, 2010). This perspective does raise the questions as to how to overcome the problems arising from this myopia so that resilience planning characteristics can be translated into reality.

In the field of climate change, however, a range of work has explored the barriers to adapting to climate change in practice (Jones & Boyd, 2011; Moser & Ekstrom, 2010). It is useful and relevant to look at and explore the barriers in the climate change context as it applies a similar logic to resilience planning for natural hazards; both climate change and natural hazards address wicked issues and take place in the face of complexity and turbulence. Both climate change adaption and resilience planning scholarship embody similar underlying principles such as creating and fostering adaptability and creating resilience through communication, social learning, innovation and leadership, for example, to be able to cope with change and uncertainty.

It is constructive to distinguish what a barrier is and its difference from limits as the two are often used interchangeably when being referred to (Moser & Ekstrom, 2010). In the literature barriers are impediments or obstacles that can stop, delay or divert a process or that might prevent the community from using its resources in the most advantageous way, but they can be overcome. It is important to separate this from limits, which are obstacles or thresholds, which are absolute and tend to not be able to changed (Jones & Boyd, 2011; Moser & Ekstrom, 2010). In this context it is the term barrier being referred to. In any context there are a range of barriers which can exist. Jones and Boyd (2011) discussed a range of three distinct, but interrelated, barrier categories in the climate change context which provide a way of organising and thinking about different barriers: natural barriers (ecological and physical), human and informational barriers (technological, knowledge, and economical) and social barriers (cognitive, normative and institutional). Within these categories, distinct barriers for climate change adaptation have been identified and include, for example, thresholds of concern, interest and focus, accessibility, salience and relevance, clarity of responsibilities, preconceived ideas and behaviours, lack of data, information and resources on climate change, lack of clarity around how to facilitate the climate change adaptation process, cost and political and social feasibility. Similar barriers for climate change are also evident through work by Glavovic (2014) and Moser and Ekstrom

(2010), which also shed light on array of barriers, which were consistent with those discussed by Jones and Boyd (2011). While consistently recognising similar barriers, Moser and Ekstrom (2010) provide a different perspective and way of viewing the barriers that is aligned with the focus of planning in this research. Moser and Ekstrom (2010) developed a framework to understand and address barriers to climate change adaptation. The framework categorised and organised barriers into three categories of thinking based upon the planning cycle: understanding, planning and managing phases. Moser and Ekstrom (2010) argue barriers are present at different stages of the planning cycle and therefore different problems and challenges will arise in different points of the process. It was also recognised that there would be cross-cutting barriers which would exist such as leadership, resources, communication, information and values for climate change specifically that would occur at every stage of the planning cycle and serve as constant barriers to be contended with. This serves as a useful point of departure to begin thinking about resilience planning, what the barriers may be, and how such barriers will align with the planning process. It sheds valuable light on what the practical challenges may be and provides a useful way of thinking about where the barriers might arise in terms of the planning cycle.

Any effort to move forward and get to the level of depth required for resilience planning in practice will have to overcome some barriers, as has been the case for climate change adaptation efforts. It is expected that detailed barriers will emerge within the scholarship as resilience planning moves forward and evolves in practice. The following section pulls together the literary information and begins to demonstrate how resilience planning may start to transition into thinking for practice through the development of a framework.

3.8 Best Practice Resilience Planning Framework

In order to achieve communities that are hazard resilient and sustainable there are key attributes which must be structured to provide for the resilience planning approach so as to build this. Research thus far has gone some way to explaining resilience planning, but scholars have yet to develop a useful guiding framework for resilience planning in practice. Based upon components revealed in this literature review, a normative framework for resilience planning has been developed that recognises that translating resilience planning into practice will require overcoming barriers and executing characteristics at the different stages of the planning process. The key challenge yet to be adequately addressed in the literature is what the actions are that need to be taken in practice to overcome these barriers to translate theory into practice. The best practice framework for resilience planning based upon the literature is as follows:

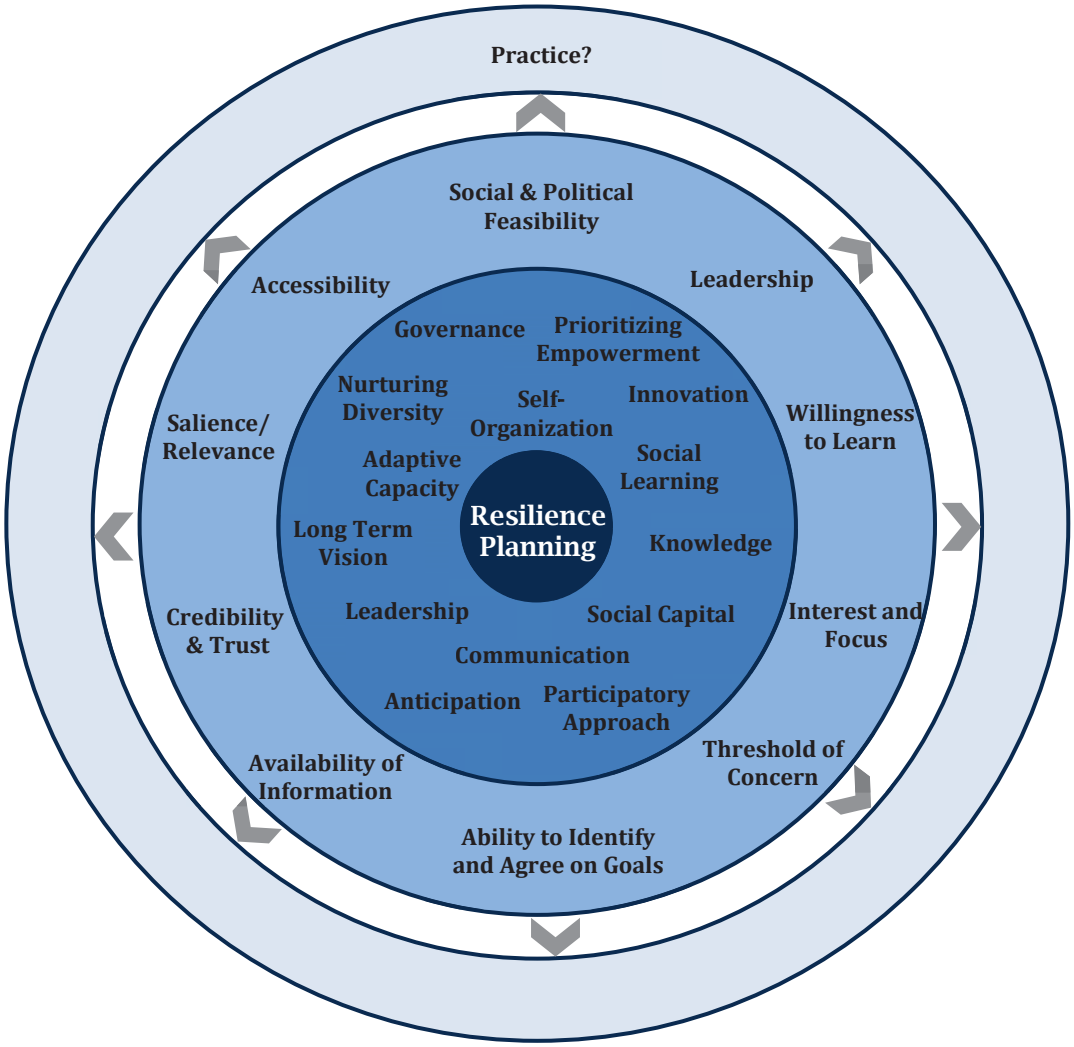

Figure 3: Best Practice Resilience Planning Framework

The inner circle presents the characteristics that need to be linked into actions for resilience planning. The second circle outlines the barriers [5] which must be overcome for the characteristics to function effectively so that resilience planning can become a practical reality. The outer ring of the framework remains blank, as the literature has yet to explore how to operationalise these characteristics into practice and what the opportunities are to overcoming the barriers so as to make resilience planning a practical reality. This research intends to explore this gap and extend upon the literature to complete a resilience planning framework for natural hazard and disasters in New Zealand in terms of operationalising the characteristics and the specific opportunities and barriers to institutionalising the planning approach.

3.9 Conclusion

This chapter has provided the context and rationale for the study based upon a literature review exploring resilience planning. The review has identified the past and current approaches to

[5] The barriers included are based on a selection of those identified in climate change adaptation scholarship by Moser and Ekstrom (2010) as they provide a useful starting point that can be changed and adapted to fit with resilience planning once explored.

planning for natural hazards, what resilience and resilience planning are, explored the current understandings of the topic and developed a best practice model for resilience planning.

The literature on resilience and resilience planning is growing and rapidly gaining salience. However, little research has been published on how key actions for resilience planning can and should be put into practice. The limited scholarly focus on these specific aspects was apparent at both an international and local New Zealand level. Currently, resilience planning is being praised for its strength and benefits, but as yet it remains to be in a primarily conceptual phase and is lacking exploration of its practical application. Consequently, there is an opportunity and potential to explore resilience planning and its practical application in New Zealand and therefore add to the existing field of knowledge.

Chapter 4
Case Study Setting and Analysis

4.1 Introduction

This thesis uses a case study approach to explore resilience planning for natural hazards. One primary case study of the Waimakariri District was the focus of this research. This chapter: introduces the case study locality and gives the background and geography of the Waimakariri District; outlines its recent earthquake experiences; and explains the legislative context which influences the planning processes in Waimakariri and has shaped the recovery effort.[6] It presents the results and discussion of the document analysis undertaken on the key planning documents for this research.

4.2 The Waimakariri District

The Waimakariri District is located in the Canterbury region of New Zealand's South Island. The district lies 20 minutes north of the city of Christchurch and the Waimakariri River.

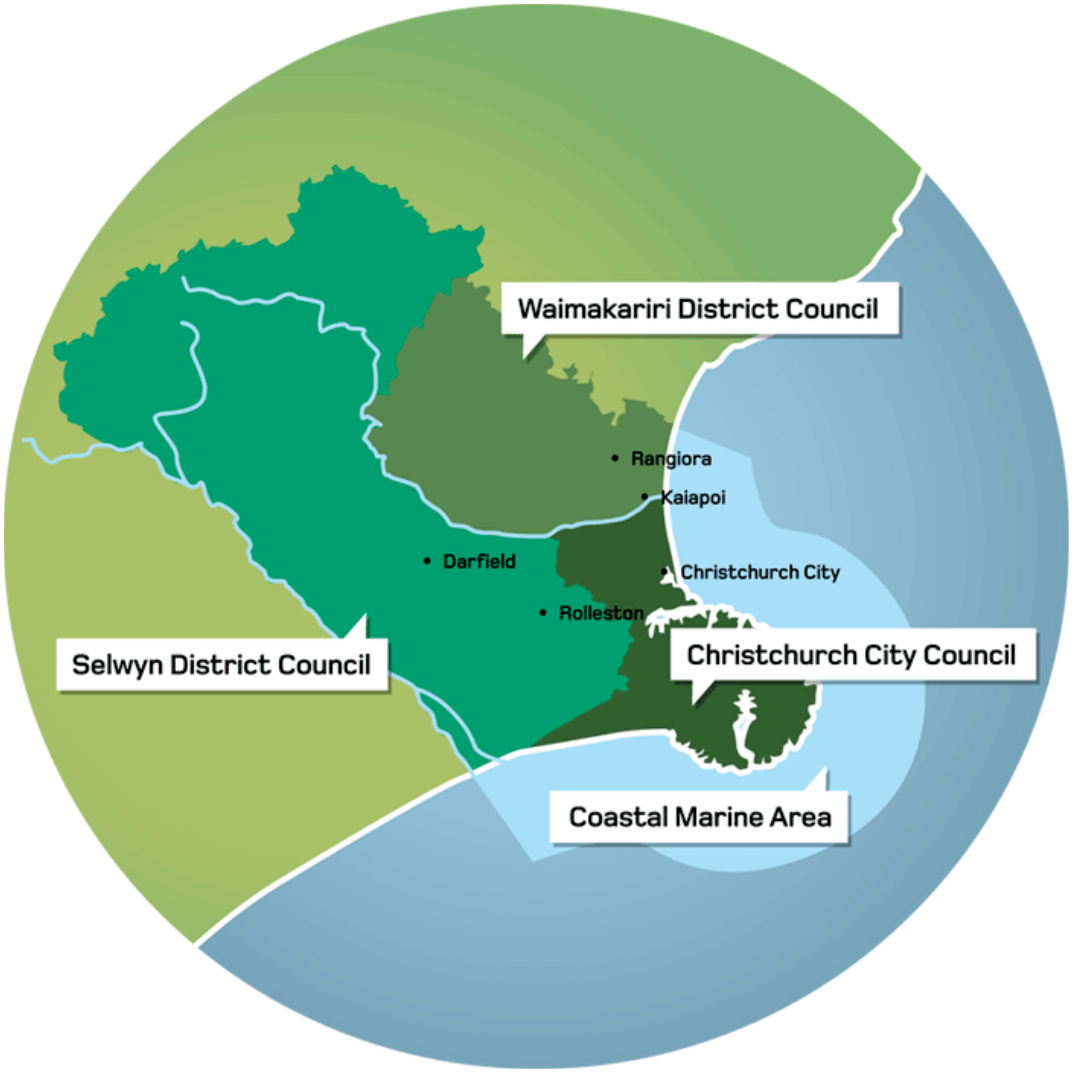

Figure 4: Map of Waimakariri District in its Regional Context

(Canterbury Earthquake Recovery Authority, 2012a)

[6] This chapter has drawn primarily on the major works of (Glavovic, Saunders, & Becker, 2010; Vallance, 2013; Willis, 2014).

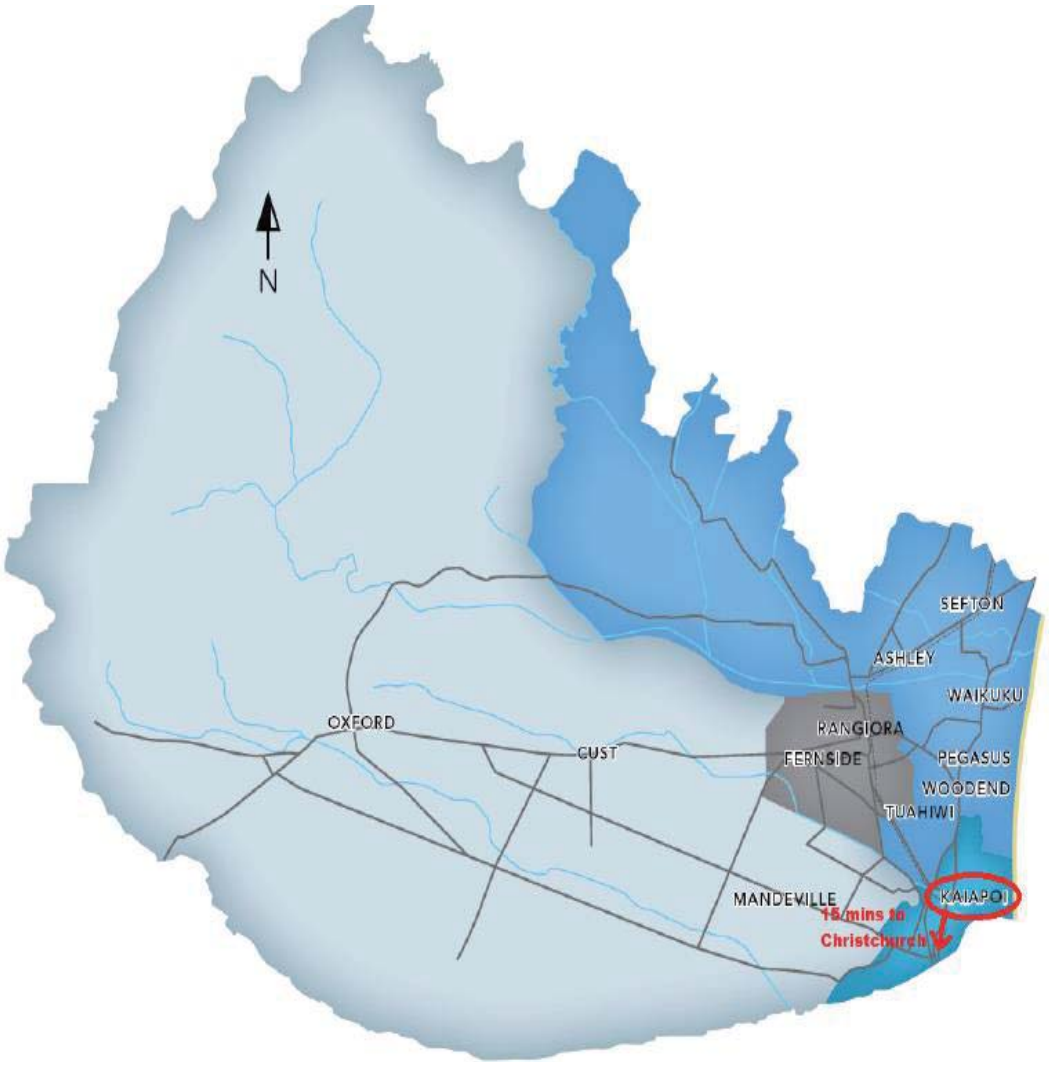

Figure 5: Map of the Waimakariri District

(Waimakariri District Council, 2003)

The Waimakariri District is geographically small covering 2,219km^2 (Vallance, 2013). The district has two main towns, Rangiora and Kaiapoi, and other smaller settlements such as Woodend, Pegasus and Oxford. Waimakariri has traditionally been described as a rural/small town area, but it has an increasing number of lifestyle blocks and small-holdings dedicated to horticulture being developed. Its small townships are rapidly expanding and the Waimakariri District now has a population of about 54,000 people (Vallance, 2013). The townships of the district form a commuter corridor into Christchurch where many residents work.

The Waimakariri District townships are located above and along the riverside and in coastal zones. Much of the land to the east of Rangiora, and particular parts of Kaiapoi, is low-lying former swampland. The Canterbury region in located in a wide zone of active earth deformation associated with the collision between the Australian and Pacific plates. As such, the district is affected by earthquakes resulting from the associated deformation and the many active faults

across the central and western parts of Waimakariri. Waimakariri District is also exposed to a range of other hazards and threats including flooding, snowstorms, tsunamis, fire and landslips (Waimakariri District Council, 2014).

4.2.1 Waimakariri Earthquake Experiences

The Canterbury region, including Waimakariri, was devastated by the 2010-2011 earthquake events. Canterbury was struck by two major earthquakes occurring on September 4th 2010 (7.1 magnitude) and February 22nd 2011 (6.3 magnitude) and the 13,000 ongoing aftershocks. The earthquakes have challenged the Waimakariri District and wider region physically, socially, economically and emotionally. Across Waimakariri, the earthquakes caused widespread destruction, but the worst damage occurred in the areas of Kaiapoi, Pines Beach, Kairaki, Woodend Beach and Waikuku Beach.

The result of the Canterbury earthquakes and subsequent aftershocks was extensive damage in the Waimakariri District and certain parts of nearby Christchurch. The earthquake events had a significant impact on the district. The regular practices and functioning of the community and Council were severely disrupted and they had to re-organise themselves for the recovery process. Waimakariri experienced considerable amounts of liquefaction and lateral spreading (cracks that open in the ground due to the earthquakes) across a large proportion of the district. Almost 1,200 homes were severely damaged, including a third of all housing in Kaiapoi and most in Pines Beach and Kairaki. The liquefaction was so severe that a zoning system required the relocation of 1,048 households (particularly Kaiapoi and Pines Beach) situated on 'red-zoned' properties; houses classified as being red-zoned meant families could no longer live or rebuild on particular properties. A large percentage of the Waimakariri community today have a lived experience of being displaced from their homes, houses being damaged beyond repair, with many facing uncertain futures for extended periods as to whether their homes would be safe and if not where they are going to live. As a result of the liquefaction and red-zoning reality from the earthquakes in Waimakariri there was an added emerging pressure of new greenfield developments (development of greenfield land in the city and outer rural areas for urban development). The need and demand for new housing development has placed further pressure on the Waimakariri Council and planning system in already extenuating tough circumstances. These circumstances together placed pressure on the Council to be robust and resilient; they had to be nimble and flexible in dealing with these challenges and pressures.

The ongoing aftershocks caused widespread fear, anxiety and uncertainty amongst the community. There were major disruptions to everyday life including temporary school closures (the school became a relief and support hub) and the loss of basic community facilities, services and activities for some time. Major recreational facilitates including the library, local swimming pool, community halls, bars and cafes were subject to long-term closure with some facilities still not currently operating. Businesses in Waimakariri were affected and damaged as a result of the earthquakes. A quarter of Kaiapoi's businesses were immediately affected as the main

street was cordoned off due to the destruction. Post-quake, 17 businesses relocated, of which 11 were permanent. Seventeen ceased trading, of which five were permanent. Several major businesses and many small enterprises closed down, which had flow-on effects for employees who lost their incomes. Rangiora's High Street has been slowly disrupted through the destruction of many businesses and offices and the closure of earthquake-prone buildings. Today, the main street of Rangiora remains to have many buildings empty and blocked off, with parts of the main street cordoned off and inaccessible. There was widespread damage to local infrastructure including: 16km of roads, 16 bridges, 12km of water mains destroyed, 10km of water mains to replace/repair, 18km of sewers, and 13,000 people without water or sewerage. As a result of the earthquakes approximately 2000 homes lost services for weeks, and this has continued on for months in some parts of the community.

The damage caused by the earthquakes and associated recovery process could easily have overwhelmed a council that was not well prepared, as they would not be able to cope or function effectively as required. However, in the case of Waimakariri it did not, and that is testament to the Waimakariri District Council's *"culture, capacity and relationships with the wider community"* (Vallance, 2013, pp13-14), which were in place before the earthquake events. Although the earthquakes and the recovery and rebuild process have been undoubtedly challenging for Council staff and the local community, the Council has demonstrated remarkable resilience and has been praised as having a positive recovery approach. As recognised in a report on the Waimakariri recovery experience, a Local Residents Association member highlighted the positive consensus amongst the community on how the district and Council has responded and is now moving forward, stating *"if somebody was going to go and write a model for recovery, there's a one-stop shop right there"* (Vallance, 2013, pp72). The Waimakariri recovery process from the earthquakes was undertaken via an 'integrated community-based recovery framework', which was based on leadership, co-ordination, clear two-way communication, engaging and engaging with locals. The Council and community have maintained a positive recovery experience, which is being recognised internationally through: maintaining strong leadership that began before the earthquakes namely through Jim Palmer (CEO) and Simon Markham (recovery manager); constructively engaging and knowing the local community; and having strong relationships between Council staff and local community representatives (Vallance, 2013).

The Waimakariri community is now at the stage where the rebuild and repairs are well underway. New town centre plans have been developed in close conjunction with the local community and work is underway. The current district plan is going to be reviewed in 2015 in regards to natural hazards (the earthquakes have been the catalyst for this upcoming review), and finding and incorporating new and more effective ways to provide for this is based upon new insights, knowledge gained and the lessons learnt. The earthquake events have brought the Waimakariri District and wider Canterbury region to a place currently where people are re-

thinking natural hazards and risk, how we perceive them and more importantly how to plan for them. There is an evident focus and common consensus across the community on the idea of 'resilience' post-quakes, and how this might be useful and used in the future. The Waimakariri District in the past has relied upon a solid legislative context to guide its planning process, particularly for natural hazards. More recently, the legislative setting in New Zealand and local district and civil defence plans have shaped the recovery and response processes for earthquakes. The next section will explore this legislative setting further.

4.3 Legislative Context

The institutional and legal regime and framework for planning, including natural hazards planning, in New Zealand is robust and facilitates coordinated, devolved decision-making. In New Zealand, and in particular the Waimakariri District, planning and planning for natural hazards occurs in multiple layers at the national, regional, city and district level. The key pieces of prevailing legislation, which have a primary influence on planning for natural hazards and are shaping the recovery in Waimakariri, are the RMA, the LGA, and the CDEMA. Responsibilities and functions within this legislative context are devolved from central government to local authorities (e.g. Waimakariri District Council). Local authorities assuming primary responsibility for local matters, including natural hazards planning, has been prominent particularly since 1991 with the enactment of and amendments to the RMA, and since 2002 with the introduction of the LGA (Glavovic et al., 2010). Local authorities in New Zealand must give effect to the provisions in the RMA, LGA and CDEMA, among other laws. The combination of legislative planning provisions needs to be viewed as a whole. Together they provide the framework for Waimakariri along with the other local authorities in New Zealand for planning decisions on natural hazards. They provide the legal foundation for building sustainable, hazard resilient communities and provide planners with guidance to avoid and mitigate hazard risks.

Natural hazards are a relevant planning concern under the RMA. In general, attention is focused on avoiding and mitigating hazard risk through land use planning and building controls. The RMA is not prescriptive about how communities should avoid or mitigate natural hazard risk, but rather is enabling, meaning they simply provide powers for local government agencies, rather than prescribing detailed requirements the responsibility is at the local level to decide how they will respond to the different risks faced. Responsibility is devolved to local authorities through a cooperative governance approach as the RMA requires regional councils and territorial authorities to have regional and district plans. The local level plans under the RMA requirements must address natural hazards risk; planning efforts must identify and avoid or mitigate natural hazards through a prescribed system of policies, plans and consent approval processes.

The LGA is a key statue in that it focuses on community and environmental outcomes. Under this Act, local authorities must have particular regard to the contribution that the efforts under the RMA, for example, 'the avoidance or mitigation of natural hazards', make to their

community. As such, a key requirement under the LGA is the responsibility for local authorities to prepare LTPs. The LTP serves as a key planning mechanism for local councils to consider the long-term planning horizon, and provide a basis through which local authorities make decisions about what level of natural hazard protection they are going to be able to provide, and Council actions and activities are held accountable (through the identification of community outcomes and setting of required levels of service and performance measures in relation to groups of activities and in this case specifically natural hazards). The RMA and LGA planning provisions are supported by the CDEMA.

The CDEMA is one of the key governing pieces of legislation for natural hazards planning in New Zealand. Explicit in the CDEMA is the concept of resilience; the Act aims to build community resilience through an all-encompassing hazards approach. The CDEMA is framed around the 'four R's' emergency management approach, being: reduction (of risk); readiness (for an event); response (when an event occurs); and recovery (post-event). Through the four R's the concept of resilience is integrated and made a central focus point for what the vision and end goal trying to be achieved is. Consistent with the legislative scope, civil defence and emergency management is defined in the CDEMA to include guarding against, preventing or reducing hazard risk. In other words (when considering the definition and four R's of civil defence and emergency management), the statutory mandate for action under the CDEMA is both pre- and post-event. Under the CDEMA, central government must produce a national civil defence and emergency management strategy (includes five principles, four goals, and multiple objectives) and plan (states the hazard and risks to be managed, and provides for the civil defence and emergency management arrangements to meet those hazards and risk). The purpose of these is to help provide for a resilient New Zealand, clearly devolve responsibilities, and to achieve an effective whole- of- government approach to response and recovery activities in respect to national and local emergencies (Civil Defence and Emergency Management Act, 2002). The CDEMA gives responsibility to the local authorities where there is a requirement to establish civil defence and emergency management group plans comprising of regional councils and territorial authorities (e.g. Canterbury Regional Council and Waimakariri District Council). These plans aim to integrate and coordinate civil defence and emergency management planning so as to manage natural hazards and reduce their associated risk.

From a legislative perspective, a consequence of the Canterbury earthquakes was the enactment of the Canterbury Earthquake Response and Recovery Act 2010, which was passed urgently in September 2010 (Saunders, 2012). The legislation enabled the relaxation or suspension of statutory requirements until April 2012, which have the potential to divert resources away from the recovery efforts, may be unable to be complied with due to the earthquakes, or could delay a quick response to the emergency recovery. The relaxing and suspension applied to all existing legislation at the time included the CDEMA, RMA and LGA. The Canterbury Recovery Act specifically removed liability for certain actions, and extended

legislative timeframes and, for example, the amount of information required and provided in LIMs. The February 22nd 2011 earthquake caused devastating damage to the Christchurch CBD and wider Canterbury area, including Waimakariri The result of the second earthquake, was the legislative establishment of CERA in April 2011. CERA was established to be the agency leading and coordinating the ongoing recovery efforts through managing: insurance, welfare, economic recovery, planning, infrastructure, communication and decision-making (Canterbury Earthquake Recovery Authority). CERA has implemented strategies, including the 'Community in Mind Strategy' and 'Recovery Strategy' to guide the rebuild and recovery process for the Canterbury region (Canterbury Earthquake Recovery Authority, 2014).

4.3.1 Legislation from Waimakariri Perspective

The main statues outlined above of the RMA, LGA and CDEMA govern natural hazards planning and have shaped how the Waimakariri District has in the past planned for and addressed natural hazards risk. As the legislation requires, the Waimakariri District Council has a current district plan, the 10 Year Long-Term Community Council Plan, and is a part of the Canterbury CDEM group plan. With the establishment of CERA and its directives, these documents have provided the legislation foundation that the Waimakariri recovery and response efforts have been shaped by. The Canterbury earthquake events have brought to light that the current legislative context for planning in regard to natural hazards is clearly not sufficient. This is evidently due to the need for new legislation to be passed in a time of crises to help guide and aid the response and recovery process. The failings of existing legislation are seldom resolved simply by introducing new legislation. However, it is clear that the previous legislation had significant limitations and that aspects of the law already in place were clearly not being effectively implemented. The next section explores these documents in practice in regard to how they provide for and include resilience and resilience planning.

4.4 Document Analysis Results and Discussion

The following sections provide the results and discussion of the document analysis undertaken through analysing a series of key planning documents relevant to the Waimakariri District case study and the wider New Zealand legislative context. Seven documents were analysed including the RMA, LGA, CDEMA, CDEM Group Plan (Canterbury), Waimakariri District Plan, Waimakariri LTP and the CERA Recovery Strategy. These 'documents' have different institutional standing and importance and therefore are not 'equal'.

4.4.1 Basic Information

An initial assessment of each document was undertaken and basic information extracted to create a sense of understanding, provide the context and background of each document, and a basis from which each document could be explored further. Appendix 6A provides the detailed basic information table and results gained.[7]

4.4.2 Document Interview

Each document was interrogated and analysed through asking a series of questions relating to resilience and resilience planning. The concept of resilience planning has yet to be institutionalised in New Zealand and therefore exploring how the concept of resilience is incorporated into New Zealand law provides a useful reference point for the document analysis process. Appendix 6B outlines the questions asked and results gained from the document analysis in a table. Below provides a brief summary and discussion of these results.

Of the seven documents analysed, there was no emphasis on resilience planning and little emphasis on the concept of resilience. One document (the RMA) had no emphasis given to including or utilising resilience. Four documents (the LGA, CDEMA, Waimakariri District Plan and LTP) also did not utilise resilience planning, although unlike the RMA, some subtle links to resilience and its core principles were present. An example of this from the Waimakariri LTP (2012) was:

> *"… harm to people from man-made hazards is minimised and the district has the capacity and resilience to respond positively and effectively to natural disasters" (7).*

While not specifically referring to resilience planning, this small excerpt does tie back to the foundations of resilience planning in regard to positively, effectively and efficiently being able to address the effects of natural hazards if and when they occur. Subtle references such as this were also evident across other documents, but relatively minimalistic. These links have been made between the documents and resilience planning principles based purely on the literature review and an understanding of resilience planning. It should be assumed that the term resilience was intentional in the document in a general manner, rather than as an explicit reference to the recently developed concept of resilience planning. Therefore, emphasis and meaningful inclusion of the concept into practice is unlikely to have taken place yet. The final two documents, the CERA Recovery Strategy and the Canterbury CDEM Group Plan, were the only documents that appeared to have some emphasis on resilience through its key principles. Links were identifiable to resilience through the core of the strategy, for example, "*strengthening the resilience of the community*", and "*building community resilience for the long term to create better community outcomes*" (Canterbury Earthquake Recovery Authority, 2012b, pp8). Furthermore, the Canterbury CDEM Group Plan tied back to resilience and resilience planning

[7] The document analysis results for both the basic information and document interrogation (as seen in Sections 4.4.1 and 4.4.2) have drawn on the key planning legislation in New Zealand including: (Canterbury Civil Defence and Emergency Management Group Plan, 2014; Canterbury Earthquake Recovery Authority, 2012b; Civil Defence and Emergency Management Act, 2002; Local Government Act, 2002; Resource Management Act, 1991; WDC, 2005, 2012).

through its strategic vision of "*Resilient Canterbury*" and its set vision to "*create socially and physically resilient communities to reduce vulnerabilities and in turn improve capacity to respond to any emergency event effectively and quickly"* (Canterbury Civil Defence and Emergency Management Group Plan, 2014, pp11). The focus on resilience in regards to its core principles and purpose are unsurprising in both documents, given the earthquakes which have placed direct focus on the concept of resilience and planning, and as such the strategy developed afterwards is framed around this and that resilience is the core purpose of the CDEM plans. As the documents clearly outline, the CDEMA is the only law in New Zealand that explicitly identifies resilience. However, it relies upon the RMA among other legislation for reduction and recovery provisions for natural hazards. In practice, communities make decisions based on the implementation of the range of legislation. As such, even though some documents do not focus on resilience while others do, a resilience planning approach could potentially be given effect through a holistic application of the CDEMA, LGA and RMA; this focus, however, has yet to emerge in New Zealand.

The documents were analysed to reveal what key principles of resilience were evident. The purpose of this was to determine how the current planning documents reflect resilience. Table 4 provides a summary of the documents and the key resilience principles that were provided for. From this analysis, the consideration for what was included and deemed relevant in these results was chosen based on: i) a connection fitting with resilience and its core purpose and principles; and ii) an ability to build and think about resilience.

Table 4: Resilience Principles

DOCUMENT	RESILIENCE PRINCIPLES
Civil Defence and Emergency Management Act	Ensuring the 'whole' community's well-being, safety and stability is maintained
	Effective response and recovery within communities
	Ability to overcome any hazard event, harm or loss associated with any emergency positively and quickly
	Communities can positively respond to adverse effects and continue to function effectively
	Communities can provide for their own well-being; cope on their own with their own resources
Canterbury Civil Defence and Emergency Plan	Reduce the impact and devastation of emergency/hazard events
	Communities and emergency response groups who are well prepared – preparedness
	Respond effectively and quickly
	Enable communities to rebuild better and stronger
	Collective action
	Enhancing capacities to cope
	Communities can respond and cope together successfully
	Learn from past events and create new positive futures
	Reducing vulnerability and improving capacity to cope
Waimakariri District Plan	Adaptive capacity
	Preparedness; being better prepared for emergency events
	Good/positive outcomes in the face of adversity
	Communities responding on their own and being able to help themselves

Waimakariri Long Term Plan	Promoting and ensuring the well-being of the community
	Ensuring safe, stable communities
CERA Recovery Strategy	Build back better
	Creating new normal
	Adaptability
	Safety and well-being of community
	Capacity of community to cope with uncertainty
	Cope on their own and build own resilience

From the table it is evident that the RMA and LGA are not included as the analysis of these documents revealed no inclusion or use of resilience principles. In all remaining five documents, resilience principles were evident to varying degrees. Naturally, due to the foundational focus of the CDEM Act, Group Plan and the CERA Recovery Strategy on resilience, those three documents identified the highest number of resilience planning principles which was expected. The remaining documents, including the Waimakariri District Plan and LTP, similarly reflected only a small level of inclusion of resilience related principles. Across all the documents analysed from the Waimakariri case study and New Zealand planning legislative setting, the topics that were identified most regularly in each case included:

- The safety and well-being of the community is stable and maintainable;
- Communities can cope on their own, using their own resources;
- Positive response to adversity.

The documents were each investigated to determine if and what key resilience planning characteristics were included and provided for. All of the documents analysed, excluding the RMA, identified a series of resilience planning characteristics and a summary of the findings of resilience planning characteristics is given below:

- *Leadership:* Identified in two documents (LGA, CERA Recovery Strategy);
- *Communication:* Identified in five documents (LGA, CDEMA, Waimakariri District Plan, Canterbury CDEM Plan, CERA Recovery Strategy);
- *Social Learning/education:* Identified in three documents (CDEMA, Waimakariri District Plan, Canterbury CDEM Plan);
- *Participatory Approach:* Identified in two documents (CDEMA, Canterbury CDEM Plan);
- *Social Capital:* Identified in three documents (Waimakariri 10 Year Long Term Plan, Canterbury CDEM Plan, CERA Recovery Strategy);
- *Reflection:* Identified in one document (Canterbury CDEM Plan);
- *Innovation:* Identified in one document (CERA Recovery Strategy).

Each of the characteristics outlined above were evident and being used across the key documents. However, it is important to acknowledge that none were incorporated for the purpose of resilience planning, but rather for other focus points across the various documents. This can be reasonably assumed as resilience planning is relatively new, so it would not be expected that these characteristics would emerge for such a purpose. The identification of characteristics which align with those for resilience planning is positive as it helps provide

potential scope to incorporate resilience planning into these documents. The identifiable actions in these documents also closely align with those outlined in the resilience planning scholarship and the key informant interviews. This is important as the consistency building between different sources clearly begins to reinforce what the necessary components for operationalising resilience planning in practice may be.

Based upon the resilience characteristics identified, each of the documents were analysed to identify if it was clear who was or should be responsible for operationalising such characteristics. In four documents (the RMA, LGA, Waimakariri District Plan and LTP) the responsibilities for operationalising the characteristics were not evident. This reflects that amongst key planning documents, the idea of responsibilities in regard to resilience and resilience planning characteristics is not adequately addressed. It does raise the question that if individuals just assume that the characteristics are in the documents then someone else, for example councils, will just naturally assume responsibility for carrying out the actions required for such characteristics. The lack of responsibility identification across these documents is concerning. If resilience planning is to be practically implemented, responsibility should be addressed so that it is obvious what needs to be done and by whom. In the remaining three documents (CDEMA, Canterbury CDEM Group Plan and the CERA Recovery Strategy) the responsibility for the characteristics identified and linked to resilience planning were evident and clearly discussed. In each of the three documents it was noted that the responsibility is joint where it was suggested that: "*It must be collaborative, no one group, person or agency can be given sole responsibility"* (Canterbury Earthquake Recovery Authority, 2012b, pp20). It was identified that the Council and community must both be involved, but noted the Council has slightly greater responsibility in ensuring the processes take place and characteristics utilised. This insight from the documents is important as it aligns with the findings from the case study interviews where it was similarly noted that a collaborative joint responsibility was crucial for resilience planning and its associated characteristics for practice. However, within the current planning documents as highlighted, there is a need to address and clarify this before resilience planning can be progressed.

The documents were examined to reveal whether resilience is discussed as a measure that will improve capacities to cope and prepare for future hazard events. Analysis of all seven documents highlighted that five (the RMA, LGA, CDEMA, CERA Recovery Strategy, Waimakariri LTP) of the documents did not mention resilience in such way. However, the Canterbury CDEM Group Plan and the Waimakariri District Plan made reference to the following points which reflect a tie back to resilience being a positive measure for dealing with future hazard events:

> "… *emergencies will be managed, and recovery achieved more effectively and efficiently when planned for in advance"* (Waimakariri District Plan, 2005, s8.1.2).

> *"… a resilient Canterbury will be more resilient to the impact of emergency events … and make the community more aware and prepared to hazards being faced in Canterbury"* (Canterbury CDEM Group Plan, 2014, pp8).

Overall, the key planning documents in Waimakariri and at the wider New Zealand level, as the results have indicated, have little focus or detail provided for resilience and as such resilience planning. Even the idea of resilience, which has been used in practice for a long time, lacks a prominent focus in many cases. As such, it is clear that the findings from the documents were relatively insignificant for both resilience and resilience planning. This is unsurprising considering that resilience planning is relatively new and therefore would not have had the chance to be incorporated into these documents. For the most part these are extensive planning documents which do not get updated when new topics or planning approaches come to light, and as such it would not be expected that significant incorporations and links to resilience planning would be identified at this stage. The lack of resilience planning focus furthermore supports and reinforces that a resilience planning approach, particularly in New Zealand, is not yet in practice and is still relatively conceptual.

For resilience planning to transition and work in practice, the documents which lead planning in New Zealand cannot remain as they are with little focus on resilience; things need to be done different and change would be required. The legislative planning setting in New Zealand can be thought of as a piece of architecture; to bring in resilience planning and see it incorporated into this space will require the planning architecture to change. The question this raises, which will be faced as resilience planning continues to evolve, is how the systemic change required can be prompted to incorporate resilience planning meaningfully and effectively in the future. This is an area which will require further exploration and research to determine how to best achieve this.

4.5 Conclusion

This chapter has provided the background context of the Waimakariri District, which is the focus for this case study research. As described, the Waimakariri District is located in the Canterbury region in New Zealand. The district has been struck and severely devastated by the 2010-2011 Canterbury earthquake events. The earthquakes had a massive impact on the district financially, socially, physically and emotionally, yet despite this the district has managed to have a positive response and recovery experience.

The legislative context for planning based upon the RMA, LGA and CDEMA were outlined. These statutes together provide the planning tool kit for which the Waimakariri and wider New Zealand localities rely on, and also have shaped and defined the recovery approaches in the Waimakariri case.

The document analysis of the key legislations, plans and policies, which are central to the Waimakariri planning process, was described. The analysis revealed that the current planning documents which are relied upon place little focus on resilience and resilience planning. It was identified that in order to adequately address resilience planning, significant changes would be required to the key planning documents. The next chapter will explore what people think about resilience planning and the current planning/legislative context from the Waimakariri perspective.

Chapter 5
Perceptions About Resilience and Resilience Planning in the Waimakariri District

5.1 Introduction

This chapter presents and reflects on the results and observations from the data obtained from the key informant interviews in order to fulfill the aims and objectives of this research, through identifying the barriers and opportunities for resilience planning's practical institutionalisation, exploring how it can be operationalised in the New Zealand context, and developing a best practice framework. The chapter is organised with the presentation of results followed by discussion. The information is categorised by the interview questions, themes and sub-themes within each section. The results and discussion progresses through the following order of the interview questions two, four, three, five, six and seven. The results and discussion together help to bridge the gap between current resilience planning theory and practice.

5.2 Awareness of Resilience Planning

Interestingly, the resilience planning concept is framed by high levels of awareness by scholars, practitioners and communities. However, in spite of this awareness resilience planning is not being translated into practice internationally or within New Zealand. This raises a pertinent question: if resilience planning is a known concept which is familiar and recognised, why is it that it is not used or being seen in practice today? Resilience planning is presented in the literature as an umbrella term of a planning approach, which works to help cities and communities develop the necessary capacity to meet the challenges of and positively respond to natural hazards today in order to create stronger, more stable futures (Davoudi, 2012; Dos Santos & Partidario, 2011; Shaw, 2012; Wilkinson, 2012).

The purpose of the first interview question (Are you aware of resilience planning?) was to gain an understanding of key informants' awareness of resilience planning and what their perceptions of the concept were. The awareness of resilience planning was gauged to be high in Waimakariri. Of the 10 participants, all responded that they were aware of resilience planning. Participants commented:

> *"Yes, I'm certainly familiar with the concept and have a good perception of resilience planning".*

> *"Yes, I know about resilience planning and I'm quite interested in the concept".*

As the results highlight, the Waimakariri key informants have a good awareness of resilience planning. It is evident, however, that there are clear variations between the level and type of awareness being reflected in practice. Despite claims of familiarity, the distinction between the concepts of resilience and resilience planning was evidently being misperceived. A high level awareness of the concept of resilience was clear across the majority of the interviewees. In light of the recent Canterbury earthquakes it was apparent that there was familiarity with the concept of resilience, the importance of building and fostering resilient communities, an awareness that past communities have not been resilient, and that current practices do not help to build resilience. While it was evident that there was a broader understanding of resilience, this did not

reflect an awareness of resilience planning and how it differs from traditional planning approaches, which few appeared to have.

It was apparent that two interviewees had a comprehensive awareness of resilience planning specifically, which was distinctly different to the majority of the other Waimakariri key informants. These two participants revealed a detailed understanding about resilience planning by presenting a familiarity of the emerging resilience planning scholarship, articulating its key elements and the challenge that still remains in putting resilience planning into real-world practice. The interviewees in these two instances referred to resilience planning in terms of the planning system and process, and its potential role and place within this as a new approach. Like the majority of participants, an understanding of the imperative of resilience was similarly recognised, but it was discussed in a detailed planning context with regard to fostering the emerging approach. This level of thinking reveals a more comprehensive understanding of resilience planning. It is understandable that few people had a good awareness of resilience planning given the concept is relatively new. The difference between the types of awareness reflected in practice in Waimakariri provides interesting insight as it reveals that while people perceive they are aware of the concept, there are in fact clear variances and disparities in the levels of familiarity with it. This highlights a divide and lack of common understanding and awareness of resilience planning across different practitioners, despite the existence of expanding scholarship. This is significant, as I would argue that if people are not properly aware of resilience planning and a common understanding is not shared, it will inevitably create struggles and complexities when translating the approach into practice. The distinction between the reality of awareness in practice provides a useful insight into a foundational issue for resilience planning that needs to be addressed in order to ensure the success and viability of the planning approach. The variance of awareness levels would no doubt be reflective of other cases across New Zealand and likely internationally. This extremely useful insight helps to demonstrate how the concept of resilience planning is understood in the real world.

For eight of the participants, it was commonly felt that the 2010-2011 Canterbury earthquakes had a direct influence on their level of awareness about resilience and resilience planning. It was stated that:

> *"The awareness of resilience planning is directly due to the earthquakes. Had we not experienced the earthquakes I doubt that the awareness and interest which is currently present would be the same".*

This reveals that it took the devastation and destruction of the earthquakes for resilience planning to gain attention. Interestingly, it was commonly felt that without the earthquakes it would be highly questionable as to whether the current resilience planning conversations would be taking place. There was a general belief across the participants interviewed that the earthquakes provided a wake-up call and strong push for the Waimakariri community into the resilience planning space, which under normal non-disaster circumstances would not be

prominent or of great interest. As such, it can be said that in the Waimakariri context there is a strong likelihood that the awareness around resilience and resilience planning would be significantly less than is currently evident. This does not mean to say that eventually resilience planning would not have become part of planning conversations on the ground, but the conversations would simply not be happening to the same extent that they are now today. In terms of why the earthquakes have served as a catalyst for the surfacing of resilience planning's awareness and presence in the Waimakariri context, participants expressed that the earthquakes sharply brought into focus the reality of the turbulent and unpredictable natural hazards environment. Furthermore, in Waimakariri and wider Canterbury region there was agreement that a tough but necessary lesson was learnt about needing to do more than just trying to keep people out of harm's way and relying on mitigation measures. This belief has ultimately fostered the rise of resilience planning and its awareness. These circumstances align with why and how resilience planning has emerged internationally in academic scholarship (see Chapter 3, Section 3.5).

Of the participants, seven noted that particularly within Waimakariri and wider Canterbury region everyone appeared to be moving into the resilience planning space. Resilience planning was perceived as being very trendy, timely and a popular topic currently as a result of the devastation from the earthquakes; *"resilience planning has become a trending buzz word".* Half of the participants noted that their awareness of the buzz concept may not be the same as the next person's understanding because it was perceived as having varying definitions. No one single common view or way of defining resilience planning was identified during my interviews. Four participants noted that while resilience planning is a buzz word which people know of, the concept is not yet well developed in the operational sense; it is not yet used in practice. Interestingly, these results are reflective of the reality of why resilience planning, despite its high associated awareness, is not in practice on the ground. It was clear in Waimakariri that resilience planning is not being used, nor were the practitioners aware of examples of it being used in practice. When asked to explain why this was the case they stated:

> *"Because resilience planning is still very much in the abstract and caught up in the complex academic conceptions of what it is and what it means. I don't think the time and attention has been placed yet in depicting and illustrating it for operational use"* (Council planner).

Other interviewees commented that they were aware of resilience planning and were positive about its future but were not using it in practice and were not aware of it in an operational sense. Prevailing planning practice is not effectively building resilience and the challenge is to understand the barriers to doing so and unlocking opportunities that do so. This insight reinforces leading literature by scholars such as Wilkinson (2012) who noted that resilience planning is now widely acknowledged and discussed, but it remains conceptual and not yet translated out into practice and this is where the challenge lies. It is interesting that it is commonly recognised in both practice and literature that resilience planning is not yet being

practically implemented, but the literature does not explore or provide for why this is the case. The lack of resilience planning in practice ties directly back into the different levels of awareness, as previously alluded to in the case study context. The fact that resilience planning is yet to be put into practice is due it being perceived as very elusive; it is hard to express and define. Currently, the resilience planning approach is very unclear and vague and interviewees emphasised this concern. Those interviewed also felt that it is too often talked about by academics in the abstract and it lacked the detail for practice that is required. These factors make it difficult for communities and practitioners to connect with resilience planning. Furthermore, both within the literature and in practice (as the analysis of Waimakariri planning documents and wider New Zealand legislation revealed) there is no guidance provided or recognition of resilience planning to date. As such, there is no clear picture or understanding of its use in practice, how to implement it effectively, and what it will look like once implemented. This was supported clearly by interviewees who talked about resilience planning being like a mirage in a desert, with nothing being overly clear. While there is a basic knowledge of resilience planning, scholarship is yet to address the reality that ambiguities in its conceptualisation limit its effective application in communities. It is ambiguous in terms of translating it into practice and simply the different levels of awareness identified reinforce the fact that there are practical issues surrounding the complexity and elusiveness of resilience planning. This is one reason why we are yet to see it in practice. It provides a nice conceptual model, but it is just not clear how to use it or how to put it into practice.

As demonstrated, the inconsistencies in awareness of resilience planning have negative implications. While a clear definition of resilience planning remains elusive to communities it will continue to not be used in practice, remaining conceptual only. As highlighted in Waimakariri, without a clear definition in communities it will be extremely difficult for its positive and beneficial future to be explored. Unless work is progressed on transitioning resilience planning out of the abstract and clearly depicting it, in practice will not happen.

5.3 Institutionalising Resilience Planning

5.3.1 Building a Resilience Planning Culture

Creating the right environment through building a resilience planning culture was acknowledged, but not prompted by a set interview question. This idea emerged naturally during conversations around awareness and responsibilities. Unexpectedly, this was commonly identified by seven interviewees as being an essential ingredient to institutionalising resilience planning into practice. The participants similarly stated that:

> *"Resilience planning must be fed into practice through an appropriate space, culture and environment. The right environment does not exist currently, so if resilience planning is to succeed in being institutionalised effectively then one priority must be to begin creating a resilience planning culture".*

As the view of needing to construct a resilience planning culture emerged naturally through seven of the interviews, it was particularly clear that the idea of having the right enabling environment for the planning approach is fundamentally important to its success and effectiveness in practice. There was a sense of belief that such culture provides the key foundation to positively institutionalising resilience planning into everyday practice. Commonly, the interviews identified institutions and management as being central to the development of the required resilience planning culture.

To make resilience planning a reality for current planning practice, and to create the culture required, it was evident that it must become a part of the institutions through which decisions are made. Resilience planning represents a shift in the operating planning environment, and as such institutional change is required to the processes that allow decisions to be informed and made differently to support the new planning approach. When institutionalisation is discussed it is commonly referred to, and thought of, in a very formal sense of the space through which decisions are made – the government, agencies, organisations, laws and administration (Dovers & Hezri, 2010). What emerged from the Waimakariri experience is that the traditional perception of institutionalisation, if solely utilised, will not foster the right culture for resilience planning, inhibiting its potential for communities. It was stated for example that:

> *"Resilience planning won't work if there are expectations that it is just a council or government responsibility and if there is a law for it then that is all that is needed; resilience planning's institutionalization needs to be much more diverse than that"* (Council planner).

It is evident that in coordinating the resilience planning culture it is necessary to have the established formal side of institutions, but importantly also a softer informal underbelly of institutions (norms, culture and sociocultural rules). This was evident from the Waimakariri perspective where it was frequently acknowledge that, "*The tricky thing when thinking about resilience planning is that it requires balance which we are not overly use to – it needs formal and informal institutional structures and processes in order for it to be tailored and context specific to the location in question".* Interestingly, this institutional imperative has also been sought as a key pathway for climate change as recognised in work by (Glavovic, 2014). This is significant for vindicating this argument in light of the lack of resilience planning scholarship addressing this line of thinking.

A management system based around responsibility is necessary to collectively work with institutions to form the culture required to institutionalise resilience planning. The purpose of one of the set interview questions (Who should be responsible for resilience planning?) was to gain insight into who should be responsible for resilience planning and its management in practice. Analysis of the interviews highlighted that the responsibility for institutionalising and carrying out resilience planning was perceived to be joint and shared by all 10 participants. Every participant identified the imperative of resilience planning being based upon collective responsibility in

order to see the greatest positive outcomes of the planning approach realised. A participant's view highlighting this was:

> *"No one group or person is or ever should be responsible for carrying out resilience planning, it simply won't work that way. It needs to be everyone's responsibility, it must be about co-responsibility as in the end resilience planning will benefit and work for the whole community not just specific individuals. As such everyone must assume a critical role in the process".*

It is evident that within the nature of the institutions required, comes the need for cooperative management, which for resilience planning means involving individuals, households, neighbourhoods, districts, regions, organizations and the government. For effective management of resilience planning, it is clear that every individual has a role to play. The responsibility for institutionalising and controlling resilience planning needs to be owned and taken on board by all people. There could be a potential danger if it is everyone's responsibility in that, then no one will front up and take on this responsibility in the expectation that everyone else will do it. However, this problem could be overcome through clearly defining the different roles and responsibilities in building the shared responsibility for resilience planning. Interestingly, this was strongly reflected in the case of Waimakariri where it was, on numerous occasions, acknowledged that "*there can't be the expectation that someone else will govern and control the process and make the decisions, but rather it needs to be collaborative and inclusive with the whole community*". Resilience planning must be a process which unites together the government, councils, civil sector and community, and promotes an inclusive culture based on arrangements to improve cooperation, coordination and integration in order to work together in the interest of the pursuit towards resilience. This was reflective of current planning documents in the case of Waimakariri, in particular, what the Canterbury CDEM Group Plan and the CERA Recovery Strategy which is joint, collaborative responsibility (no one sole group, individual or agency will be able to achieve this on their own).

Pulling together the type of institutions, responsibilities and management required, which emerged from the research, helps to frame the culture which must be developed for resilience planning to be based on for practice to achieve success. It is clear that the culture that needs to built for resilience planning is one which is framed by a cooperative and inclusive management of the principal actors responsible for interacting with the range of formal (laws, government, administration) and informal (culture and norms) institutions and provisions to result and enable social choices and decisions being made to shape resilience planning's prospects.

In order to realise and build this culture, so that decisions and progress can be made in practice, resilience planning needs to become socialised so that it is becomes legitimate, trusted and supported by councils and the community. This sheds light on the need to interact and canvass the concept across a wide range of scales – nationally, regionally, within districts and individually – so that it influences positive feelings and attitudes towards resilience planning

in order to support its institutionalisation. The perception of socialising being important to the process of resilience planning and building the right culture, while not addressed in any current literature, was highlighted in Waimakariri through key informant interviews. An example was the suggestion that a first fundamental step, before even beginning to look at putting resilience planning into practice, is to: "*infuse it into the communities, you know we need to introduce the concept into the social domain within the community and get the conversations and discussions going first, get the support, build the trust and let people make up their own minds about resilience planning and then it will feed down into practice much more seamlessly" (*Council planner*)*. In order to achieve this, it would require the best practice characteristics for resilience planning such as social capital and networks, communication and social learning to occur to influence and enable the key features of trust and legitimacy to develop so as to support the resilience planning endeavour. This is significant, as it highlights that the entire process of institutionalising and operationalising resilience planning through best practice characteristics are tied and linked; they are dependent upon each other in order to ensure the success of resilience planning in practice.

5.3.1 Resilience Planning's Integration Into Planning Systems and Processes

For resilience planning to be institutionalised into practice in New Zealand specifically for natural hazards risk, it is inevitable that it will have to be implemented into the planning space. Resilience planning, to have any practical application, must be integrated into the processes that underpin the planning system; it must be provided for in a documented form to allow for the planning and decision-making processes to give effect to resilience planning and its principles. One insight gained through reviewing the scholarship was the significant lack of guidance as to how to institutionalise and appropriately provide for and integrate resilience planning into the current planning system (e.g. in governing legislation or local plans). This absence of direction for resilience planning reflects a key contributor as to why it is yet to be enabled into practice for natural hazard risk.

Within the current New Zealand planning system there are a range of various key guiding legislations, plans and policies (e.g the RMA and district plans). It could reasonably be expected that resilience planning could be put into practice and provided for through the current leading and prevailing planning documents. The concept could be integrated into the existing plans, policies and legislation, which guide the planning process throughout New Zealand. The purpose of the fifth interview question (What prevailing plans, policies or programs are you involved with that could assist or impede a resilience planning approach?) was used to gauge an understanding of how and where practitioners in New Zealand believe resilience planning should be institutionalised. Of the 10 participants interviewed, only nine responded to this part of the interview process, as one participant was not directly involved with any plans or policies and did not feel as though they had enough knowledge to provide an opinion on this. There were four participants who thought *resilience* and *resilience planning* was not adequately addressed in the existing legislative setting and plans. Participants highlighting this view stated:

> *"Our current provisions for planning are pretty silent on the concept of resilience with a couple of minor exceptions. Really they don't provide for resilience or help yet to build resilient communities"* (Council staff).

The same four participants noted a common resolve around the need to be very careful and cautious in resilience planning's inclusion, particularly in the existing district plan and the RMA, so that it does not become like sustainability – overused and its purpose conflicted and lost.

The legislative frameworks of the RMA and LGA, and the district plan, were acknowledged by eight participants to impede resilience planning's institutionalisation. Participants acknowledged that the National CDEMA, the Canterbury CDEM Group Plan and the Waimakariri LTP have the potential to assist resilience planning's institutionalisation. These existing planning documents were identified by four interviewees as potentially being able to incorporate resilience planning, as they already, "*have some focus on resilience and therefore I guess could be extended further to provide more detail and the space for resilience planning"* (Council staff).

Interestingly, despite some recognition given to the above planning provisions, whether impeding or assisting resilience planning, seven respondents conveyed that this formal planning space was unsuitable for the institutionalisation of resilience planning. Interviewees reported being "*skeptical and concerned about producing resilience planning through such documents".* There was a strong feeling of cautiousness and hesitation from all the respondents about progressing with resilience planning down such a formal planning path. This was exemplified in the interviews, it being stated that:

> "*The formal planning documentation are fairly blunt and relatively global documents; they are primarily a tool in terms of hazards for just risk management. This would provide difficulties as such to bring resilience planning in effectively as it is not as black and white as that"* (Council planner).

As the document analysis process revealed, the RMA, LGA and Waimakariri District Plan do not currently make any reference to resilience planning, or even the idea of resilience. This is unsurprising given that these laws were framed in the 1980s-1990s and early 2000s and revised over time, and resilience planning has only emerged as a concept over the last few years. However, resilience specifically has been a known concept for a long time and is central to the CDEM Act and its relevance has been reinforced by the Canterbury earthquakes. While its relevance has been reinforced, it is yet to have a substantial role in the key planning legislations and plans. This insight is reflective of what practitioners in Waimakariri revealed – that those documents per se are not suitable for resilience planning. It is clear that the natural hazard risk environment will change and is not static. Putting resilience planning into practice, as it is now, is a good start but it must be provided for in such a way that it allows for it to change and be adapted as the surrounding landscape of information, knowledge, expertise and insights evolves. As reflected from the Waimakariri perspectives, the current planning provisions

are not conducive to being easily adaptable and flexible because they are highly complex, costly and time-consuming to change.

Through the analysis of the interviews, it was clear that in Waimakariri there was a greater appetite from the interviewees supporting the need for a more informal approach to resilience planning and its institutionalization into practice. It was predominantly clear by the vast majority of participants from the Waimakariri case study that the appropriate and most suitable space for resilience planning to be institutionalised would be through developing an informal framework, a set of guidelines, considerations criteria or a specific resilience planning strategy. Resilience planning was recognised as being an ongoing and iterative process. As such, there was greater interest present in the need for institutionalising a process for resilience planning based upon some guidelines, but not in producing a very formal and tight resiliency plan or including resilience planning into the Waimakariri District Plan. This was evident where a Council planner stated that, "*we are in a document centric world, particularly in the planning space and the problem with this is that it often creates a mindset of oh well we have documented and cover that and then it's forgotten about, a bit like sustainability*". Utilising a more informal assisting approach stands out as allowing a useful means to provide for, give consideration to, and use resilience planning in practice, which would allow as the respondents reflected, to have input into the top tier or more formalided planning space. Providing for resilience planning through establishing a strategy, criteria or framework creates the necessary space for the approach, which could then infused and fed down into the ongoing decision-making and planning process. The more informal approach as outlined by Waimakariri practitioners would positively provide a means to bring resilience planning into practice without having the stringent, rigid and permanent components of formal planning documents. A clear preference discovered during the interviews was for a more flexible and adaptable approach, to transform and evolve when required, which is central to resilience planning.

While it is understood that participants had strong views against institutionalising resilience planning into practice through the formalised planning space, it is important to consider how the prevailing planning space can be utilised. It is time to inject resilience and resilience planning into practice in New Zealand and build a common resolve around these concepts in order to overcome barriers and utilise opportunities. It must be considered that it does not have to be a choice between formal and informal approaches to institutionalisation. It is important to recognise the challenge of changing the formal provisions in prevailing political environments and accept that for now more progress and success, particularly in practitioner's views, is likely to be made in the informal setting. However, at some point, higher-level government support will be important; the current formalised legislation and plans in New Zealand set the priorities and focus points for planning in this country and resilience planning should become a part of this framework. There needs to be alignment between the formal and informal to some extent, and further research and attention is evidently required to explore how this is best achieved, and

how the challenges felt by practitioners can be overcome to reach a meaningful middle ground for resilience planning.

5.4 Barriers to Institutionalizing Resilience Planning

As the resilience planning approach is new and conceptual, transitioning it into practice will inevitably have to contend with some resistance and barriers. The literature review and above discussion support and have highlighted this. In order for resilience planning to be a practical reality, it is important to understand what in the local context is undermining resilience and how those barriers might be overcome to support resilience planning. The purpose of the third interview question (What are the barriers to resilience planning institutionalisation?) was to identify from the Waimakariri context what the specific barriers are to institutionalising resilience planning, specifically in New Zealand. Waimakariri case study practitioners identified several key barriers to seeing resilience planning institutionalised. From analyzing the interview responses, nine primary barriers were highlighted which are outlined in Figure 6 below.

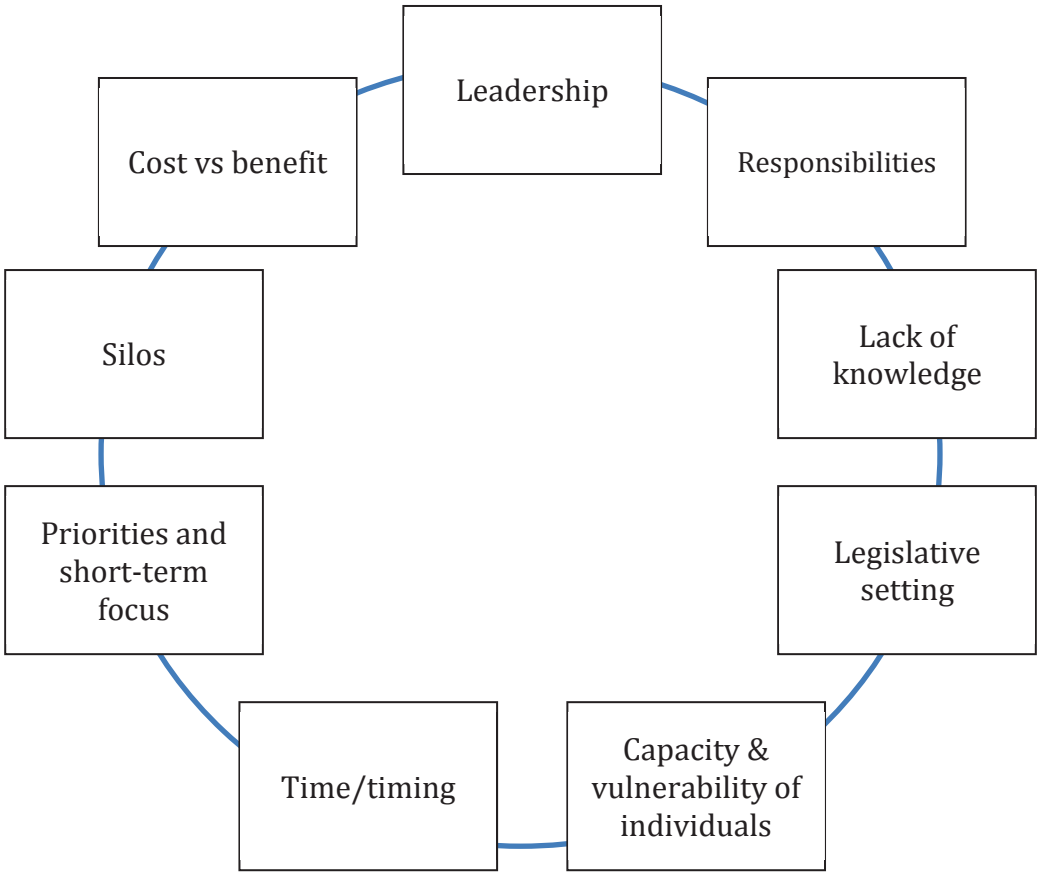

Figure 6: Resilience Planning Institutionalisation Barriers

In the current resilience planning literature, barriers to institutionalising resilience planning are not explored or made reference to. Positively, the Waimakariri case study was able to begin to bridge this gap with all 10 respondents identifying the series of barriers outlined above. It was evident that the issues identified reflect barriers, as opposed to limits, as the respondents in all cases were aware of them and encouragingly could find opportunities and enablers to counteract the present barriers. In regard to climate change adaptation (see Section 3.7.3),

Jones and Boyd (2011) frame barriers in terms of three categories: natural, social and human and informational. Interestingly, the barriers influencing climate change are reflective of, and similarly reinforce, those identified for resilience planning by Waimakariri practitioners. As such, the Jones and Boyd (2011) categories provide a useful and meaningful approach to separate, understand and explore the specific resilience planning barriers identified which is carried out below.

5.4.1 Natural Barriers

The interview data revealed that respondents in Waimakariri did not identify any natural barriers that would ultimately influence resilience planning's institutionalisation. The lack of attention on natural barriers in the interviews is a distinct point of difference to the climate change adaptation scholarship and the Jones and Boyd (2011) model. Despite the lack of response towards this category, it is inevitable that natural barriers to an extent would be a part of the process of institutionalising resilience planning. The reality is that in wider Canterbury there are very evident natural barriers which underpin the planning challenges in the district. These barriers include liquefaction-prone soils and low-lying land at the coast which are prone to sea level rise. While such natural barriers were not recognised in the case study, it is important to understand that they do exist and must be considered when looking at institutionalising resilience planning. As this lacked attention in the case study, it requires further research to gain more detail and context to assist the institutionalisation process for resilience planning.

5.4.2 Social Barriers

Both planning practitioners and local community members in Waimakariri identified a wide variety of social barriers to institutionalising resilience planning. This was evident through interviewees recognising that resilience planning sounds great in theory, but acknowledged real difficulties in developing and setting it in practice, which ultimately reflects the challenge in resilience planning's practical application. The social barriers corresponding to challenging resilience planning's institutionalisation included: priorities and short-term focus and memories; responsibilities; silos; leadership; lack of knowledge; individual vulnerability and capacity; cost versus benefit; time/timing; and the political and legislative context. It is important in this case to recognise that some of the barriers including time, short-term focus and cost versus benefit might manifest in both social and human and informational categories. However, in this instance they were recognised as being more social due to clear predominant factors of experiences, perceptions, beliefs and public trust appearing to shape the barriers, similarly noted in the literature (Jones & Boyd, 2011).

Community priorities and short-term focus and memories were together identified as two predominant and interconnected social barriers to institutionalising resilience planning in Waimakariri. This was evident through six of the interviewees recognising a lack of priority on resilience planning as a leading barrier. It could easily be assumed that resilience planning would be of particular focus and a strong priority for the Canterbury community in light of their

recent experiences. However, as interviewees noted, every individual in the community due to the earthquakes is in a different place with different priorities currently. For the many devastated by the earthquakes, the priority is putting their lives back together, not building and fostering resilience planning. For others, the memories of the events are starting to fade and normal routines are continuing. As this occurs, the priorities and attention on natural hazards begins to fade so that more immediate concerns of dealing with day-to-day life can come to the forefront. The different priorities of communities and lack of priorities on the resilience planning imperative in practice as such was evident as a barrier as interviewees' observations commonly reflected that:

> "*You have to be willing to invest in the long term to enable resilience planning, but the problem is that people don't want to invest in the long term. All our focus is on the short term and medium term which simply won't work for resilience planning in practice; it challenges the very long-term visionary nature of the approach. What compounds this and makes it more challenging is people's focus on their day-to-day lives and conflicting and different priorities. If you are going to do something like resilience planning and see it in practice, it has to be a priority and people have to appreciate the long term. The reality is that this is not the case, and you end up with a barrier in that people are unwilling and uninterested in engaging and embracing a new path forward like resilience planning".*

This is reflective of the academic literature where in the past it has been widely identified that community priorities often pose as barrier due to tendencies to focus on individual, more pressing daily concerns and have short memories due to a state of myopia, thus challenging any effort to institutionalise new approaches such as resilience planning (Kunreuther & Michel-Kerjan, 2010).

In order to institutionalise resilience planning, there is a prerequisite for responsibilities to be taken across various levels – from the government, local council to communities. This leads to another barrier identified in Waimakariri for institutionalising resilience planning. A lack of willingness to assume *responsibility* to take the necessary actions for achieving resilient outcomes and it being highly unclear who is responsible for carrying out the process was an evident barrier identified by three participants. Of the interviewees who discussed this barrier it was evident that they were referring to two clusters of responsibility: the responsibility of the local practitioners and the council; and the responsibility of the communities. Despite resilience planning being framed positively, Waimakariri practitioners identified with there being a lack of 'will' to take responsibility, which has been reflected in practice through other imperatives. Interviewees noted an institutional climate where those in practice often have a mindset of:

> *"That's not our responsibility, or that's not our role. It just seems to be that basic thing: it's not my job, it's somebody else's. It's a passing the buck thing that seems to happen quite a lot. If people won't take responsibility and responsibilities are not explicitly clear, which is how things are at present and it will ultimately challenge resilience planning; it*

simply won't work without responsibility being taken and people willing to step up" (Community organisation staff member).

As the case study demonstrated, Waimakariri and, in particular, the Canterbury region, is not immune to this mentality. A previous report undertaken in Canterbury post-earthquakes revealed there were concerns about the lack of clarity surrounding responsibilities and, at times, an unwillingness to step up and take ownership across councils. Concerns were expressed by interviewees that these past responsibility issues would carry over and negatively impact the propensity to move forward with resilience planning. The identification of the lack of willingness to take responsibility, as acknowledged in Waimakariri, is understandable given that resilience planning is new, untested and yet to be successfully demonstrated in practice. The notion of a lack of clarity about who is responsible for taking action on resilience planning aspects clearly outlines a barrier. This position is reinforced throughout the literature, as it does not provide for explicit identification of roles and responsibilities for resilience planning, or the necessary mechanisms to hold people and organisations accountable for fulfilling these. As noted in Waimakariri:

> "*Who is responsible for something like resilience planning? Responsibilities in the resilience planning terrain are not clear: what is local government responsible for? What responsibility should the Council have? And what should the individual responsibility be? Without clarity around these ideas how do you even begin to talk about resilience planning".*

It was clear that the responsibility barrier extended beyond the Council and practitioners into the community. The community was highlighted as needing to play an important role in taking responsibility for helping to institutionalise resilience planning. However it was recognised that too often there is the perception from communities that it is not their role and job to be involved in the planning processes and implementing new systems such as resilience planning, and it is this exact mindset which frames the foundation of this barrier. The earthquakes, however, demonstrated communities stepping up and taking on key roles, and as such this barrier may not be as prevalent in Canterbury as perceived. Responsibility is imperative to effectively implementing resilience planning in practice and without it the achievement of resilience outcomes are clearly undermined. It is a significant barrier as it reduces the capacity and support required to institutionalise resilience planning. The interviewees clearly supported this, and felt that it will challenge the very institution of resilience planning if there is no responsibility taken for it, because then there is no commitment and the efforts become worthless.

Institutional silos and silo mentalities are a current issue in Canterbury and within Waimakariri and were identified as a substantial barrier by six participants that would challenge the institutionalisation of resilience planning. Silos, as a barrier, were discussed in the sense of institutional attitudes of working alone and not sharing resources, information and knowledge. The resilience planning literature does not address the barrier of silos and therefore limited guidance and information is available on the topic. However, a report by Enfocus looking at

Canterbury after the earthquakes, which identified failings and issues, did acknowledge silos as being a serious problem across the different councils in Canterbury (Enfocus Ltd, 2011). It expressed shortcomings in governance and inter-governmental cooperation due to the existence of silos, which have been present before, during and after the earthquakes. Silos were evident through a lack of communication and collaboration, both within the district council and between the other (Selwyn, Christchurch and regional) councils across Canterbury. Therefore, it was viewed that the Waimakariri District Council could improve in terms of 'on the ground' relationships with the other influential institutions. This was also clearly reflected within the interviews conducted where the silos were a note of concern as they do not support a united and effective rebuild and recovery environment for Christchurch, negatively influencing on resilience planning. Despite Waimakariri having a relatively positive earthquake experience, a concerning silo culture was noted where the local CDEM officers do not work with the planners, who do not work with the engineers, and so the cycle continues. This type of institutional culture provides an environment inconducive and unsupportive – the complete opposite environment to what resilience planning both requires and works to create. All groups are evidently working in such an independent manner that it results in conflicting messages, visions and priorities through a lack of crucial communication and collaboration, creating significant barriers for institutionalising resilience planning, including reducing the legitimacy of its implementation. It prompts the critical question: How can resilience planning be institutionalised when silos create a mis-matched and conflicted operating environment and resilience planning requires strong relationships, social networks and capital to be successful? Communities will not invest in resilience planning efforts when the leading groups are not working together and presenting a united front, and as such this is an abundantly clear barrier.

High levels of vulnerability and a lack of individual capacity (both on a single person and household basis) was identified by five of the Waimakariri practitioners interviewed as being a significant barrier towards institutionalising resilience planning. The Canterbury earthquakes resulted in creating large pockets of extremely pronounced vulnerability throughout the region including some individuals in Waimakariri. This was perceived as inhibiting portions of the community's ability to directly invest and involve themselves in resilience planning. Practitioners in Waimakariri have acknowledged that this is reflective of the current challenges being experienced. Despite now being four years on since the first earthquake event, it was made clear during the interviews that there are still a large number of people in the community who are 'isolated and desperately struggling'. Resilience planning is directly associated with vulnerability and is emerging as a key planning approach to address and reduce its root causes. Interestingly, what the research has divulged is that it is the very vulnerability in which the resilience planning approach seeks to address which is actually acting as a barrier for institutionalisation. Pronounced vulnerability is a direct barrier to the process, as resilience planning in practice requires support, investment and active engagement from individuals and whole communities. It must be embraced by and built from within the community. However,

pronounced vulnerability directly reduces the ability, interest and desire to do so, which was clear through participants' views stating:

> "*We are dealing with the consequences of not having resilience planning, but you can't make people resilient when they are not ready … people are isolated and desperately struggling so they don't want to talk about resilience planning, they don't have the capacity to be involved or even care – it's not even on their radar screen. That is not a positive space for resilience planning"* (Community organisation staff member; Central government official).

Progressing resilience planning requires positive values and beliefs to exist which, as outlined, is not the case for portions of the Canterbury community. The interviewees reflected upon and reinforced this: *"You can't make people resilient when they are not ready. You certainly can't force them into this space, but you can't just leave those behind and think oh well they will catch up. It simply doesn't work like that and this creates a challenging space to be in when thinking about institutionalising resilience planning*" (Council planner). You cannot expect people to invest in the future of resilience planning when they are stuck in their present and have no picture of what their future looks like. This sheds an important insight into the vulnerability barrier and why it will challenge institutionalising resilience planning. It ultimately reduces the accessibility of implementing resilience planning, as those who the planning approach is directly aiming to work for are not receptive, interested or able to invest and move into such a space.

Cost versus benefit was highlighted to be a barrier to resilience planning being institutionalised by six of the participants. From the Waimakariri participants' perspective, cost versus benefit presents a challenging barrier for resilience planning, as it was recognised that the community will simply not invest if they cannot see the clear benefits. As resilience planning is not in practice, there are no benefits yet to base any cost assessment on to get the support required for practical institutionalisation despite the recognition of the need for such an approach. It was further noted by four interviewees that there are tendencies for risk to be discounted and conceptualised incorrectly, which negatively impacts upon resilience planning's cost versus benefit analysis and its cause for institutionalisation by some individuals, creating a clear cut barrier. Consequently, respondents noted that justification is lacking for 'some' of the community to implement resilience planning:

> "*It primarily comes down to cost versus benefit. Do you invest in something like resilience planning when you think an event like the earthquakes will never happen again? To practically institutionalise resilience planning it will inevitably cost money. Any new options put forward like resilience planning are not going to be adopted easily because they are seen as too expensive in terms of what benefit they will have and the level of risk communities believe they face. Even after the earthquakes, people are still discounting risk and becoming complacent – the benefits do not outweigh the costs. If it is going to cost money, normally a negative view is taken and that's a real challenge to making new approaches and plans work".*

Cost versus benefit is a similar barrier evident in research on climate change, which asserted a similar issue with cost over what the benefits are, and communities not wanting to invest because things such as mitigation measures and new planning approaches seem unwarranted and unjustified (Kunreuther & Michel-Kerjan, 2010). Having been through the earthquakes and witnessing the devastation and destruction, it could reasonably be assumed that cost versus benefit would be irrelevant and not a barrier for the district, as the benefits would be amply clear. It is inevitable that institutionalising resilience planning will be linked to costs, but that cost was conveyed from a Waimakariri perspective as potentially too high when assessed against the perceived benefits. This was clearly understood as a significant barrier in light of recognition of the lack of positive examples and evidence of resilience planning being effective and beneficial in practice, as a basis for community support and investment. Additionally, there is a fragility and unease in Canterbury communities post-earthquakes and people currently are unwilling to take a risk on something like resilience planning when the positive outcomes are at this stage purely conceptual. This is fundamentally a barrier as the reality is that the benefits of resilience planning cannot be presented and exemplified in light of the cost, so it makes it difficult to get the support required to justify the costs to institutionalise resilience planning. This is particularly relevant as some interviewees noted that money could be better spent elsewhere on the recovery and rebuild process, especially where the benefits are clearly visible to the community and therefore supported. As such, cost versus benefit is a key barrier to be contended with before resilience planning can become a practical reality.

Another key barrier to resilience planning's institutionalization identified by seven interviewees in Waimakariri relates to *time and timing*: 1) time-resilience planning requires a long-term focus and will inevitably not be quick to institutionalise; and 2) timing-resilience planning is untimely in light of the current situation in Waimakariri and Canterbury because people are preoccupied with the process of recovery and rebuilding. Resilience planning as a new approach will require the establishment of a proper planning process which the participants in Waimakariri both identified and suggested. In this context, it is important to recognise that resilience planning cannot be put in practice overnight. People have a tendency to focus on short-term horizons, which the literature and interviews both recognised. However, in regard to resilience planning, time is an evident barrier as currently the devastation caused by the earthquakes has caused people to become more focused on short-term outcomes and quick solutions to their current problems. Resilience planning, as a new endeavour, will not be the quick-fix planning approach which can fulfill the short-term demands prevalent particularly in Canterbury. It will take time to build a culture for resilience planning to thrive and slowly integrate into communities. The reality is that such a planning approach does not fit with the current demands and therefore timing is clearly a barrier for resilience planning. With the current post-earthquakes timing it was evident in the interviews conducted that resilience planning would not have the full support and investment needed from the community as people do not want to wait years before they see action. Interestingly, it was directly felt through a small portion of the Waimakariri interviewees

that right now people are still searching for answers and are just not ready for change and the investment required for resilience planning. As such, it is reasonable to suggest that implementing a new approach so soon after a disaster would be untimely. This was reinforced by the Waimakariri community interviewed who stated, "*There is a right and a wrong time to have the conversation about resilience planning. While the community is still broken and struggling, it is potentially not the right time to try and push something like resilience planning"* (Community organisation advocate). While the timing barrier is understood in Waimakariri, it does raise the question that if after a disaster, when lives are being rebuilt and shaped again for the future, is not the right time to bring in something new like resilience planning, then when is?

The final social barrier identified from the Waimakariri case study for resilience planning's institutionalisation was the *current legislative setting.* The legislative setting was identified as a barrier for resilience planning moving into practice for not only the Waimakariri District but across New Zealand by two of the interviewees. While this barrier was not one of the most significant in terms of the level of response, it is important to note because it is particularly relevant and applicable beyond the Waimakariri context. The current New Zealand legislative planning framework, including plans and policies, was felt from a Waimakariri context as unsupportive of resilience planning and consequently a fundamental barrier working against institutionalising resilience planning on many levels. This was referring to the reality that to actually institutionalise resilience planning, it needs to be documented into the planning system in some form. However, it is clear that the current legislative environment is unsupportive of the changes necessary to allow this to take place. As noted by one interviewee, "*We have an entire legislative setting – from government down to our district plans – which is totally unsupportive for resilience planning as they are too difficult to change, would take a long time and have conflicting priorities which would not help but rather impede the resilience planning cause" (*University academic*).* The interviewees suggested that within the RMA you would have to prepare for the long haul in terms of making changes to get resilience planning recognised and addressed: "*This impedes resilience planning as in terms of the planning process it cannot move forward and gain the attention required until it is recognised and provided for and this is not quick*" (Council member and planner). The legislative framework is perceived as lacking the flexibility to establish resilience planning into existing planning documents and without this there is no focus, no attention and no priority or provisions being made for the planning approach. This obstacle does not assist institutionalising resilience planning and is undoubtedly a significant barrier. What was clear in the Waimakariri context was that there is a definitive mis-match in the policies: policies tend to promote economic growth, wealth and housing as important before resilience, community safety and sustainability. As identified in the document analysis findings, the resilience concept is absent in the local Waimakariri and wider New Zealand context. Provisions are made in planning documents such as the regional plan and district plan for focusing on disaster risk reduction, but focus and priority on these seems only prevalent as one respondent noted when there was a tangible threat or immediately after an

event. In peace time, the reality is that the legislation provides more focus and attention on other areas of concerns; we are not good at taking information and putting it into regional policies and plans which will then influence district and city plans. Not expressing a clear focus or priority on resilience or even natural hazards planning and the unsupportive legislative environment for change, all contribute to weakening any capacity and coordinated effort for resilience planning being put into practice.

5.4.3 Human and Informational Barriers

The institutionalisation of resilience planning was recognised as requiring various skills, knowledge and concerted efforts, which reflect the human and informational category, set out in Jones and Boyd (2011). In Waimakariri, two human and informational barriers were identified corresponding specifically to leadership and knowledge. Interestingly, both barriers were similarly identified in climate change adaptation work by Moser and Ekstrom (2010).

In practice *leadership,* and a lack of it, was identified by four participants interviewed as being a key human and informational barrier for resilience planning's institutionalisation into practice. When there is no requirement, law, job description or pubic demand as is the case for resilience planning, to initiate processes, leaders are required. Respondents in Waimakariri consistently agreed that leadership, alongside a comprehension of the actual need for resilience planning, would be crucial for institutionalisation. This demonstrates that there must be a sense of understanding of the current problems, issues and a need for resilience planning in light of natural hazards risk. Fundamentally, as Waimakariri practitioners clearly highlighted, this ultimately comes down to leadership and having leaders who are willing to get resilience planning working in practice and drive the process of, "*Let's resource resilience planning, let's try address it and build and implement resilience planning"* (Council planner). However, within the Waimakariri context specifically, and as is likely to be the case in other localities across New Zealand, this leadership for resilience planning is lacking, and as such was believed to directly contribute to resilience planning not being in practice yet:

> "*Effective leadership is crucial, but the major problem especially this far into the disaster situation in Canterbury is a lack of leadership; I don't think we are seeing it and that's a huge barrier. A lack of leadership ultimately creates an environment where people will continue to maintain the same old 'business as usual mindset' which is not supportive for new concepts like resilience planning" (*University academic*;* Community organisation advocate; Council planner).

Leadership being a barrier is consistent and representative of other research and academic scholarship in the natural hazards and planning field. Specifically, in each case by Moser and Ekstrom (2011) in terms of climate change and Saunders (2012) in innovative disaster risk reduction planning, leadership was identified as a barrier in the similar context of implementation and success in practice. It is widely recognised that in order for change to happen and new approaches to be put into place there is a need for leadership – from those who believe strongly in such change and are passionate about it. As resilience planning is new

it needs, and will rely upon having, functioning leadership. The interviewees stated, "*A concerted drive of leadership based upon interest and belief in resilience planning is one hundred percent necessary*" to make the changes and get it grounded in practice. The lack of leadership serves as a challenge for resilience planning because leadership is a key link for creating and aiding change. Without it there is not the guidance and visionary focus needed to induce the cycle of change and more importantly get the community to involve themselves in institutionalising resilience planning. An example of this was noted by a planner at the Waimakariri District Council who recognised that without the right leadership, which at this stage was sadly lacking (particularly in the community space), resilience planning in terms of being put into practice has no credibility and cannot be taken to others and expected to be internalised and then reflected externally in practice:

> *"Leadership, especially community leaders, are something which we don't have and the issue with that is that leaders are required to inspire you to do something and to guide others. Well sadly we are lacking this in places which means we do not have the drivers currently to begin having the right resilience planning conversations"* (Community organisation advocate).

This is a significant barrier facing the institutionalisation of the planning approach. As Moser and Ekstrom (2010) noted, leadership creates quality goals, priorities, support and vision, but when this is lacking it creates disconnect between these components which restricts the ability to function in a space in which is trying to change. It becomes difficult, as was noted in Waimakariri, to develop resilience planning, and get the resources, public support, interest and engagement behind it to successfully institutionalise it when leaders who are the significant drivers are lacking in practice. As such, it is especially clear to see how and why resilience planning remains just a good idea when there is a lack of leadership in place, diminishing the drivers necessary to move it into practice.

In order to put any new approach, measures, systems or planning styles in practice, there needs to be a level of knowledge to implement and support the transition. What was evidently clear from within the Waimakariri was that a *lack of knowledge, clarity and understanding* of resilience planning is a barrier to its institutionalisation. Of all the barriers identified, the limits of knowledge for resilience planning was the most significant, with all 10 interviewees referencing this barrier. This barrier is expected due to resilience planning being new and still remaining to be an emerging concept in scholarship and planning practice (Davoudi, 2012; Dos Santos & Partidario, 2011; Shaw, 2012; Wilkinson, 2012). There are major gaps within the current resilience planning literature, particularly in that nowhere does it provide for the knowledge and information required on how to use this approach and put into practice. There has been some recognition by scholars outside of the resilience planning domain which does reinforce this barrier, as it has been suggested in the past that a major element challenging the strive towards sustainable hazard resilient communities is a lack of local capabilities due to incomplete knowledge (Frazier, Walker, Kumari, & Thompson, 2013). The lack of knowledge on resilience

planning at present is a barrier as perceptions in Waimakariri reflected, as it becomes an elusive pursuit when it is not clear what to do with it. It was recognised directly in Waimakariri that:

> "*Without detailed knowledge of resilience planning, it becomes very difficult to use it in practice. We don't have a clear picture of what resilience planning looks likes and that lack of clarity will impact on its practical application"* (Council planner).

This was reinforced in Waimakariri, where it was predominantly acknowledged that what knowledge and recognition people did have of resilience planning was framed around its complexity and a lack of clarity. There are no models or framework to assist the transition to institutionalising the planning approach. This was strongly supported in Waimakariri on various occasions, such as when it was noted that the real complexity and barrier to seeing resilience planning in practice is that "*we have no idea what it means for practice or picture of what it looks like, how to use it and how to begin to institutionalise it; it is simply unclear at this stage*" (Council planner). This provides meaningful insight into why it is not being seen in practice, as clearly out in communities the lack of knowledge and technical expertise is inhibiting its use and exploration. As such, it evidently is a clear barrier when considering institutionalising resilience planning.

5.4.4 Cross-Cutting Barriers

The different barriers are all going to be present and most prevalent at different phases of the planning cycle for resilience planning. Moser and Ekstrom (2010) identified barriers for climate change that manifest themselves at the different phases of the planning process – understanding, planning and managing. However, this research also recognised that there are barriers which are cross-cutting and that occur at all times of the planning process. Interestingly, many of the barriers identified in Waimakariri tie back into the idea of cross-cutting barriers in that they are always going to challenge the planning cycle behind resilience planning, regardless of what phase it is in and as such will prove critical to its implemetation. Together, leadership, lack of knowledge and understanding, silos, priorities and individual's vulnerability and capacity appear to be of a cross-cutting nature. These barriers shape the legitimacy, guidance, awareness, engagement levels and beliefs that influence how people will perceive, act on and invest in resilience planning. These cross-cutting barriers have been identified through making observations based upon the literature and interviewees responses, but are supported by some of the cross-cutting barriers Moser and Ekstrom (2010) identified for climate change. Similarly leadership, knowledge, understanding and people's values and beliefs were distinguished as key issues that would inevitably occur at all times for climate change planning. I would make the case that these cross-cutting issues were evident, but I would suggest that further work into the barriers, and where they fit specifically in the planning cycle, would be needed to verify and add to this in detail.

The social and human and informational barriers identified in the Waimakariri context reflect the same trends and patterns of barriers predominant in the climate change adaptation space. In

both resilience planning and climate change adaptation, it is evident that similar problems are being identified for seeing the institutionalisation of the concepts and processes, such as leadership and lack of information, which were acknowledged by Moser and Ekstrom (2010). Without any scholarship specifically on resilience planning barriers, the comparisons that can be drawn from similar fields of climate change provide useful support and justification for the findings in this research. As the scholarship recognises, climate change has been an issue for a long time (Moser & Ekstrom, 2010) yet there are still significant barriers that today are even being identified for the adaptation process, which is ultimately trying to benefit communities and create more stable futures. It is interesting that before resilience planning is even in practice, that the same patterns of inhibitors are being identified. As such, it does raise the consideration that despite positive awareness around resilience planning that a reluctance, and to some degree hesitations, exist about up taking and institutionalising the new planning approach. This is an important point of consideration as it does bring to light the reality that putting resilience planning into practice is going to require a cultural shift and concerted focused effort. Practitioners in Waimakariri did note that, "*Personally [we] are very interested in really resilience, but these barriers are reflective of the community space and it will require a dedicated effort to change this*".

When considering the broader application of the barrier findings, it is necessary to consider whether the results were unique to Waimakariri and the Canterbury region. What is clear is that despite these barriers being identified in Waimakariri, they are very likely to be relevant and similar to other areas across New Zealand if resilience planning was to be institutionalised. There was reference made throughout the interviews that the barriers, while relevant in Waimakariri, "*will definitely resonate with a lot of communities*". The associated barriers with resilience planning and any endeavour for institutionalisation tied back to the myopic perspective which has been discussed and influence a community's desire to embrace new approaches in direct relation to natural hazards (Kunreuther & Michel-Kerjan, 2010). Most of the barriers were ones that in the past have been recognised as being challenging for climate change adaptation and implementing innovative disaster risk reduction approaches in communities. What this highlights is that the social and human and informational barriers that emerged in this research do have universal applicability, and in many instances would as such be expected to be prevalent regardless of where the effort to institutionalise resilience planning is taking place. The concern with these barriers, as the interviews reflected, was that it becomes lost that planning and, in particular, resilience planning can make beneficial impacts on communities, save lives and help them to cope positively if the right approach is being taking. Unfortunately, the barriers at present have cast a haze over this and steer practitioners and the public away from moving forward with the approach. Each of these barriers, however, are ones which can and need to be addressed, as they have the potential to be overcome if the correct mindset and attitude is taken. This would assist putting resilience planning into practice, providing real benefits for communities.

5.5 Opportunities for Institutionalizing Resilience Planning

Despite the numerous challenges and barriers acknowledge in Waimakariri, many opportunities were also positively identified. The identification of opportunities is encouraging for resilience planning and the drive to institutionalisation. It is useful to distinguish the opportunities reflected in the interviews as enablers, in that they correspond to making resilience planning possible in practice. The opportunities identified are of special interest as they are directly associated with realising the potential of resilience planning. Two different types of opportunities were clearly evident from those discussed by Waimakariri practitioners: enablers to help overcome the barriers so that resilience planning is possible; and general opportunities for institutionalising resilience planning. The first emerged in discussions in light of the barriers and the second was prompted by the fourth interview question (What are the opportunities for institutionalising resilience planning?).

5.5.1 Enablers and Opportunities for Overcoming Barriers to Support Resilience Planning

The barriers discussed above are important and need to be addressed before resilience planning can effectively be institutionalised into practice. This has similarly been recognised and reflected in the climate change scholarship and associated barriers (Moser & Ekstrom, 2010). While the resilience planning literature does not outline or provide details on opportunities for overcoming the barriers for resilience planning, in Waimakariri all parties recognised several key enablers to overcome the barriers so as to help support and bring resilience planning closer to practice. This set of opportunities emerged without prompting the interviewees, but rather were naturally acknowledged as participants were talking about barriers and what needs to be done. The opportunities were expressed as general ideas for how to overcome the barriers, as opposed to specific insight being provided for every barrier. Despite this, the general enablers provide important insight into how to begin the process of breaking down and overcoming the barriers. The enablers identified to overcome the barriers in Waimakariri included: ensuring a concerted effort and focus is placed on resilience planning; changing thinking and priorities; focusing on the culture of resilience planning; collaborating preparing detailed information on resilience planning benefits; undertaking vulnerability assessments; and implementing positive reinforcement. These are explored in the following discussion below.

Ensuring a concerted effort and focus is being placed on resilience planning was identified as being a key general enabler by four Waimakariri practitioners, for all the barriers identified. Institutionalising resilience planning is no easy feat, particularly when there are barriers impeding it, but through genuine focus and attention placed on the planning approach it can be translated into practice. This was evident in the case of Waimakariri, where the barriers identified were seen as being able to be overcome through joint effort being directed on the resilience planning and recovery imperatives (which would include a focus on the Council and the community). As highlighted by respondents, this would involve meaningfully engaging with practitioners and the community, upskilling where possible, and using the awareness gained from the earthquakes. Together, these points stand out as being able to assist barriers to be

overcome. It was suggested, furthermore, by three respondents that we must engage at a wider scale to draw on greater amounts of knowledge and learn from international experiences. It is clear that greater input into setting aside the time and resources was seen as being positively able to influence the barriers.

Interestingly, implementing and ensuring a participatory planning process was widely discussed in the interviews from the Waimakariri context as being a key enabler to overcoming some of the barriers such as people's priorities, cost versus benefit, and responsibilities. There were seven participants who recognised participation as a key opportunity. It is believed that bringing the community into the realm of planning, and then specifically resilience planning, and giving individuals a voice and a role is a meaningful way of counteracting various barriers identified. As the interviewees exemplified, "*We need to take the process down to the community and not just consult, but allow them to actively engage in the planning process which serves as a huge opportunity for resilience planning*" (Community organisation advocate). If people are involved and given opportunities to work within the processes and see results occurring, it will undoubtedly build greater levels of support, focus and interest, which will ultimately reflect positively for resilience planning and its endeavour in practice. This is significant as by bringing the community into a more participatory planning process, it could help the public see and understand the bigger picture for resilience planning and the end goals in a more meaningful way in which they are more likely to engage with if they can be a part of it. If this is undertaken, as participants highlighted, it would help to address the issues of responsibilities and priorities which otherwise, as identified previously, would inhibit resilience planning.

Changing the thinking, thought processes and priorities across a community was identified as an opportunity for resilience planning and its institutionalisation by six interviewees; this reflects that an opportunity for resilience planning to be put into practice lies in shifting and re-aligning focus and priorities in order to face up to the natural hazard reality being faced today. It was evident through the analysis that this was seen as an enabler to overcoming and addressing the barriers identified including: lacking priority; short-term focus; no guidance; and unsupportive legislative setting. For resilience planning to be put into practice it needs to be a focus point and key priority. However, as highlighted, this is not currently occurring and there are significant barriers impeding it. Within the local Waimakariri context, developing advice and guidance documents (which already exist for other issues) on resilience planning and distributing this out into the community was commonly considered by Waimakariri practitioners as a means of helping to raise awareness. This would usefully initiate the first step towards making resilience planning a priority and allowing for discussion and the community to have a say, and as such it operates as an enabler to overcoming many of the barriers identified. This was evident with it being noted that through such approach, "*it enables priority, attention and focus to go on resilience planning which provides a really useful step if the decision is made to undertake it in addressing some barriers; it can be put into practice and slowly barriers surrounding priorities*

can be overcome" (Council member). Encouraging the renewal, development and refreshing of plans and policies was another pathway of agreement for changing the lines of thinking and priorities, so as to align and set up the required foundations for resilience planning. This was clearly asserted in the interviews, and the interviewees distinguished that natural hazards are one of the biggest threats we face in New Zealand, and there are opportunities to provide for resilience and resilience planning within key planning provisions. In doing so it could break down barriers and provide inclusion in the leading frameworks to demonstrate priority and focus for resilience planning, which must be provided for and would feed down into the community.

The idea of collaboration as an opportunity was acknowledged in four different cases in Waimakariri. Collaboratively, local planners, agencies, community leaders and organisations preparing and providing detailed information about the benefits of resilience planning was factored as being a critical enabler to overcoming various barriers from silos, lack of knowledge, cost versus benefit, priorities and a general lack of support. This insight from Waimakariri reflects a very achievable enabler to overcome some barriers and helps bring resilience planning closer to practice. Local planners and agencies need to work together in order to identify specific data and informational needs for resilience planning; it is about gathering information. The purpose of this, as interviewees noted, is that it would importantly aid in identifying what types of data would be most helpful in motivating communities to take action and provide a stronger case to present communities to gain support and a solid foundation for beginning to build resilience planning in practice. This, as practitioners stressed, is a critical opportunity for resilience planning, as "*we must start somewhere achievable*". This was seen as an enabler to various barriers as it was argued that this would allow for the specific needs of the community to be matched to the available resources in order to determine how resilience planning can be provided for in practice for the community. As one participant noted, "*its about making a plan and using what information, lessons learnt and detailed information about the potential benefits from resilience planning into the community so as they can forge their own way forward in practice with this approach"* (Council member). In doing this it begins to instill a common vision and set of priorities for resilience planning and works towards methodically gaining public support and willingness, and together these steps work as enablers to overcoming barriers.

The reality in Canterbury is that there are pockets of vulnerable individuals, households, neighbourhoods and communities, which were seen as being an influential barrier to resilience planning. Interestingly, three interviewees highlighted the idea of implementation and utilising vulnerability assessments as a key enabling opportunity for overcoming the barrier. It was strongly felt that vulnerability assessments were required in order to create awareness of the level of vulnerability amongst the community and, in addition, assess the circumstances and different needs of those individuals. This process has a role in the reduction of the vulnerability and capacity barrier, as it was demonstrated that simply undertaking vulnerability assessments

leads to awareness, which can then be turned into the implementation of initiatives to address this and work closely with vulnerable individuals and groups to support them. This was extended upon in the interviews with it being noted that, "*support systems are required, they need to be tailored to the individual situations and taken to the people who require them, not wait for them to muddle their way through and remain isolated on their own*" (Central government staff member). While not a quick fix, this provides a meaningful way to enable vulnerability and people's capacity to be addressed, so the entire community can eventually be brought into the space where resilience planning discussions and practice can be facilitated.

An enabler to overcoming the barriers identified in Waimakariri, including people's priorities and tendencies to focus on the short term, was identified to be using and implementing positive reinforcement; this was commonly felt by two interviewees who both recognised this opportunity. By this it was meant positively celebrating and reinforcing efforts, small or big, made by the council and community in terms of moving into the resilience planning practice space without needing to wait for the long-term results. Positive reinforcements and acknowledging short-term efforts was clearly perceived to hold real power as it still fosters the long-term focus required for resilience planning. However, it recognises the short-term progress and benefits made. This would simply encourage communities to be more inclined to invest and take further steps with resilience planning. The key difference with not using positive reinforcement or recognising the steps forward made, as it was highlighted, does not create support, willingness, interest and focus on resilience planning but rather can have the opposite effect. With the current situation in Canterbury, it was felt that positive acknowledgement of progress and steps forward to a better future that could be provided for in resilience planning would fundamentally serve as a key enabler to counteracting some of the barriers.

Initiating focus on the culture and special interest on the mission of resilience planning was established from within the Waimakariri context as being a useful enabler to overcoming some of the barriers identified. There was a strong response amongst the Waimakariri interviewees for this opportunity with seven participants raising this point. Interestingly, while this approach is not being used in the district, there seemed to be an agreement that it is an enabler that would result in the 'breaking-through' of the barriers of silos and responsibilities not being taken. Rather than getting caught up in the structures and responsibilities for institutionalising resilience planning and making little progress forward, what is required (as revealed in Waimakariri) is the "*creation of a culture that values resilience planning*" (Council planner) and focusing on this and trying to deal with the problems faced by escalating hazard risk today. As outlined by the participants in Waimakariri, ensuring and establishing communication, collaboration and engagement is central to creating the space to focus on the resilience planning culture and helping to paint the 'bigger picture' for what the entire community is trying to achieve. Building and focusing on the culture of resilience planning outside of the established hierarchies, jobs and responsibilities, organically creates and allows for leadership,

collaboration, communication and responsibility to occur. The objective focal point in institutionalising resilience planning revolves around initiating and creating a culture for resilience planning. In establishing this, as highlighted in the Waimakariri case, it was felt to serve as a key enabler to addressing barriers including silos and lack of responsibility being taken and give rise to resilience planning in practice.

5.5.2 Opportunities for Institutionalizing Resilience Planning

In broader terms, to promote resilience planning and its institutionalisation into practice more generally, a package of key opportunities exists as identified in Waimakariri. This is significant, as similar to the enablers for overcoming barriers, opportunities for resilience planning's institutionalisation are not explored and outlined in any resilience planning scholarship to date. Separate to the enablers identified to overcoming the barriers, interviewees were asked "*generally what opportunities exist to institutionalise resilience planning*". From analysing the interview responses, four primary opportunities were highlighted. The broad opportunities for resilience planning's institutionalisation included: the recent Canterbury earthquake experience; heightened awareness and interest in resilience; relationships and connections; and the recovery and rebuild process in Canterbury. These opportunities are significant as they all directly tie back to the earthquake events in Canterbury. It is interesting because no opportunities for resilience planning to be institutionalised were identified outside of the earthquake context. This does raise the question about if the earthquakes had not happened, would these opportunities be present? As the results reveal, all opportunities identified tie directly to the earthquakes, which is unsurprising given it was consistently recognised that the events brought to light resilience and the turbulence of the hazard event. As such, it could be posited that without the earthquakes, practitioners may not have been so forthcoming on opportunities for resilience planning and none be identified. This is of special interest as resilience planning is a key imperative not just for Canterbury but New Zealand wide due to the hazardous landscape. These opportunities would not be recognisable or referred to in other localities, but it was enforced strongly in the Waimakariri case that it is important that the opportunities present which stem primarily from the earthquakes are recognised and utilised by communities across New Zealand.

The 2010 Canterbury earthquake events came through as being a primary opportunity for institutionalising resilience planning. The earthquake experiences were highly recognised as an opportunity by seven of the respondents. In Waimakariri specifically, and across Canterbury, the earthquakes (while a negative experience) did have positive outcomes in that it brought Canterbury together by constructing a common goal – to rebuild, recover and see the region rise again in a stronger, stable and more positive manner. A wealth of knowledge, skills and expertise were gained and key lessons learnt. Within this, as the practitioners and community members in Waimakariri noted, it is an encouraging opportunity for the resilience planning space and its institutionalisation:

> *"The things you learn living through a disaster. I really believe that the earthquakes have improved our knowledge, understandings and expertise which really would act as an opportunity for resilience in practice as it has developed a space where it is more feasible and people are better equipped to have the conversations necessary, this is a real opportunity to be grasped to aid resilience planning in practice*" (Council planner and staff member).

For example, it was referred to that "*people both professionally and personally know more now about resilience and natural hazards"* and consequently there is a unique opportunity to capitalise upon this and use it to enter into the resilience planning space. The earthquakes demonstrated insights of people being able to cope on their own, the importance of being prepared before events, and adapting to circumstances and the positivity of self-motivated and self-initiated responses. What this recognszes is that people in Canterbury, due to the earthquakes, inherently were, and reflected core components of, resilience. Due to this, despite a lack of specific and technical knowledge on resilience planning, the people of Canterbury are more equipped, according to a senior planner, to have the conversations required to facilitate resilience planning into practice. It is clear that institutionalising resilience planning will take more than people simply being more equipped and aware of resilience, but it needs to begin somewhere. The foundations of people being resilient and having more knowledge does provide an opportunity to reflect the experiences from the events out into a greater common resolve of putting resilience planning into practice.

The earthquake experiences interconnected with another key opportunity identified for institutionalising resilience planning; the opportunity lies in heightened awareness and interest which was identified by six of the interviewees. The negative earthquake experience was referred to as having a positive outcome in that they have raised awareness around the concept of resilience and the importance of building it in light of hazards. Resilience planning is unsurprisingly the clear driver to achieving the building of resilience in communities. The interviews in Waimakariri reflected that there is a strong sense of intensive awareness, focus and interest on resilience, and how it can be built, at present. It is a leading trendy buzz word (Davoudi, 2012), which the Waimakariri Council acknowledged as being very open to and interested in. Resilience was commonly referred to within the Waimakariri District, and there is a desire prevalent at present to be resilient. This was reflected through statements highlighting:

> *"The negative experience of the earthquakes can also be seen as a positive as it has heightened the awareness not just in Canterbury but across New Zealand about what can happen when you're not well prepared and illustrates how different things could have been if we were better prepared. This has pushed people into a space of being a lot more interested in resilience – that interest is utilised can create discussions which can lead to actions which is a positive opportunity for the resilience planning space" (*Community organisation advocate*).*

This was recognised as creating a positive environment for resilience planning and independently helps to ensure that intended outcomes of resilience planning in practice are achieved. It was clear that the earthquakes brought to light vulnerabilities and the consequences of not being prepared. The flow-on effect of the earthquakes is that everyone has a heightened awareness of resilience planning and it was noted that the councils, in particular, are directly interested in exploring new options to invest in, in order to "*ensure we do not repeat the past*". As such, the heightened awareness and interest provides an opportunity for resilience planning as there is marked appreciation for it, and it is highly topical, which usefully facilitates discussions and investment in looking forward to resilience planning in practice. While interest in resilience planning is high it creates an environment and space conducive to explore the concept.

One outcome of the Canterbury earthquakes was new relationships and connections within and across the councils and community being built. From the Waimakariri perspective, the new relationships and connections were prominently identified as a positive opportunity for institutionalising resilience planning by six interviewees. Resilience planning best practice is based upon social networks and strong communication channels as being fundamental components; these are necessary for its success and effectiveness in practice (Davoudi, 2012; Dos Santos & Partidario, 2011; Eraydin, 2010; Shaw, 2012). It was interesting that the research similarly identified with this element of literature, and showed that having good relationships and connections provides the space necessary to be able to explore and have open discussions about resilience planning which presents as an opportunity. Without good relationships and connections, resilience planning endeavours are not feasible or applicable as the collaboration and coordinated efforts required are not evident. However, the earthquakes, through the turmoil and destruction, created an environment where connections and relationships, between practitioners, the council and the wider community were built and established:

> *"People need to work together as one. In the past this has not been visible in Canterbury but the earthquakes have changed this as people and the councils in particular had to work together … really this is an opportunity for resilience planning to be put into practice on this basis if the connections and relationships are fostered and invested in"* (Council planner).

This was evident in the research, where it was demonstrated that people had to work together and in the past this has not been visible, but there is now a closer community as important connections and relationships have been made. Agencies, organisations, the councils and community have begun to work much closer together and support each other. They have come together for a united purpose and that is a real opportunity for resilience planning as there is a united front and promoted discussion around resilience. What was seen after the earthquakes was a degree of cohesion and working together, which as the research acknowledges is unusual. The interviewees certainly felt this was the case, and commented "*it is pretty special*", with the earthquakes providing a leverage point and opportunity for resilience planning to move

towards being practically applied. The gap and disconnect between groups within a community prevents resilience planning in practice, as the Waimakariri context shed light on. However, the relationships and connections which have been made are important and usefully provide the space for open discussions, involvement and the support necessary for resilience planning, and as such is a key opportunity out in the field.

The element of timing, manifested itself as barrier, but interestingly was also clearly recognised as being a key opportunity directly within Waimakariri and Canterbury to institutionalising resilience planning into practice. Timing, as an opportunity, was a significant theme with eight interviewees acknowledging it. Implementing new initiatives, and in this case new resilience planning initiatives, will be met with timing-based questions. At any time, there will be skepticism and questions raised regarding if it is the appropriate and right time. Practitioners were very definite that the current timing of the rebuild and recovery phase in Canterbury is imperative and presents a crucial opportunity for resilience planning to be institutionalised in current planning practice. Interestingly this opportunity was strongly portrayed by all eight participants with it being commonly stated that:

> *"We are in a period of change, and people at present are more inclined to adjust their attitudes and step up to the mark so now is a prime opportunity for change to made. The Canterbury region is having to change so if there was ever a time to bring in resilience planning I would argue that it would be now. Resilience is a bit of an abstract concept, which is why now is the right time and an opportunity to talk about because we have so very concrete as an example".*

Participants talked about being in a major period of change due to the earthquakes at present, and that is something which does not happen every day. It is clear, therefore, that an opportunity lies within that space of change, as people are more inclined to adjust their attitudes more so than in peacetime. As one participant noted it is the perfect timing and it is "*like hello resilience planning"*. The rebuild and recovery phase in Canterbury has meant that there is an inevitable period of change occurring and the entire community is in some way looking forward for new outlooks. The councils, in particular, and some of the community are searching and exploring new paths and ways forward, all with the crucial purpose of, "*ensuring we do not repeat or go back to where we were*" (Council staff member). In parallel to this, as mentioned as another opportunity, there is heightened awareness of the need to move forward and rebuild in the reality of the natural hazards environment, where it was recognised that the events and threat of being devastated again is still fresh in the minds of many. Piecing this information together, it is clear that the current timing in Canterbury presents a real opportunity for resilience planning to be put into practice, as there are the foundations necessary to help bridge it into practice. As noted by the planners and practitioners, the opportunity was said to be "*right now, because we have something so very concrete to use as a basis*" (Community organisation advocate). This highlights and ties in the reality of the resilience planning concept currently viewed as being so abstract, which challenges it going into practice. However, in Canterbury

they are living in the now after multiple disasters with vast knowledge on what can happen when a natural hazard strikes. Ideally, the timing can be seen as a real opportunity because Canterbury has the current rebuild and recovery phase, the awareness of the need for resilience planning to facilitate it into practice, and the reality of the earthquake events to provide the foundations for resilience to emerge in practice in order to rebuild the broken city. It is human nature that we eventually move on and memories begin to fade and this was recognised in the Waimakariri context. Practitioners were generally interested in this opportunity because it was felt that it would not always be present and the current ideal timing will pass. While futures are uncertain, and conversations are around the desire for 'resilience', it makes it easier to engage in the process and get support for the change. In Canterbury, they have the perfect timing right now where change is necessary and being sought. If there was ever a time to put resilience planning into practice it is now in the rebuild and recovery phase, and this is a significant opportunity for resilience planning in transitioning towards practice. This opportunity must be caught before it passes.

Overall, practitioners on the ground in Waimakariri saw many unique broad opportunities being present to institutionalise resilience planning in practice. This is important as the identification of opportunities helps to aid and support the resilience planning venture. If these opportunities and enablers are explored and utilised, it will create a positive space for the institutionalisation of resilience planning. However, it was clear that these opportunities were deemed to be very unique to the current timing and space in Canterbury, which must be capitalised upon, because they will have a limited lifespan.

Resilience planning is a very new and complex concept, so it would be easy for it to be categorised into the too hard basket and become swamped by barriers. Despite this, in the Waimakariri context many opportunities, as discussed, were identified, which is an extremely positively sign for resilience planning and its institutionalisation into practice. These opportunities demonstrate that people are being able to see past resilience planning's complexity and the reality of being in new and untested territory. It was evident that resilience planning was not just merely being discussed as something positive which sounds good. However, currently in practice in the Waimakariri it is being looked at and thought about at a much deeper level, which is important because it starts the process for forging paths in which resilience planning could be established. As respondents from Waimakariri noted, "*we need resilience planning right now, we must look at it and if no opportunities can be identified and we don't look for the positive spaces to try and bring it into practice then not a lot of hope could be held for resilience planning*" (Council planner). By actually identifying the vast array of opportunities, and being able to see enablers to overcome the barriers, it demonstrates a positive space necessary in terms of being able to consider the application of resilience planning comprehensively; it provides hope for its continuing momentum forward into practice.

This is significant particularly when considering resilience planning in practice is a first in New Zealand, is unchartered territory, and there is no real reassurance of how beneficial it could be.

5.6 Operationalizing Resilience Planning

5.6.1 Best Practice Characteristics for Resilience Planning

Progress towards resilient communities is currently more demanding in times of increased turbulence and uncertainty. Resilience planning can assume a critical role in this space to avoid disruptions and collapses from natural hazard events (Dos Santos & Partidario, 2011). There is growing recognition of this imperative widely across the literature and out in practice in Waimakariri as has been made evident. For resilience planning to be a catalyst for change in planning practice, a number of characteristics are needed in order to facilitate the operationalising process for the approach.

The purpose of the sixth and seventh interview questions (What are the priority (required over the next 1-2 years) and secondary (required over 3-5 years) characteristics needed to shift resilience planning and operationalise it into practice?) was to gain insight into what key characteristics, both priority and secondary, were deemed necessary to operationalising resilience planning out in New Zealand practice. The resilience planning characteristics being explored in practice reflect the common idea of 'best practice'. The Waimakariri interviews revealed that all 10 participants identified strongly with the concept of priority and secondary characteristics for resilience planning in practice. The interviewees all reflected a need for two sets of characteristics for resilience planning; those needed immediately and those required in the long-term future. The participant's views together summarised stated:

> *"It is fundamental to recognise what is needed now and what can wait; it is important to distinguish what needs to be the point of focus immediately and what other components can be left for later. We are in a time where we are calling out for resilience planning and there must be a line drawn between what is a priority and what is secondary so we know where the attention is required up front in the early stages".*

This insight is interesting, as it reveals that despite resilience planning being conceptual in New Zealand, and very limited scholarship on best practice available, already there are clear established views from practitioners as to what best practice should be and how to operationalise it in practice. What this considers is that in operationalising best practice characteristics, they cannot be randomly undertaken at any stage. Rather it is considered necessary to ensuring the effectiveness of resilience planning that particular characteristics (priority) occur in the beginning phase of resilience planning, while others (secondary) can occur at a later stage and are not imperative to the planning process from the outset. The priority and secondary categories provide a meaningful way of distinguishing between the characteristics and act as 'stepping stones' as was referred to in the Waimakariri case study, for how the process should unfold and take place. This demonstrates a form of understanding around the characteristics necessary and what they mean for the resilience planning process to build on

and guide the operationalisation process without it being yet formalised. The consideration of best practice characteristics in terms of priority and secondary provides a useful guidance mechanism for councils, communities and agencies to use resilience planning in practice by providing a grounding framing point for how it needs to be addressed in practice – what is most necessary as opposed to those characteristics which can wait.

The Waimakariri interview participants identified priority characteristics, which they deemed necessary for the operationalisation of resilience planning. The priority characteristics identified included: leadership (eight respondents); communication (nine respondents); social learning (nine respondents); social capital (seven respondents); innovation (five respondents); and reflection (six respondents). As participants stated, "*these characteristics together provide the core steps which are most important and crucial to the resilience planning process particularly over the next one-two years"* (Council planner). Participants classified these particular characteristics as being a priority for resilience planning as:

> "*These characteristics are critical from the get go. If you don't have strong leadership, communication and the ability to reflect on the past immediately, resilience planning would quickly become difficult. It requires these characteristics [in our opinion] to set the groundwork for the process; you can't put something like resilience planning into practice and expect to build elements like social capital later. These characteristics must be there from the outset and as such is a priority to make the resilience planning process as successful as possible".*

The majority of the priority characteristics from the Waimakariri perspective, corresponds and aligns closely with both the resilience planning literature most cited best practice characteristics (see Chapter 3, Section 3.7.1) and the document analysis results. This is significant as it demonstrates an important alignment between what is being discussed in the academic space and the reality in practice. Furthermore, while not specifically discussed in the resilience planning context, key planning documents including the CDEMA, Canterbury CDEM Group Plan, CERA recovery strategy and the Waimakariri District Plan collaboratively provide for and recognise communication, social learning and social capital to be fundamentally important characteristics. The agreement and commonality across the priority characteristics demonstrate that in operationalising resilience planning, they together are crucial to the process and must occur upfront from the beginning. As noted in Waimakariri key informant interviews, "*if communication and education for example are not in place from the beginning, it is difficult to see how such endeavour will be effective and work in practice*" (Council staff). As such, a collective understanding for the way forward in operationalising resilience planning is provided and made clear through these common perceptions.

The Canterbury earthquake events have shaped and influenced the way much of the community and local practitioners in Waimakariri and wider Canterbury are now thinking and acting. As feedback shed light on, Canterbury is a broken region and as such it was highlighted

that, "*to even begin to think about resilience planning, leadership, innovation and communication would be required upfront immediately; it would be a priority because of our immediate situation"* (Community organisation advocate*).* The earthquakes and disaster context being contended with in Waimakariri directly influenced and shaped the characteristics deemed to be a priority; the priority characteristics reflected in Waimakariri were discussed purely in regard to the reality of the devastation and destruction that has occurred. It is understandable that if the operationalisation of resilience planning is taking place in a post-disaster context, the priorities would more than likely differ slightly to a non-disaster setting in 'peacetime', which would potentially identify with different priority characteristics so as to reflect and cater for what is directly needed. This argument is substantiated by the current best practice resilience planning literature, which recognises a wider scope of characteristics than what was reflected in Waimakariri. The above consideration regarding contexts provides understanding as to why priorities may vary in differing circumstances.

Alongside the priority characteristics, a set of secondary resilience planning characteristics was also identified from the Waimakariri case study. Secondary characteristics included: knowledge (four respondents); long-term vision (six respondents); and self-organisation (six respondents). Together, these deemed to be the secondary characteristics required for resilience planning and its operationalisation. With the secondary characteristics identified, it was stressed by participants and should be recognised that it does not mean that they are not important and should be forgotten about, but rather they are characteristics which are not fundamental early on. The secondary characteristics do not need to be the focus point presently, but they must be addressed at some stage and are a key part to resilience planning's operationalisation in order to ensure the greatest success.

As it is clear in the Waimakariri context, the secondary characteristics for resilience planning were not as prevalent as the priority characteristics identified. Half of the number of secondary characteristics was recognised in the best practice discussions compared to the priority characteristics. The disconnect between the characteristic categories was primarily reflected to be the case, as secondary, less important characteristics are simply not a priority in the Waiamakriri and greater Canterbury region currently. In light of the earthquakes and the current context in wider Canterbury, the practitioners and interviewees did not appear to be in a space to think about secondary characteristics for resilience planning. This was evident through common referrals made to the need to focus on "*what can be done now, what is of the most priority to the community immediately that can make a positive difference*". The reality in the current post-earthquakes disaster space is that the focus is on priority steps that need to be taken, not secondary characteristics that may be relevant years down the track. The implications of this are that, as practitioners recognised, decisions are trying to be made for the long-term benefit, but they have the immediate short-term reality to deal with. This insight provides an explanation as to why the priority characteristics appeared to be more predominant

out in practice. In this light, the perception cannot be taken that secondary characteristics are not important or necessary and do not warrant a place in a resilience planning framework. Under different circumstances, it is more than likely that a greater amount of secondary characteristics would be identifiable and an easier point of discussion. The secondary characteristics are a fundamental component of resilience planning in the space of practice, but it is clear that more work would be required here to explore this element further. The next step required for resilience planning is to determine how these characteristics identified in practice in Waimakariri can be linked out into practice.

5.6.2 Actions to Operationalize Resilience Planning Characteristics for Practice

Resilience planning is based upon a number of key priority and secondary characteristics for practice, as revealed in the Waimakariri context. The pathways for how to translate the characteristics into actions for practice remain vague. Current resilience planning literature identifies and depicts at a high level the characteristics required, but it does not detail the actions required to put these into practice. This helps to explain why resilience planning is often categorised as being confusing and complex, as there is currently no firm guidance on how to operationalise the necessary characteristics into actions. As such, it is a space where people in practice are trying to make sense of it. Interview participants were asked in questions six and seven to explain what actions are required to put the characteristics identified into practice. Participants did not reveal how to put the secondary characteristics into practice. However, some insight has emerged from the Waimakariri case study into how to begin to translate the layers of priority characteristics out into practice including: leadership, communication, social learning, social capital, innovation and reflection. The figures and discussion below summarise the key points linking the characteristics to actions for practice.

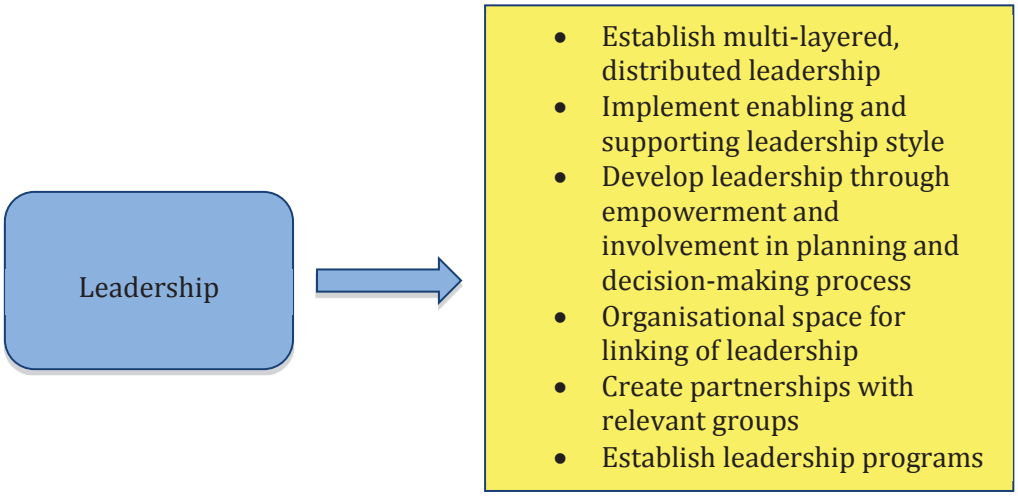

Figure 7: Leadership in practice

Leadership was a key best practice characteristic for the operationalising of resilience planning from the Waimakariri perspective. The perspectives on leadership for resilience planning was extremely valuable given that leadership by the Waimakariri District Council CEO and mayor

has been widely cited as being crucial in the 'best practice example' the Council has set in the regional recovery post-earthquakes (Vallance, 2013). The success of resilience planning in practice will depend upon having good leadership and people who will join those leaders in the drive forward to safer and more resilient communities. Leadership received significant amounts of attention and support in the interviews; "*resilience planning won't work on its own without leadership; we need to finds ways to increase leadership capacity so that we can begin to talk about resilience planning for practice*" (Community organisation advocate). Leadership in practice for resilience planning will require the development and collection of people willing to guide and front the approach. The Waimakariri case study provided insight into practical measures to bridge the gap and put leadership into practice, which are explored below further.

Putting leadership into practice requires leadership which is distributed and reflective of the 'whole community'. In Waimakariri, it was highlighted that leadership must be practised from the high level (government, councils, agencies) right through to the lower level (community groups, individuals). The multi-pronged approach for leadership is understandable in translating resilience planning into practice, as to make it successful it must target the whole community. It is imperative that there are leaders who can connect with and will reflect the different groups within the district, so as to gain trust, momentum and support for resilience planning.

An enabling and supportive style of leadership needs to be built and fostered from the outset of the resilience planning endeavour in practice. The discussion in Waimakariri highlighted leadership is too often undertaken through a control and demand style, but for resilience planning simply telling and demanding action from people will be ineffective. Practitioners commonly recognised the need everyone to get involved and ensuring leadership which is enabling and supportive is imperative. In practice, this is achievable through "*recognising the potential of others and having a willingness to not work alone and share responsibilities"* (Council staff). Building leadership based upon trust, where leaders must act as *"distributors"* and distribute out roles and responsibilities to community members, provides a perfect opportunity for the community to be involved and experience personal growth through the benefit of resilience planning. An enabling and supportive leadership style can be transferred out in practice through a vision to inspire others and making it clear who they are there for; *"we need to make it clear that we are here for you*" (Central government official).

Developing leadership through empowerment and involvement in decision-making was identifiable from the Waimakariri perspective as a key action for this resilience planning characteristics. An individual leader or organisation leading resilience planning will not be successful on their own, as expressed in Waimakariri; "*I really believe in resilience planning but I need more people to join me to give it the salience it requires to take it further in practice. It can't be a one main train – everyone needs to get on board and step up*" (Council planner). To translate leadership into practice for resilience planning, involvement in the decision-making

processes from within the council and out in the community must be collective and collaborative. This would allow leadership to develop and spread across all fields of expertise and different community groups, to encourage all those who believe strongly in resilience planning to have a level of responsibility, and as such naturally assume leadership roles. It is important to recognise that such leadership be actioned, for resilience planning cannot be forced but rather must grow organically as belief, inspiration and interest grows. The critical component to reaching such a point was deemed be through utilising other best practice characteristics such as education and social capital.

There is an art to leadership and knowing what to do and how to do it. Developing therefore an organisational space for leaders where partnerships with relevant groups/individuals both locally and internationally can be established is a useful action to putting leadership into practice for resilience planning. Leadership was perceived in the Waimakariri as needing to be interlinked through tight-knit relationships to share ideas, build a united front, and promote the same visions and goals for resilience planning through collective action. Using the space of forums or workshops to collaborate, share ideas and develop means of actively engaging behaviours, will support resilience planning, such as through promoting events, policies or guidelines. Leadership needs to be developed so it spreads across all fields and expertise, but those leaders must be linked back together in a formalised space to create a 'whole approach'. This will importantly build trust, connections and networks, but will also provide a means for a common vision to be established amongst the various leaders and distributed back to the different parts of the whole community.

Establish leadership programs: Developing leadership programs, workshops, leadership circles and action learning groups were identified as a key measure to help put leadership into practice for resilience planning. This idea would allow for feedback, coaching and mentoring to occur, and fostering leaders, but also stimulating change and personal growth within community members and local council members to help provide opportunities and the space for leadership to develop. An example of this was, "*I think the best thing we can do is establish the space or 'hubs' for leadership to grow, currently there is the leadership lab in place in Canterbury and it provides an excellent program to help foster leadership which we now recognise to be so important since the earthquakes. This is a very useful step to helping realize leadership in practice*" (Community organisation advocate). The significant element to leadership programs is that it would allow leadership to be distributed out to the community based upon the knowledge and skills gained, which would contribute to a stronger community being built to support resilience planning but could furthermore develop secondary leaders. This provides some useful guidance from the Waimakariri context as to how translating leadership into practice can be provided for and fostered.

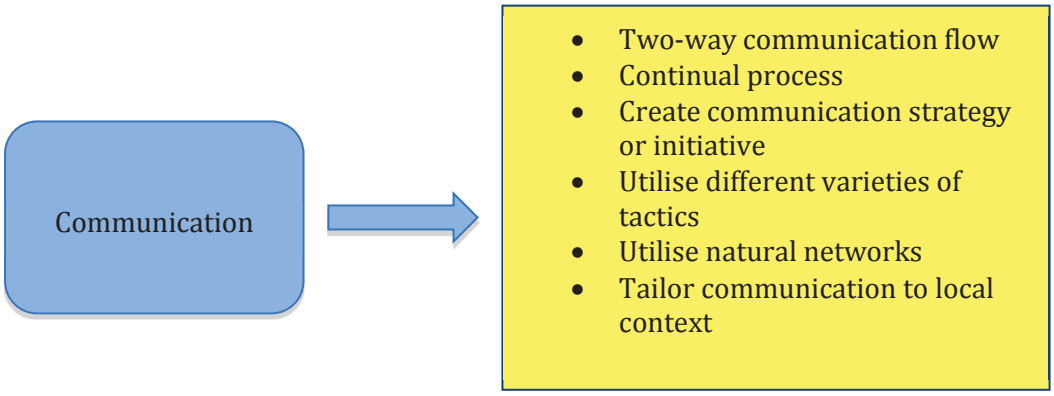

Figure 8: Communication in Practice

Communication was a key priority resilience planning characteristic identified in both the current scholarship and in the Waimakariri. The process of communicating was seen as being a cornerstone for building resilience and supporting an effective environment conducive to resilience planning. Regardless of how vital the characteristic of communicating is to resilience planning, the literature is yet to provide the necessary guidance on what is required to put it into practice. In the Waimakariri case study research, however, a number of key insights were distilled to provide direction on how communication for resilience planning can be linked into practice, as expressed and expanded upon in the following discussion.

Perceptions of putting communication into practice revealed the requirement to become an established ongoing action; communication for resilience planning needs to continually occur and not be undertaken as a one-off in isolation to the planning process. This was evident in the Waimakariri context; "*we can't just communicate with the community and within the Council once initially about resilience planning and think we are done because it does not work like that, rather it must reflect a deeply engaged process which is always cycling around*" (Council planner). Situations, knowledge and contexts are always going to change, and as such ongoing open communication will benefit resilience planning in making the planning process fluid and able to shift and adapt as necessary. As interviewees reflected, communication allows and aid us to be adaptable and are pertinent to ensuring resilience planning can serve and address the needs of the context in question; *"if we don't continue to communicate how can we expect something like resilience planning will fundamentally will have to evolve with communities to occur*" (Council member).

It was reflected that putting communication into practice must be achieved through establishing two-way communication flows; this reflects the need for both top-down and bottom-up communication styles. As stated in Waimakariri perspectives, "*communication must flow both ways between the Council communicating to the community and vice versa; both groups must actively provide for and engage in communication, receiving information and processing and responding to it*". Resilience planning must be a whole community effort, and must work to target all people to collectively build resilience to create more flexible and adaptable

communities. Strong communication channels are needed, and this is where resilience planning in practice requires appropriate engagement where one group does not take sole responsibility for communication but rather an open process is needed. This would be established into practice primarily through creating relationships (particularly in terms of power) where opinions are equally recognised and acknowledged. The two-way communication relies upon "*having good relationships with the community*" (Central government official) which is critical to helping build trust, understand situations, come up with creative ideas and problem solve in the realm of the resilience planning space.

Communication can be actioned into resilience planning practice through producing a specific communication strategy document or initiative. In Waimakariri, it was commonly acknowledged that communication efforts in practice need to be achieved through a meaningful well-thought through plan. This would be achieved by formalising how communication will be achieved and undertaken, by who, for whom, and to set a common vision in a strategy or set of guidelines. Making communication have a point and specific purpose so as to provide the best outcomes will lead to success for the resilience planning approach. Without a strategic plan communication efforts could drift and fail to achieve meaningful results for resilience planning particularly in the early stages of its application. Linking the priority characteristic of communication into practice makes the whole process of collaborating within the Council and community worthwhile. It provides a level of accountability for the Council to ensure effective and meaningful communication is provided for greater resilience planning success in the practical planning space, and as such providing invaluable feedback.

A common correspondence between putting communication in practice in the case of Waimakariri was through employing a variety of tactics and forums in order to encourage engagement between the Council and community. One approach from the Waimakariri perspective would not be sufficient in practice, as not all groups would be targeted within a community, and communications would not be effectively received and provided for. Different means for communication could be established through: natural pre-existing networks (e.g. schools, supermarkets), social media (in particular Facebook and Twitter were identified as being useful mechanisms for two-way communication); community events and community meetings, communication programs and pamphlets. Putting communication into practice requires creative and different instruments to reach different users, which is a significant insight for translating it into practice to ensure and enhance the successful flow of information. This was evident in the interview, "*establishing many methods of communication is crucial in order to make sure that everyone has a way of communicating and to ensure accessibility and availability to all groups of the community*" (Council planner). This is important as there is no point having two-way communication to support a resilience planning endeavour, if the communication channels do not support accessibility and provide a means for the community to engage with it in the first place.

From the Waimakariri case it was evident that to put communication into practice, tailoring the resilience planning communication process to the specific context is essential. The needs and focuses of resilience planning will undoubtedly be different between situations and, as participants in Waimakariri stressed, "*no one size fits all approach is adequate*" to support resilience planning. The first step that must be undertaken is to ensure that the communication channels and processes for resilience planning reflect the community or space directly. Every context is different and will inevitably have different needs and requirement across the community; communication processes must suit and target the specific locality in question, and as such there is no universal model for putting this action into practice. Communication needs to be systematically undertaken in a way that it can be understood by everyone involved, including the community. To ensure communication is established via meaningful engagement, interviewees felt, "*it is put in context for the community, Council and agencies in a way that they can understand and relate to – don't make it abstract otherwise the point of communicating in the first place is lost*" (Community organisation official). Using scenarios to explore, for example, the uncertainties and potential hazard risk facing communities might be the way forward for communication in practice. It would make it context specific and relatable so that ultimately attention can be focused on the resilience planning processes and decision-making.

These steps to put communication for resilience planning into practice correspond and need to be integrated, to make the process of communication lead to positive resilience planning results. This is important in ensuring that people can see that the process of communication is followed through into positive outcomes for the community.

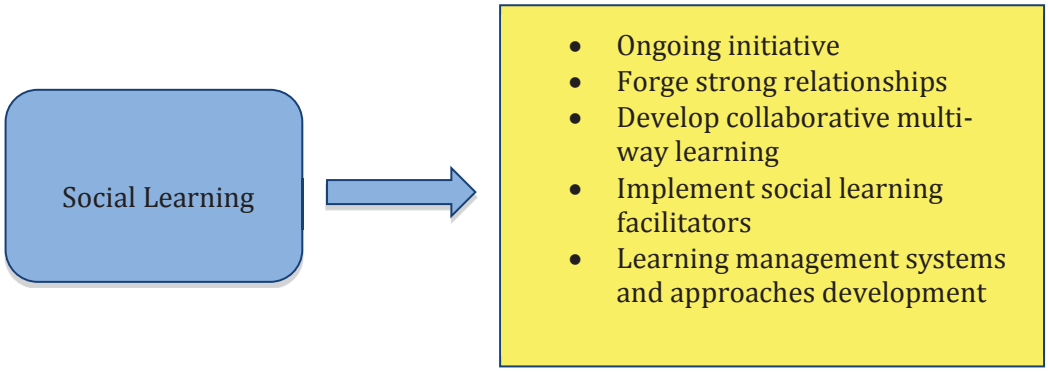

Figure 9: Social Learning in Practice

The process to operationalise resilience planning requires positive *social learning* to take place; social learning was a significant priority identified as a best practice characteristic. While this is well supported in both the literature and Waimakariri case study, how to progress social learning into practice for resilience planning remains elusive. In Waimakariri, interviewees responded to social learning as being an essential as it "*offers a way to bring out the transformational change required for resilience planning through generating trust, awareness and knowledge to align ideas and goals and shape leadership*" (University academic). Social learning will happen

through integrated systems of participation, analysis, debate, experimentation, prioritisation, transparency and monitoring and review. To see this in practice, central observations were distilled from the Waimkariri case study, which provides some useful guidance for how social learning can be used in practice for resilience planning.

To put social learning into practice, it must become a continuous process. Waimakariri planning practitioners noted that meaningfully putting social learning into practice, "*requires an iterative learning system to be put in place and one off independent education efforts would simply be inadequate*" (Council planner). Time must be spent ensuring social learning is a permanent work in progress as situations change and new information come to light. The space of resilience planning is quickly developing, so there is an understandable need to ensure that social learning reflects and embraces this so as to ensure the most suitable plans and goals can be made. Resourcing ongoing social learning can be undertaken in practice, as respondents in Waimakariri identified, through establishing a resilience planning education strategy, which would be able to be updated to ensure continual relevant learning takes place. The purpose of such a strategy would be to permanently allow for support and the flow of information through outlining goals, directions, setting monthly community meetings, and shaping what steps will be taken to support and advance the learning process and developing learning management systems.

To put social learning into practice as a key ingredient in resilience planning, the process of establishing strong and genuine relationships needs to occur between council departments, councils, organisations and community members. As noted in Waimakariri, "*there must be good genuine connections and relationships between ourselves (the Council) and the community so that social learning can effectively take place as it builds trust and connections which will ultimately influence people's willingness and confidence to emerge and engage*" (Council staff member). In Waimakariri, it was commonly recognised that they have already begun to establish meaningful relationships through actively engaging and becoming involved in the community. Community events, 'fun days', and simply getting to know the communities are measures currently being used to establish this. Having effective relationships makes the learning process easier, safe (people wanting and feeling more comfortable to learn) and more successful. It would enhance informational flow so as to be able to learn from each other and together develop flexible ways of moving forward to beneficially utilise resilience planning. Taking the time to establish good connections and relationships is an important step in creating the confidence and willingness to then engage and participate in learning; people become more receptive to receiving and engaging with information.

Linking social learning into practice requires the establishment of space for collaborative multi-way learning to take place. Similar to the communication characteristic, there is a need to nurture social learning at several levels to target and involve all groups. In the Waimakariri it

was stated that, "*it must go beyond the individual level and become embedded in the wider groups that construct our society – council, institutions, organisations, agencies, business and individuals*" (Central government officials). It is considered crucial to putting social learning into practice that the informing, educating and learning process comes from everyone, which means opportunities for such learning must be legitimate and well established. It must drive learning, as recognised in Waimakariri, to be a whole community endeavour which will benefit everyone. As identified by the Waimakariri participants, developing established participatory approaches to provide for this in practice can be achieved through a combination of measures including: setting a goal/vision for social learning into the LTP or strategy to provide something to work for and serve as a means of accountability; co-designing the framing, the problems and needs for it (bring together the public and private sector together to forge shared thinking from the outset about the challenges and how to provide) would makes people feel involved and want to invest in the process; and finally implement interactive methods for social learning which allows a 'safe' space for everyone to participate such as 'interactive websites'. This is important as it constructs measures to allow for learning to take place and for community involvement in this space.

Transitioning social learning into practice would require the implementation and utilisation of social face-to-face facilitators; facilitators were described in Waimakariri as individuals who will drive, support and push the social learning effort for resilience planning and will effectively encourage involvement. Such facilitators would get out in the community, creating and 'facilitating' the opportunities for learning to occur, being a conduit for knowledge and information between the council and community to encourage the education and informing process. Facilitators need to be established from within different groups of society and are important in encouraging communication to find what will best work for communities, what will encourage participation and support the learning process. This was evident with reference made in the Waimakariri that, "*to make sure that social learning is taking place effectively (two-way collaborative learning) and actually resulting in positive outcomes, there needs to be pivotal people who facilitate the process for the different groups within the community" (*Council staff member*)*. Those in the community who people naturally engage with need to be identified and utilised in the facilitator process. In Waimakariri, this approach was outlined as having been successful to date with some community projects where it was stated that, "*people have responded really well to some small community projects where we have had key people who have worked with others and brought them into the process; it's only early days but we are already seeing the benefits"* (Council staff member*).* The challenge is identifying those facilitators, who may need to be the natural leaders, such as trusted and respected community members and senior managers. A facilitator for social learning provides a useful pathway through which participation can be encouraged, prioritisation for education can be pushed, and the space for discussion for resilience planning can be enabled and managed for the future.

In order for social learning to meaningfully occur in practice, developing and implementing learning management systems and a diversified range of approaches is necessary. As recognized in Waimakariri, "*if a variety of tactics are used from online measures to our hazard education information packs which were sent to everyone, it makes it more open to all groups across the community and provides a means through which everyone can learn and inform the Council for example in the best way which suits and encourages them to*" (Council staff member). Success will likely be greater in terms of social learning for resilience planning if groups can be targeted to engage in a manner that interests and works for them; online learning will not work for everyone so in looking forward to social learning in practice for resilience planning this must be considered and provided for. A variety of different approaches would be required including workshops, forums (both online and offline), scenario programs providing framework for a variety of views to be contributed, community programs, interactive websites, social media, community events and information packages. In Waimakariri, an example was the discussion around their 'hazard information packages', which were made available both online and offline. Furthermore, Council staff members and planners went to local community events to engage in discussion and promote the work. This idea was also seen to run in parallel with the necessary step for social learning of establishing feedback/learning loops through the measures outlined above, so that information can be received, provided and responded to in the specific context so that learning can take place.

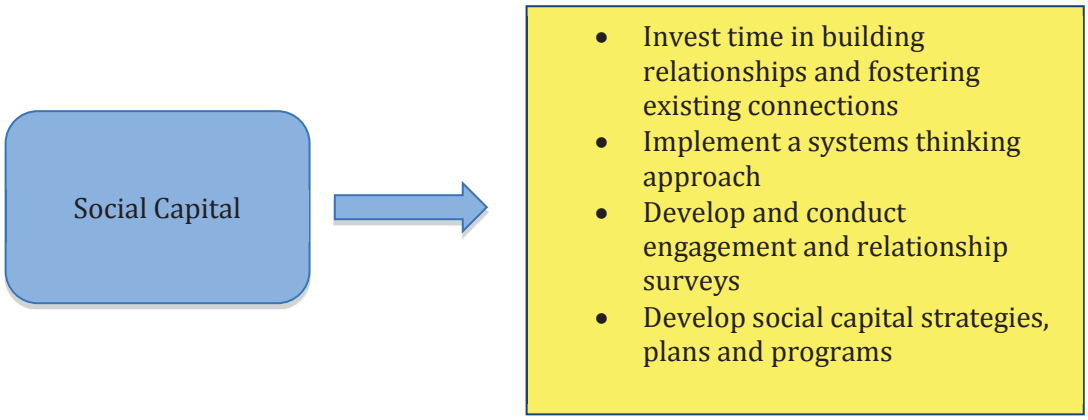

Figure 10: Social Capital in Practice

Social capital is one of the fundamental best practice priority characteristics for resilience planning, concerning relationships and connections across 'whole communities' As reflected in the Waimakariri case study, social capital is about strong relationships, which is key to resilience planning. The current scholarship does not provide for what needs to be done to put social capital into practice. Insights constructed together from the Waimakariri context shed light on how social capital can be put into practice effectively which are distilled below. The Waimakariri insights distilled are as outlined below.

There is a need to build and act on social capital in peacetime,[8] rather than waiting for a disaster or disturbance to occur before making changes towards building social capital. Both planning and community based practitioners expressed a need for social capital to be built and put into practice 'right away' because of its necessity to resilience planning's future. This viewpoint from practitioners is clearly understandable given the resilience planning approach is based and relies upon social capital and communities working well and being meaningfully connected. In establishing social capital into practice, it cannot be standardised into a universal model, but rather needs to be tailored to the specific context and environments being addressed. An example from the Waimakariri perspective was *"we need to make social capital work for us; what needs to be done here to see it in practice is ultimately going to be different to say Christchurch city, Dunedin or Auckland"* (Central government official). Perceptions in Waimakariri were that the Council needed to do a lot of prep work, consultation and engagement, and after this develop strategies and programs in collaboration as explored below. Translating social capital for resilience planning into practice cannot be undertaken through a universal model, but requires it to be embedded into practice through gaining an intimate understanding of the local context and situation first.

A key component for social capital is investing time in relationship building and fostering already existing connections. Creating genuine connections, and establishing working relationships, was perceived as a fundamental first step to putting social capital into practice. Waimakariri participants reflected that "*creating partnerships is a large component in any effort to seeing social capital effectively in practice"* (Council planner). Insights revealed that simply coming together and getting to know your colleagues, community and neighbours through taking time out of everyday jobs and tasks and committing to relationship building is a key mechanism required in building and fostering social capital for resilience planning in the future. There was a common agreement amongst the practitioners in Waimakariri and wider Canterbury on the path required to link social learning tailored for resilience planning into practice. It can and should, as the interviewees stressed, purely be done through establishing regular team building workshops within the councils, having organised community events to bring people together, and actively getting out amongst the other community members. Together these frame a useful starting point to form bonds to make resilience planning more viable and take place in practice. As noted, "*there is no scientific formula to building relationships and connections in order to provide for social capital, you just need to find fun and engaging ways of bringing people together*" (Central government official). Waimakariri practitioners revealed having already begun to put this action into practice through the community 'You-Me-We-Us' project and other events where a concerted effort has been made by Council staff members to get out into the community and build relationships.

[8] This is a Canterbury specific use of this term which is normally associated with war-torn contexts. The local Canterbury people have been through a type of 'war' with the earthquakes, and as such the term 'peacetime' usefully illustrates the reality of the past experiences in Canterbury and where they are today.

An interesting insight was the need to implement systems thinking and acting particularly from within the Council so that social capital can be realised in practice. Bringing in a systems thinking and planning style requires a change from the traditional top-down organisational focus and culture. It was commonly agreed in the Waimakariri case study that "*everyone must be given a voice and a place in the planning processes and particularly the resilience planning space. The Council can't be solely responsibility and in dominant control of the thinking required for resilience planning otherwise it simply ends up reflecting just one perspective and focus point which undermines social capital and the importance of building it*" (Council staff member). This recognises the need for joint working via identifying the web of connections and relationships in the community to gather a variety of visions, ideas and situations to achieve goals. This style of systematic thinking provides for the recognition of the whole community and brings everyone together so as to provide for and consider how to nurture the connections or build and foster this meaningfully. Social capital will not be built or fostered if organisational top-down thinking with a single focus point is relied upon, but rather must be provided for through the systems style thinking embracing the utilisation of connections across a community. This is fundamentally important to supporting the very vision and purpose of resilience planning as something which works for everyone.

Undertaking yearly engagement and relationship surveys were considered across Waimakariri practitioners as a useful step in actioning social capital into practice. The process of conducting surveys would provide a key basis for ensuring engagement and collaboration between the community groups is undertaken in an appropriate matter specific to the location or situation, to allow necessary changes or adaptations to be made. This was reflected with participants perspectives, which signalled that the process of engagement is the heart of social capital, and as such ensuring that it is linked into practice effectively is critical. As such, engagement practices need to be specific to the community so the right information is gained first before proceeding. Conducting engagement surveys can be undertaken through using online and offline measures to identify: what relationships and connections exist; where attention is needed to build these; what engagement strategies will and will not work; what the community's wants and needs are; and what measures will encourage them to build social capital. This insight into transitioning social capital into practice is significant as it provides a necessary means to place specific focus on the action once contextual insight is gained to shape the process to meaningfully allow and provide for resilience planning.

Developing and implementing social capital strategies, plans and programs was considered in the Waimakariri context to be a positive and straightforward approach to translating social capital into practice. Development of new social capital strategies were deemed a necessary step in putting social capital into practice as it formalises the action, provides a vision for it, and delivers opportunities for relationships and connections to be established and fostered. There

are a number of ways in which this process could be undertaken based upon the Waimakariri views, which included the following: establishing community projects and programs in order get people together and get involved; and building collaboration and a sense of 'community'. An example of this was developing community projects, where it was noted that generalised projects like this build social capital, which can then be fostered and fed down into the resilience planning context. Interestingly, this community projects approach is currently being tested in practice in Waimakariri through the 'You-We-Me-Us' program, which is trying to build relationships and connections between the Council and community through projects with the end goal of building resilience. Developing an engagement strategy was another suggestion, which sets out goals, visions and processes for engaging and therefore targeting social capital. It was suggested that both formal (e.g. feedback on legislation) and informal (in the context of the community and in a general space) engagement was fundamental to building social capital for resilience. Furthermore, the development of a neighbourhood plan was also seen as a useful way forward to put social capital in practice. Such approach would directly require communities to come together and make plans for their neighbourhood, which would help to build relationships and get people working together for a common purpose. This step in practice would result, as practitioners stated, in, "*positive outputs for resilience planning being practically applied"*. Social media was considered to be a very useful medium for building relationships and connections between the community and Council. In Waimakariri a Facebook page, 'neighbourly', has recently been established to try and test the effectiveness of this in practice. Developing plans, policies and programs would be a useful step for building social capital, which would support resilience planning in practice.

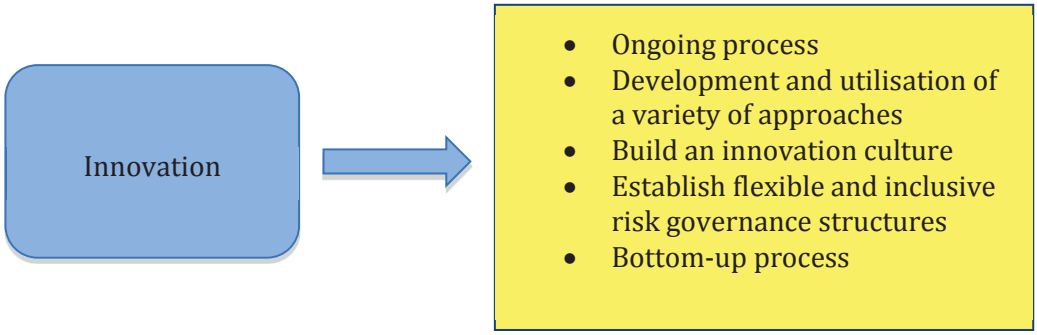

Figure 11: Innovation in Practice

One of the best practice characteristics, *innovation*, was deemed a fundamental component to resilience planning and its operationalisation. With natural hazards becoming more of a threat, there is an understandable need for innovation to provide unique and creative ways of dealing with the changing hazard landscape. Similar to the other best practice characteristics for resilience planning, there is no literature or scholarship providing guidance on how to put innovation into practice, and how it needs to be used in order to successfully feed resilience planning for practice. There is no specific scientific formula, framework or management style that can be relied upon for innovation. This was outlined in Waimakariri, where the point came across that there is no magic bullet to implementing and creating innovation. You cannot expect

to manage your way to creativity, and it is a challenging characteristic to work with in trying to set down what is required to put it into practice, but it is necessary. It was encouraging from the Waimakariri case study that some insights were produced on what is needed and how to put innovation for resilience planning into practice.

The process of being innovative and practising innovation for resilience planning cannot be a one-off endeavour, but rather must be an ongoing process. Resilience planning is a complex process which must support the changing hazard environment, "*as things change so does the need for new ways to tackle that change and because of this, we need innovation and it must always be continuing to take place"* (University academic), as Waimakariri perspectives reflected. Ensuring innovation is an ongoing process requires people to be brave and have the confidence to share ideas and take risks, which will only be achieved through engagement, building trust and simply providing the opportunities to encourage innovation across the whole community. To action ongoing innovation in practice it was exemplified from Waimakariri that engagement is the crucial key component; engagement from the Council with the community, local organisations and agencies, to "*educate them and inform them about resilience planning and to encourage and provide the foundation for innovation to evolve"* (Council planner). As distinguished from the interviews, the use of online forms, idea boxes, online forums or share an idea spaces could serve as appropriate avenues to explore.

To successfully move innovation from being a conceptualised best practice characteristic to being practically implemented for resilience planning, it was recognised that the first step needed is to build a culture for innovation: "*in practice, it requires creating a space where innovation is encouraged, fostered, supported and utilised"* (Community organisation advocate). Building a culture for innovation is about creating the conditions amongst the community and within the council organisation which will be conducive to innovation where it is allowed for and people are confident to be innovative and share ideas. Several key steps for what needs to be done to build a culture of innovation for resilience planning were identified including: clearly identifying aims for change through resilience planning; and removing constraints inhibiting innovation through starting to share knowledge and decision-making responsibilities, which means involving people and establishing a participatory collaborative process. Increasing participation into the planning process will allow greater opportunities for innovation to take place. This is important because it recognises that innovation can come from anyone and anywhere. As such, the resilience planning process, to allow for innovation, must be open to anyone with a desire to change and a willingness to challenge existing ways of working; recognising all ideas big or small and taking the time to consider them all, "*you cannot simply rush through the processes as we sometimes try and do to get results, we must not be too quick to disregard and work through all creative angles that emerge"* (Council staff member).

It was noted that in order to put innovation into practice what needed to take place was fostering innovation from the bottom-up. The general community must become the place where innovation stems from. This was evident with interviewees establishing a need to move beyond the Council for coming up with ideas and paving the way forward; "*seek ideas from outside the practice. In many instances you do not need to reinvent the wheel; simply look for great ideas from external resources such as schools and universities"* (University academic). For innovation in practice, what is required is to take projects for resilience planning to those you normally would not: *"kids and students at university are very innovative and have great ideas that [we] normally wouldn't think of, but the problem is we never think to use or ask those groups"* (Council planner). Innovation in practice will only come through working together and utilising all individuals across the community and it is necessary to make the process open to everyone.

Establishing flexible and inclusive risk governance structures was widely acknowledged in Waimakariri as a key mechanism for undertaking innovation. Innovation in practice specifically for resilience planning requires governance structures that are flexible and can be adapted to accommodate and sustain an open and wide framing for the council and community. This was evident from the Waimakariri case as it was stated that, "*the planning processes and policies should be flexible and adaptable. You can't predetermine the outcomes otherwise innovation is stifled, rather we need to establish some guidelines that can then grow as innovation is able to come out*" (Council planner). What is required is the development of widely scoped frameworks and guidelines that provide guidance and the process for resilience planning, but which are not too detailed. Rather they should be structured and tailored in such way that they provide the necessary components for the resilience planning process, but leave the outcomes and the processes to organically come about through creativity and innovation. An inclusive framework, which supports a participatory governance role, is needed to discover a balance between planning process structures and self-innovation by all individuals. Modes of governance with the capacity to release creative energies encourage innovative practices, move beyond narrow conceptions, and give space to multiple activities are necessary. This was exemplified in Waimakariri: "*it is necessary for us to think carefully about our governance structures for resilience planning – we need flexible planning process structures and they must be inclusive so that it provides the space and conducive environment for innovation to grow and emerge"* (Council planner). Key to resilience planning is thinking outside the traditional way and finding new unique methods to tackle natural hazards that arise; innovation will allow the process of resilience planning to emerge and break outside the usual approaches to better combat against the risk being faced.

It is clear that on the ground in practice from the Waimakariri perspective, there are many different ideas as to what needs to be done to put innovation as a best practice characteristic into practice. Creating innovation requires a breakthrough in creativity, imagination and instinct. Developing this requires perceptiveness, ingenuity and agility and implementing these requires cooperation from the whole community, inclusive and flexible governance structures, building an innovation culture and ensuring that all of this continually takes place. When these conditions are established and developed, innovation can and will take place.

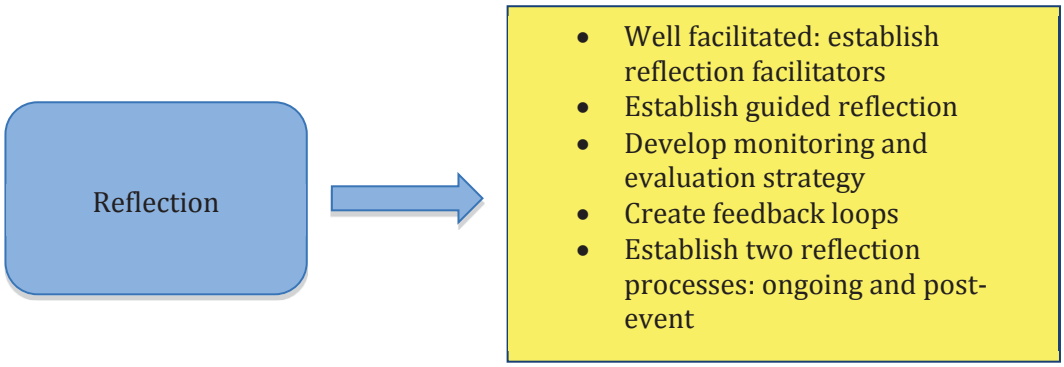

Figure 12: Reflection in Practice

Reflection was deemed to be the final key priority characteristic required for resilience planning in the case study. This was obvious as it was highlighted in the Waimakariri case study, particularly in light of the earthquake experiences that "*you can't move forward [especially with resilience planning] unless you look back otherwise you will make the same mistakes*" (Council staff member). Despite scholarly attention on the importance of reflexivity, there is no information provided on how to put reflection into practice for resilience planning. Consideration was given to this from the interviewees, but it was noted in many instances that this is something they were still trying to get their ahead around and in many cases were unsure of how to meaningfully put reflection into practice to support resilience planning. Despite this, some key insights were distilled as to how the process of reflection can be put into practice. The following explores the key insights.

In putting reflexivity into practice for resilience planning, it was recognised that establishing guided reflection is necessary. Interestingly, two types of guided reflection were considered essential to development: ongoing reflection (could occur yearly to every five or 10 years) and post-disaster reflection (a specific process that would only take place after a disruption or disturbance and would differ to the day-to-day reflection process). It was clear that the two styles of reflection were important for resilience planning in ensuring, as interviewees responded, that 'learnings and lessons from events and day-to-day practice and actions are taken on board and utilised. This was clear as interviews referred back to the Canterbury earthquakes and noted that, "*we have a unique time at present to put resilience planning into place, but before we can meaningfully do that we need to utilise the learnings that have come from the earthquakes so as to move forward with clear and specific direction and purpose. This*

is not something which should just happen now but after an event also" (Council planner). For resilience planning to work in practice, ongoing reflection must take place, to ensure that the planning efforts continue to evolve and adapt to change and as more information comes to light to directly align with resilience planning. It was commonly acknowledged that developing and providing a strategy for reflection would be the most appropriate measure to ensure that effective guided reflection, both ongoing and after disasters can be provided and planned for. It is important that the process for reflection and how it will be done is first laid out to ensure it is meaningful and will be used in the most appropriate manner.

In translating reflection into practice, in Waimakariri it was commonly considered that a monitoring and evaluation strategy needed to be developed in order to support a process of reflection specifically for resilience planning. It was clear that such strategy should be developed in collaboration with the local council, community, agencies and organisations. As interviewees noted, "*it is important that process of reflection needs to reflect the whole community and as such the whole community must be involved" (*Council staff member*).* This insight is important, as moving forward with reflection for resilience planning through a strategy provides a meaningful way for it to take place and ensure it is well facilitated, thought through and provided for. As noted in the interviews, the usefulness of such a strategy is that it allows for a variety of tools and measures for the reflection process to take place to be laid out and documented so that every person knows how it will work and how they can participate such as through forums, meetings and online spaces. The development of a monitoring and strategy was considered to provide the most significant way of providing for resilience planning and the necessary reflection process as it delivers the ability to be able to change course as learnings, lessons, insights and developments in knowledge and information are gained. The development of such a reflection strategy will undoubtedly become more necessary and relevant as natural hazard events continue to change and intensify and resilience planning develops, expands and becomes more entrenched in practice.

In linking the characteristic and process of reflection into practice it was deemed necessary from within the Waimakariri case study context to have reflexivity facilitators. It was suggested that a range of facilitators for reflection would be a necessary step in order to "*encourage the reflection process to occur, to be a conduit for helping to move reflections into action and to provide the spaces and opportunities for reflection to occur"* (Central government official). It would inevitably be important that a variety of facilitators are established to 'represent' and 'reflect' the entire community, which is an important consideration, as if meaningful reflection of a location is to take place it must echo all the groups, circumstances and different situations across a community. It must reflect the entire community so that in the end resilience planning is tailored and working for the entire case of the community, location or context in question.

The establishment of feedback loops was identified as being a necessary component in distilling how to put reflection into practice. An example of this was interviewees noting that the key to putting reflection into practice is establishing feedback loops for resilience planning, which is important because the hazard environment and landscape is going to change as is the knowledge and insight we have. Therefore, developing feedback loops provides a path for reflection to take place into practice and then be meaningfully used. It was considered that the feedback loops would require resilience planning being put into practice, sourcing feedback from the different sectors of the community (must be regular and through different forums) and then having flexible resilience planning guidelines, which can then be adapted based upon the reflections. While the establishment of feedback loops was deemed to be a fundamental element to putting reflection into practice, it was felt from the Waimakariri case that some of the reflections that have taken place since the earthquakes have not been that useful with people getting stuck on personal experiences. As such, in many cases respondents noted that they were unclear at this stage what specifically is required or needed for resilience planning in terms of establishing these meaningful and useful loops of feedback and they are still searching for this clarity themselves. This is an important recognition as it demonstrates the need for more work and investigation to be undertaken.

The process to operationalise resilience planning corresponds with having to put the best practice characteristics into practice. As the insights have shown, the Waimakariri interviewees expressed general ideas as to how to practically do this. The responses were a mix of insights into what is required and needed for resilience planning and how to actually put the actions into practice. This recognition provides consideration of resilience planning being a complex journey; the process of trying to determine how to best see the concept out in practice is one in which is not clear cut and simple to identify. It was evident through the findings that people are still trying to make sense of resilience planning and how to create the capacity to see it transform in practice which, as this research has revealed, is not a straightforward simple process. Importantly, this reinforces the reality that to see resilience planning operationalised in practice is going to require a lot of work, commitment and effort.

As outlined, the case study research from the Waimakariri has distilled out a number of key insights into how to put the best practice resilience planning characteristics into practice. However, these are purely based on the case study research and there is no literature to support, compare and discuss the findings in context, as the current resilience planning scholarship is yet to provide for and address the transitioning space between the characteristics, actions and practice. What is emerging from the case study was a clear mixture of steps and insights considered necessary for putting resilience planning characteristics into practice, but they do appear ‘confusing’ as people are trying to make sense of and forge their way through the new resilience planning space. It is clear that the actions to practice insights for the characteristics are slightly confusing, as details regarding how to sequence the actions in

practice were unclear, as participants recognised. They had clear thoughts on what was required for resilience planning in practice and how to do it, but were still *"trying to muddle [their] way through this space and when these actions need to be undertaken and by whom".* How it would all unfold in practice remains unclear. This is important and is reflected in the fact that a mature understanding of resilience planning for practice is not yet present, but practitioners as reflected in Waimakariri are definitely trying to find ways to move this space. This is positive for resilience planning and how beneficially it is being perceived for practice. To properly unpack the details that emerged, further work into how and when to sequence these actions based upon the insights gained into practice and actually seeing resilience planning working in reality is required. The use of participatory action research, which would co-implement this research into practice, is necessary to make sense of the insights and take them to the next level for practice. The insights into what needs to be done to put the resilience planning characteristics and associated actions into practice, which emerged from the Waimakariri case and the framework below which has been developed from this research, provide a useful starting point for the discussions and steps required transitioning resilience planning into practice.

5.7 Resilience Planning Framework

Out in planning practice there is a real tension between trying to ensure decisions are made both effectively and timely, particularly in regard to natural hazards risk reduction. As the literature has demonstrated, past planning approaches for natural hazards have grappled with the best way to make effective decisions and plans for communities in light of hazards risk (Burby, 1999; Glavovic, 2010; Haque & Etkin, 2007; Lagadec, 2009; Mileti, 1999). This was similarly reflected out in practice in the Waimakariri where it was commonly acknowledged that the challenge to planning, especially since the earthquake experiences, is trying to make the right decisions quickly and ensure that the decisions and plans made are going to effectively safeguard the community. The confronting reality to this decision-making and planning process is that it is dealing with issues and layers of complexity, uncertainty, turbulence and dynamism. Resilience planning has a key role to play as scholarship identifies in light of the natural hazard risks being faced today to ensure that more than just static responses and ineffective plans and decisions are made to the uncertain and dynamic environment. In order to see resilience planning used in such way it first must be institutionalised and operationalised so as to translate the planning concept out to practice. Despite this recognition, the resilience planning scholarship does not provide a framework of particular sets of practical steps to do so. Through pulling together the insights, ideas and findings from the Waimakariri case study perspective, however, a framework approach to aid resilience planning translated into practice has emerged which is outlined below.

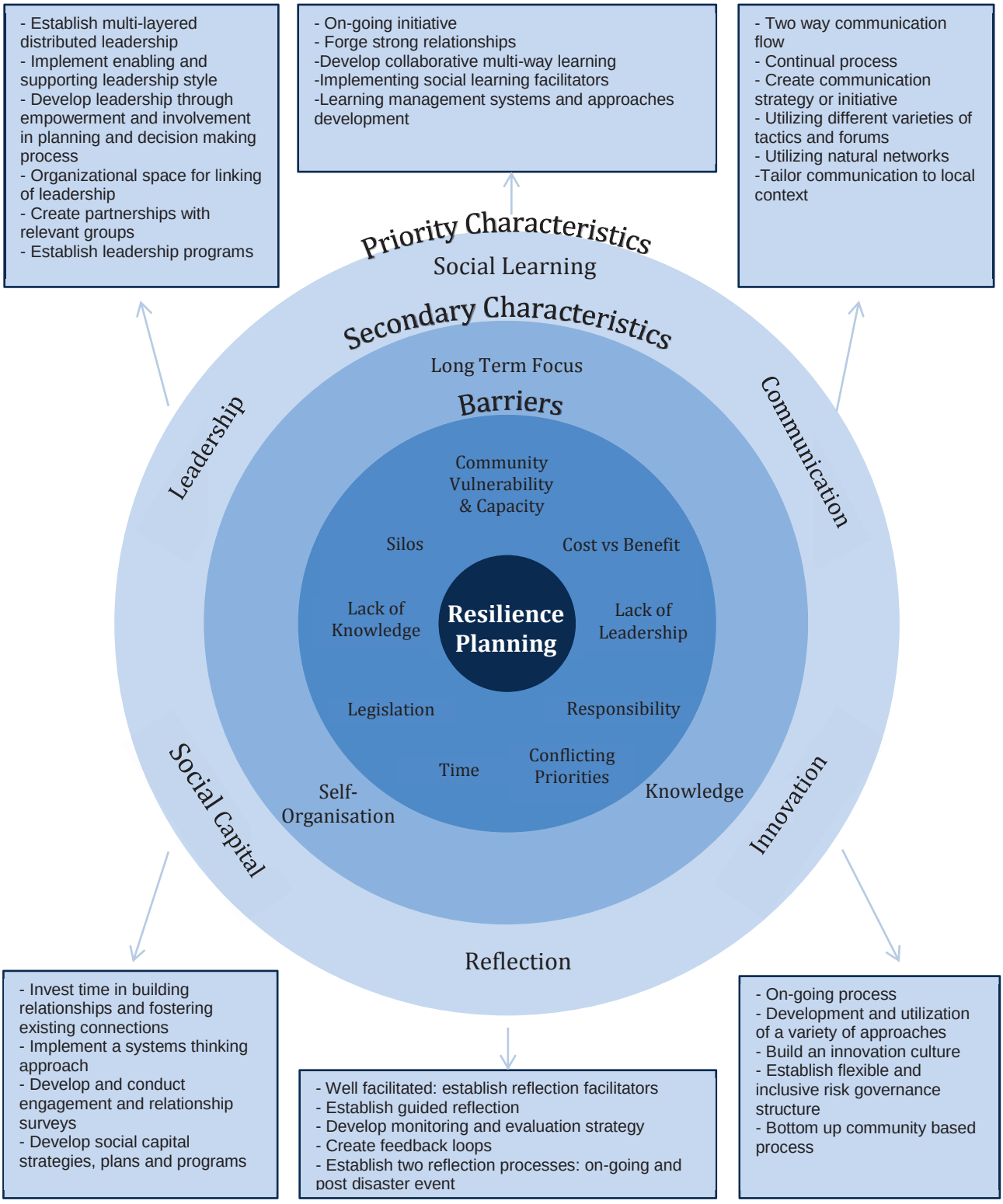

Figure 13: Resilience Planning Framework

N.B. The outer boxes present the actions required for putting the characteristics into practice and what needs to be done.

The framework in the centre outlines the barriers for resilience planning which must be overcome and then moves out to the secondary best practice characteristics required. The third circle of the framework presents the priority resilience planning characteristics and then feeds out to the new component of the framework of the practical insights and steps into putting resilience-planning characteristics into practice. The outer boxes of the framework present the layer of information and detail required to move resilience planning into practice through the characteristics in which the literature does not yet provide for. This framework is representative of what was considered necessary to operationalise and institutionalise resilience planning in the Waimakariri context.

The framework serves as a set of stepping stones which demonstrates from the Waimakariri perspective that there are priority and secondary characteristics, which must be undertaken for resilience planning to be put into practice. To link the resilience planning characteristics to practice there are specific practical steps (outer boxes of the framework), which are required to be undertaken. However, to get to the position of being able to put the actions for the characteristics meaningfully and effectively into practice which represents the outer layers of the framework, the barriers inhibiting resilience planning must first be overcome. Each stage of the framework is therefore interconnected and must work and link together in order to see resilience planning in practice. All of these stages and elements of the framework needs to take place in the real-world and real-time planning process. The framework must unfold in the planning cycle which as Moser and Ekstrom (2010) identified is the three phases of: understanding, planning and managing. Further work is required to explore when and where within the real-world planning cycle the different components of the framework need to be sequenced and occur.

This framework provides a useful starting point to beginning to think about resilience planning and what is required for it to be used in practice; it demonstrates some practical insights into how resilience planning can move a step closer to transitioning from its conceptual phase into practical use to help deal with natural hazards for councils and communities across New Zealand. This framework will inevitably need further development and refinement as further research and insights are gained, not just solely in the Waimakariri context but New Zealand wide. The framework is an exciting step forward for resilience planning and adds a third layer of detail, specific actions and barriers directly for the New Zealand context, which ultimately begins to provide a picture for resilience planning in practice for respondents in Waimakariri and as was demonstrated in the literature is currently missing. It is exciting to note that the Waimakariri participants were very positive and interested in such framework and were genuinely interested in seeing how it could begin to be used in practice as the approach due to the earthquakes is urgently required.

5.8 Limitations

There were several limitations to this research and its findings, which have been identified. One key limitation is that it is from the Waimakariri perspective only. While this research has facilitated a more detailed and comprehensive picture and useful starting point for resilience planning and its transition into practice, only the one case study was used. The practical implications of this meant relying on only one source of information and not being able to compare and look at alternative cases to provide greater depth, insights and understandings of resilience planning. It is expected that had multiple case studies been used, a wider range and slightly differing results would have been revealed and as such the framework, opportunities and barriers are potentially slightly limited and at this stage.

The data collection occurred over a finite period of time; therefore, the information that the participants provided is a direct reflection of their views at that specific point in time, which is a limitation of this research. The data is retrospective of the Canterbury earthquake events, which happened a few years prior to the research, but the aftermath is still being contended with which did influence and shape the interviewees' opinions. While the data gained is useful, it is primarily reflective of the current Canterbury context and does not take into account or reflect responses and results that would have been gained potentially in peacetime and in localities unaffected by a natural hazard event. Potentially the results and findings of the research would have been slightly different, and as such this is a limitation.

The interview participants were not versed in the literature, nor were the findings of the literature discussed and brought into the interview process. This was a key limitation to this research, as the interviews did not go into detail on some of the best practice characteristics identified in the literature. In particular, a range of other best practice characteristics were identified in the literature, all of which would be useful and should more than likely have a place in a resilience planning framework. However, these characteristics were not identified in the interviews, and as such no insight was provided on how they can be translated into practice. This was a limitation as it means that the framework developed is not yet complete and lacking some important components and insights which this research did not provide for.

The framework this research has developed provides a good step forward for the resilience planning scholarship and serves as a useful starting point for moving the concept into practice, however another key limitation to this research is that the framework is incomplete. The interview results did not end up shedding light on how to put the secondary characteristics into practice, more than likely because they were not seen as being so important. Rather only the priority characteristics were addressed, and as such there are still gaps to the framework and further research would be required into these secondary characteristics before work could progress to seeing how this framework could be used in practice.

A final limitation to this research is that it did not test the findings or explore their usability practically from the case study; the results could not be tested in practice. As such, while the research is useful and provides key insights, it remains relatively conceptual at this stage

5.9 Conclusion

This chapter has presented the data obtained through the interview process that gives an insight into resilience planning and its institutionalisation and operationalisation for practice. The results and discussion identified a high level of awareness of resilience planning of which the Canterbury earthquake events were a primary trigger for. It was revealed that had the earthquakes not happened, the conversation surrounding resilience and resilience planning which is currently occurring would not be taking place. The discussion in light of the key findings revealed that for resilience planning to be put into practice, a specific culture needs to built. From within that culture development resilience planning was highlighted to be best integrated into practice through the development of a resilience planning framework, strategy, set of guidelines or consideration criteria.

The key findings of the data and focal point of the discussion in terms of the research question and aims were the insights into how to transition resilience planning and its conceptual best practice characteristics into practice. Significantly insight was provided as to how to operationalise resilience planning characteristics so as to support the endeavour in practice. This chapter has revealed that for resilience planning to be institutionalised and operationalised into practice through the best practice characteristics, a number of barriers must be overcome and opportunities taken. All of this must take place within the real-world planning cycle. A resilience planning framework was developed which demonstrates how to conduct this process so as to effectively institutionalise and operationalise resilience planning for natural hazards in New Zealand. It appears that there would be support for resilience planning in practice and the key insights provide an exciting and useful starting point.

The following chapter will provide a summary of conclusions from the research and recommendations for future research.

Chapter 6
Conclusion

6.1 Introduction

New Zealand is highly susceptible to natural hazards, and resilience planning is therefore imperative to help to manage, plan and deal with the risk. As such, the main objective of this research was to explore resilience planning and identify what the opportunities and barriers are to its practical institutionalisation and how to operationalise it in New Zealand from a Waimakariri perspective. The research also sought to develop a best practice resilience planning framework to help aid resilience planning's transition from conceptualisation to a practical reality. The preceding chapter has provided an in depth discussion of the research findings. The purpose of this final chapter is to provide concluding statements of the research outcomes and recommendations for planning practice and future research.

6.2 Key Findings

There were several significant findings, which emerged in this research. The findings are summarised below.

From the case study based within the Waimakariri District, it became apparent that in institutionalising and operationalising resilience planning, a cultural shift in how we think and approach natural hazards planning is required. A resilience planning culture must be built based upon formal and informal institutions to provide for a meaningful resilience planning approach in practice. To assist in changing and building such a culture, multi-collaborative responsibility is required. This begins with the 'whole' community being involved including district and regional councils, local organisations and agencies and the local residents. If this is achieved, it will help lead resilience planning to become a practical reality.

This research has been based within the overarching context of resilience planning and an integral component to the planning approach is having meaningful awareness. In the Waimakariri, a high and positive awareness was perceived to exist for resilience planning. This research has shown that in reality the majority of awareness about resilience planning in fact reflects an understanding of the imperative of resilience and building resilient communities as opposed to resilience planning specifically. With the current Canterbury earthquake situation, however, there is a unique timed opportunity at present to increase and improve resilience planning awareness as there is the context and foundation to base discussions on. Despite the positive awareness, resilience planning is not yet practically applied in New Zealand due to a haze and lacking of clarity surrounding, what resilience planning looks like in practice, how to use it, what to do with the approach and where to begin. This research has managed to start reducing the haze and make resilience planning more clear in order to move it a step closer to being a reality in planning practice.

The regulatory context of managing and planning for natural hazards focuses on six key laws and plans: the RMA, LGA, CDEMA, CDEM group plans, district plans and LTPs. While each of these documents provide for natural hazards planning, in reality the inclusion of the concept of

resilience and specifically resilience planning is minimal. The CDEMA is the only document which accords sufficient focus on resilience. In summary, the research found that the key planning documents currently do not adequately support, prioritise or place focus on resilience and resilience planning. There is an opportunity to improve the current management and planning of natural hazards via the transforming and injecting of resilience into the current legislation.

In terms of how resilience planning should be institutionalised and operationalised, it was found that an informal approach was the most valuable. In the specific context of Waimakariri, producing an informal framework, a set of guidelines or consideration criteria for resilience planning, was identified as being the most appropriate approach for practice. Despite not being recognised in the case study, there is a need to explore how the current formalised legislative setting in New Zealand can be reformed and shaped to include and begin to provide for resilience planning. Ultimately, regardless of how resilience planning is provided for, to be successful it is going to need higher-level government support of some form. As such, there is an opportunity and need to explore how an informal resilience planning approach could be supported and feed into the existing planning frameworks.

It is inevitable that institutionalising resilience planning into practice in New Zealand will face challenges and barriers, but the resilience planning literature did not shed light on this. The research found that there are several human and informational and social barriers, which must be overcome for resilience planning to effectively be transitioned into practice. The following barriers were identified:

- Leadership;
- Responsibilities;
- Lack of knowledge;
- Legislative setting;
- Capacity and vulnerability of individuals;
- Time/timing
- Priorities and short-term focus;
- Silos;
- Cost versus benefit.

Resilience planning's institutionalisation into practice was identified as being challenging and associated with various barriers. Despite this, the research in Waimakariri found that the following enablers to overcoming the key barriers exist in order to strengthen resilience planning and aid its transition into practice:

- Concerted effort is placed on resilience planning;
- Utilising a participatory planning approach;
- Priority on resilience planning;

- Collaboratively collecting and preparing detailed information on the benefits of resilience planning;
- Vulnerability assessments;
- Utilising positive reinforcements;
- Focus on the mission and not the culture.

There are also general opportunities to institutionalise resilience planning outside of overcoming the associated barriers. These opportunities include: the heightened awareness and interest currently surrounding resilience and resilience planning; the recent earthquake experiences; the relationships and connections developed through the earthquakes; and the recovery and rebuild period in Canterbury. These opportunities for resilience planning tie directly back into the earthquake events. Had the earthquakes not occurred these opportunities would not exist; there is a prime opportunity currently therefore in Canterbury and wider New Zealand if they choose to learn from Canterbury's experience to make changes, and forge new paths for how we plan and deal with natural hazards through the new resilience planning line of thinking. As the barriers and opportunities to institutionalising resilience planning into practice have not been explored in the current scholarship, these findings provide a significant contribute to the field and serve as a useful starting point for thinking about how this valuable concept can move forward to being utilised in planning practice.

With regard to best practice for resilience planning, the review of literature determined that a number of key characteristics are required to operationalise resilience planning. However, there is yet to be any guidance provided as to how such characteristics are linked to practice. The Waimakariri findings compare very well with the international literature in terms of best practice characteristics being identified including: leadership, social learning, social capital, communication, innovation and reflection. Unlike the academic scholarship, the case study research revealed a number of key steps for guiding how each characteristic can be put into practice and importantly what needs to be done for the future. The framing of the best practice characteristics required, and how those characteristics can be put into practice, was a significant finding for this research and a positive step forward for resilience planning's transition towards operationalisation in New Zealand. It is recognised, however, that there is still a need for further thought to be given and research done to explore how these best practice characteristics and actions will play out and look in practice.

Based upon the different elements and findings of this research, a resilience planning framework was developed to provide guidance and shape thinking around how the planning approach may work in practice in New Zealand. Such a framework was a significant research outcome as no other framework for resilience planning of this nature has been produced in the current literature. The framework is based upon four key aspects: 1) the barriers which must be overcome: 2) the secondary characteristics required: 3) the priority resilience planning

characteristics: and 4) guidance and steps for linking the characteristics into practice (see Chapter 5). What the framework recognises is that there are priority and secondary characteristics for putting resilience planning into practice. However, for this to occur there are first barriers that must be overcome and these processes must fit and be used within the real-world planning cycle. This framework provides an exciting and substantial contribution to the resilience planning scholarship and is presented as a guide to hopefully help shape future planning focus and choices surrounding hazards and disaster in New Zealand in the future. It is envisaged that further research here is required to see how this framework could play out in practice in this country.

The limitations of this research have been discussed in this report. While these findings are significant, provide insight into resilience planning's operationalising and institutionalising, and are a positive step forward for resilience planning, further research and exploration is required. Research limitations that require further exploration include testing these findings in practice and exploring other comparative case studies. In this way the findings of this research could be explored in further detail to go towards improving the viability and usability of resilience planning in New Zealand.

6.3 Recommendations

Based upon the outcomes of this research, key recommendations for current planning practice in New Zealand in terms of resilience planning are as follows:

- The Canterbury earthquakes have served as an important reminder for Canterbury and wider New Zealand that we are very prone and susceptible to natural hazards. The earthquakes have provided a unique opportunity as Canterbury is trying to rebuild, create a new future and rediscover itself. It is important that this opportunity is capitalised on and resilience planning is explored in regards to how it can benefit the community and where it can be used. There is currently the unique opportunity (one not normally present) to make changes and bring in resilience planning and that needs to be grasped and taken advantage of by councils, communities, agencies and local planners and not left to pass by.
- A common and meaningful understanding of resilience planning must be created. Conversations and education around resilience planning need to be facilitated through discussion and consultation across communities to: i) increase and improve awareness and understandings of resilience planning; and ii) begin exploring how resilience planning can be integrated and tailored into community planning practices across New Zealand. The time to have resilience planning discussions is now and this needs to be capitalised on by appropriate groups including councils, agencies, and government and local planners.
- The New Zealand Government needs to take a leading role in both implementing and supporting resilience planning. Time needs to be spent exploring how resilience planning can be used and what guidance and support the government can provide to

local authorities and communities. This is important as resilience planning is a new approach and will require higher-level support. Finally, the government needs to inject resilience planning into the planning regimes through transforming the current legislation to help align priorities, focus and attention on this approach.

Further resilience planning research needs to be undertaken within a New Zealand context. Based upon the findings and contributions made by this study, recommendations for future research required include the following:

- Further case study research for resilience planning within New Zealand is required. This research could only explore one case study, and as such while it is a useful starting point does not provide a mature and complete framework and insights for resilience planning in practice. In order to expand findings and develop a more comprehensive resilience planning framework, multiple comparative case studies across different localities in New Zealand would be useful.
- Further research and discussion is required to unpack the findings of this research properly. Insights into best practice characteristics and links to practice were identified, but further investigation is required to distill the actions and work through problems and unanswered components of the framework including how to sequence the actions, by whom and when. Such a line of research for resilience planning in the future is critical to ensuring resilience planning does become a practical reality; it is important and timely as resilience planning is still confusing and people are trying to make sense of it.
- Secondary characteristics (an aspect of the resilience planning framework) were briefly identified in this research, but the details linking how to put those characteristics into practice was not explored. In order to further advance the framework, another stage of research should be undertaken to explore the identified secondary characteristics and provide the higher level of detail required.
- A final recommendation is that more extensive 'participatory action research' based upon the findings and framework from this research should be undertaken. Participatory action research would provide for the co-implementation of the framework and insights provided of this research into practice, which this thesis simply did not have the scope to do. This is an important stage in the process of trying to see resilience planning in practice as it provides a means of making sense of the findings in the practical space.

6.4 Conclusion

The value of this research is that it has made significant contributions to the current resilience planning scholarship through beginning to bridge the gap between resilience planning's conceptual state and becoming a practical reality. The scholarship to date did not provide for how to institutionalise and operationalise resilience planning. This research has contributed to the scholarship by identifying how resilience planning needs to be institutionalised (through an informal framework once a resilience planning culture has been built), what the barriers and opportunities specific to the New Zealand context are for resilience planning, and how to

operationalise resilience planning through best practice characteristics. Finally, this research has contributed the first resilience planning framework in New Zealand to serve as a useful starting point for discussions on how the concept can and should be used in practice.

Resilience planning is extremely valuable and has a key role to play in addressing natural hazards and their associated risk in New Zealand. The Canterbury earthquakes have served as a distinct wake up call for the risks that this country faces in regard to hazards and has brought to light the need for resilience planning. There is a unique time and opportunity at present due to the earthquakes not just in Canterbury, but across New Zealand, to explore resilience planning and begin looking forward for the future as to how resilience planning can be used to ensure our communities are safe, strong, stable and have the ability to cope with the turbulent hazard landscape. While there will be barriers to seeing resilience planning in practice, it is clear that these can be overcome if people are willing to try and put the effort in and maintain focus on the positives of resilience planning. This research has produced a resilience planning framework, which serves as a meaningful place and opportunity to take steps towards seeing resilience planning into practice. What is important is that the resilience planning opportunity is recognised now and actions start to be undertaken to see this concept in practice as it is more imperative now more so than ever before.

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Appendix 1
Methods: Data Collection and Analysis

1.1 Case Study Research Method

Yin (2003) outlines four constructs to ensure the quality of research designs that are using a case study methodology – construct validity; internal validity; external validity and reliability of – which have been considered and planned for in this thesis. Construct validity is concerned with ensuring accurate research of a case and avoiding 'subjective judgment' for data collection and analysis (Yin, 2003). Construct validity was overcome and managed through following Yin's (2003) suggestions of using multiple sources of evidence. For example, in this research multiple sources of evidence were used from literature review findings, interviews and documentation data. Secondly, establishing a chain of evidence (ensuring the source of evidence is clearly identifiable and laid out) to link and follow through to the conclusions and research question was utilised.

Internal validity is concerned with the presence of relationships between findings. Yin (2003), suggests internal validity can be achieved through using established methods for analysis such as pattern matching and searching for common themes. This research used pattern matching and identifying of common themes in the analysis of the interview and document data in Chapters 4 and 5 of this thesis. This approach allowed for the key data to be grouped together with respect to common themes and concepts identified from the literature review.

External validity is focused on whether the findings are applicable outside the confines of the immediate selected case study; it questions whether the findings can be generalised beyond the study's locality (Yin, 2003). The findings from this case study may have relevance and application in other New Zealand settings. It is recognised that settings, issues, circumstances and situations vary between different New Zealand localities. Nonetheless, these findings are likely to have 'external validity' as it would be expected that other settings of similar scale and many localities will face similar concerns and issues in light of the Canterbury earthquake experiences. The analysis of the wider institutional setting and lessons learned from best practice elsewhere will ensure this case study is applicable outside its own boundaries, particularly when recognising that New Zealand communities operate under a common planning regime, and as such there is broad applicability.

The key to reliability is an important concern for any researcher (Yin, 2003). Reliability of case studies is based upon its ability to be replicated with the same conclusions drawn if the study was to be undertaken at another time. To ensure the findings of this research are as accurate and reliable as possible, the process of triangulation was used. Triangulation is a facilitated process of validating data through using multiple sources of evidence and cross-checking data (O'Leary, 2010). Triangulation works to confirm the authenticity of each source and the results. Triangulation was used to promote the reliability of this research through using multiple sources of evidence, and cross-checking and comparing the different data types together with the

findings of the literature review. Findings were also discussed with my supervisor to ensure the results were realistic.

1.2 Document Analysis Data Collection

The documents for this research were analysed to produce data for the case study research through the steps of gathering, reviewing, interrogating and analysing (O'Leary, 2010).

Relevant documents were collected from various sources (internet, council and government agency). Numerous copies were then made of each of the documents that could then be annotated in the analysis process.

The analysis process begun with a 'conversation' with each of the documents. This initial review was a preliminary investigation to extract background information and general context about each document in order to allow for the document to be explored further (O'Leary, 2010). It helped to create a basic understanding of the documents in order to provide an avenue for the interrogation of the documents to begin.

The next stage of the document analysis process was to conduct an in depth interrogation of each document (O'Leary, 2010). Conducting the document analysis interrogation required an 'interview' or 'conversation' to be carried out with each document in order to start forming dialogue with the text in order to collect the data (O'Leary, 2010). After the initial review process, each document was interrogated following O'Leary's (2010) method in order to produce the data required for analysis. The documents were interrogated through an interview type process, by which the documents were treated as respondents who could provide information relevant to the enquiry on resilience planning (O'Leary, 2010). Questions were formed to conduct the interview and conversation, with each document based upon knowledge of resilience and resilience planning and information gained from Chapter 3, and with the answers being extracted and organised into tables.

The final stage of the document analysis process was to analyse the data that emerged from the interrogation process (O'Leary, 2010).The content was explored and analysed to allow for patterns, themes, reoccurring ideas and points of significance to emerge from the words, phrases and key ideas in order to create meaning based upon the research questions and objectives set (O'Leary, 2010). The results of the document analysis process can be found in Chapter 4.

1.3 Interviews: Data Collection Process

As outlined, focused interviews were utilised for this research. Focused interviews aim towards maximising a study's potential through allowing the focus to be on a specific topic or line of questioning. The focused semi-structured interview style utilises flexibility through a defined question plan, which can shift to follow the natural flow of the conversation. The benefits of such

an approach is that it allows the intended and required information to be gathered, but with the potential to also gain interesting and unexpected data through a natural conversational flow. It allows flexibility in the interview and provides a means to probe deeply into the specific research focus (O'Leary, 2010).

The interviews each utilised a set question plan to provide a general guide for the conversation (Yin, 2003). Interviews were comprised of open-ended questions to provide a level of structure and focus, but also flexibility for the discussion, which is essential to the success of a case study (Berg, 2007; Yin, 2003). This approach aimed to steer the direction of the interviews, but also to allow the discussion to go beyond the planned questioning and desired responses by encouraging and leaving the discussion forum open for the participants to discuss as many ideas as relevant (Berg, 2007). Two types of questions were asked: essential (central focus of the study and acquiring desired information); and probing (draw out additional information) questions (Berg, 2007). Each question was structured around these two styles purposely in order to gain the base information required, but to probe for greater depth from the key informants to gather the most insightful information about the newly emerging resilience planning field of this research.

1.4 Content Analysis

As outlined, the content analysis process for the case study data was carried out as follows. Both data sources were organised and sorted by undertaking an initial screening process of all interview transcripts and documentation tables in order to cull out any redundant data or unnecessary notes and observations. A systematic assessment of the raw data was then completed so as to build up categories of understanding and reduce and sort the data into emergent themes (coding of the content). To make sense of the data, an inductive coding process was utilised. Inductive coding meant that the codes used to assess any themes or patterns emerged naturally from the data without any preconceived or pre-determined notions or trying to find specific answers (Berg, 2007; O'Leary, 2010). An inductive coding approach was important in this research design to explore all avenues of the case study and to allow for expected codes to emerge, as well as giving room for important and relevant unexpected findings to emerge. Each document and interview transcript was organised and coded for important and keywords, sections, phrases, ideas, topics and concepts relating to resilience planning (O'Leary, 2010).

Once the codes were defined a detailed exploration took place to search for patterns, points of significance and connection between the coded interview and document data. This meant searching for key relationships, interesting and important points and reoccurrence or repetition between the ideas. The data at this stage was then cross-referenced against the literature in order to see how it creates meaning for the categorised concepts and issues. The final process for the data analysis was to bring together all the significant findings in the study; what emerges

and is exposed through this process was then reflected upon and linked back to the research question, aim and objectives to produce meaningful insights, answers and conclusions (O'Leary, 2010).

Appendix 2
Massey University Ethics Approval

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA

10 June 2014

Briar Belgrave
32 Milverton Avenue
Hokowhitu
PALMERSTON NORTH 4410

Dear Briar

Re: Resilience Planning in New Zealand: Opportunities and Barriers

Thank you for your Low Risk Notification which was received on 5 June 2014.

Your project has been recorded on the Low Risk Database which is reported in the Annual Report of the Massey University Human Ethics Committees.

You are reminded that staff researchers and supervisors are fully responsible for ensuring that the information in the low risk notification has met the requirements and guidelines for submission of a low risk notification.

The low risk notification for this project is valid for a maximum of three years.

Please notify me if situations subsequently occur which cause you to reconsider your initial ethical analysis that it is safe to proceed without approval by one of the University's Human Ethics Committees.

Please note that travel undertaken by students must be approved by the supervisor and the relevant Pro Vice-Chancellor and be in accordance with the Policy and Procedures for Course-Related Student Travel Overseas. In addition, the supervisor must advise the University's Insurance Officer.

A reminder to include the following statement on all public documents:

> *"This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named above are responsible for the ethical conduct of this research.*
>
> *If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher(s), please contact Professor John O'Neill, Director (Research Ethics), telephone 06 350 5249, e-mail humanethics@massey.ac.nz".*

Please note that if a sponsoring organisation, funding authority or a journal in which you wish to publish requires evidence of committee approval (with an approval number), you will have to provide a full application to one of the University's Human Ethics Committees. You should also note that such an approval can only be provided prior to the commencement of the research.

Yours sincerely

J. O'Neill

John G O'Neill (Professor)
Chair, Human Ethics Chairs' Committee and
Director (Research Ethics)

cc Prof Bruce Glavovic
School of People, Environment and Planning
PN331

Mrs Mary Roberts, HoS Secretary
School of People, Environment and Planning
PN331

Appendix 3
Background Information Document

MASSEY UNIVERSITY
COLLEGE OF HUMANITIES
AND SOCIAL SCIENCES
TE KURA PŪKENGA TANGATA

INFORMATION SHEET

RESILIENCE PLANNING:
Opportunities and barriers to practical institutionalisation and operationalisation in New Zealand

This information sheet provides background information about my research on resilience planning in New Zealand. This research aims to contribute to and learn from the Canterbury earthquake recovery experience in order to deepen understanding about how to operationalise and institutionalise resilience planning in New Zealand.

Introduction – what is this project about?
This study focuses on the role of resilience planning in managing natural hazards and reducing disaster risk in New Zealand.

Research aim: The aim of this research is to understand the opportunities and barriers to practical implementation of resilience planning principles in New Zealand. I am particularly interested in exploring lessons learned about how to operationalise resilience planning based on the Canterbury earthquake recovery experience, with a particular focus on the recovery experience in the Waimakariri District. Informed by this experience, I will explore what can be done to institutionalise a resilience planning approach in New Zealand, how resilience planning is and could be applied in practice and what best practice for resilience planning means. My research aims to provide better understanding about resilience planning and how it can be incorporated into planning practice in New Zealand.

Research approach: This research is based on a case study of the Waimakariri District earthquake recovery experience, located in the context of the wider Christchurch earthquake experience. Institutional, legislative and relevant policy provisions will be reviewed to assess barriers and opportunities to operationalising resilience planning. The recovery experience will be described from a resilience planning vantage point. Key informant interviews will be undertaken with those involved in activities relevant to resilience planning. I will interview individuals in the community (e.g Waimakariri Council staff, and those involved in formal and informal roles relevant to resilience planning through community-based and private sector organisations) and regional (e.g. ECan staff) and central government agencies (e.g Canterbury Earthquake Recovery Authority). The purpose of the interviews is to gauge perceptions of and understandings about resilience planning and, in particular: the barriers to implementation; opportunities for implementing resilience planning principles and best practice; how to put resilience planning into practice; and finally what lessons have been learnt about institutionalising resilience planning in New Zealand.

I would like to have a conversation with you about the following:

1. Please could you explain your role and what you have been doing/involved in since the earthquakes?

2. **Risk reduction** is a key focus in natural hazards planning. A broader notion of **resilience planning** is emerging. Are you familiar with these concepts and what do they mean to you?

3. Broadly speaking, what are the main barriers to institutionalising a resilience planning approach in Canterbury and the Waimakariri District in particular?

4. What are the main opportunities for institutionalising resilience planning in Canterbury and the Waimakariri District in particular?

5. What specific policies, plans and or programs are you involved with that could assist or impede a resilience planning approach and why?

6. In order to shift the resilience planning concept into a practical reality, what priority characteristics are necessary and what actions would you recommend need to be taken over the next 3-5 years to achieve these; who should be responsible for/involved in each action?

7. What three priority characteristics are most important and should be implemented into practice over the next 1-2 years and who should be responsible for/involved in each of these?

What does participation in this project involve?

Project procedures: This research is based primarily on a review of relevant institutional and legal planning provisions, planning practice and a series of key informant interviews. The interviews will be undertaken in person. Before each interview is conducted, all interviewees will be informed about the nature of the research based on this Background Information Document, their rights as participants, and will be asked to sign a consent form. Interview times will be held at each individual's convenience.

With your permission, interviews will be taped and transcribed. Interview transcripts will be made available and sent to interviewees on request. Themes will be extracted from the interview transcriptions and general findings will be reported on within the thesis. All data will be collected, utilised and sorted by methods that comply with the Massey University Code of Ethical Conduct. A summary of the research findings will be made available to participants upon request.

Participant involvement: Interviews are expected to take about 60 minutes each.

Participant's rights: You are under no obligation to accept this invitation. If you decide to participate you have the right to:

- Decline to answer any particular question;
- Withdraw from the study;
- Ask any questions about the study at any time during your participation;
- Provide information on the understanding that your name will not be used unless you give permission to the researcher;
- Be given access to a summary of the project findings when it is concluded;
- If an audio tape is used, you have the right to ask for the audio tape to be turned off at any time during the interview or discussions; and
- If a questionnaire is used, completion and return of the questionnaire implies consent and you have the right to decline to answer any particular question.

Project contacts

For further information about the project, please contact:

Briar Belgrave, Massey University, Palmerston North
Ph: 027 352 5363, briar.belgrave@gmail.com

Prof. Bruce Glavovic, School of People, Environment & Planning, Massey University, Palmerston North, Ph: 356 9099 ext 2036, b.glavovic@massey.ac.nz

Appendix 4
Interview Schedule

Interview Schedule – Waimakariri case study

1. Please could you explain your role and what you have been doing/involved in since the earthquakes?

2. **Risk reduction** is a key focus in natural hazards planning. A broader notion of **resilience planning** is emerging. Are you familiar with these concepts and what do they mean to you?

3. Broadly speaking, what are the main barriers to institutionalising a resilience planning approach in Canterbury and the Waimakariri District in particular?

4. What are the main opportunities for institutionalising resilience planning in Canterbury and the Waimakariri District in particular?

5. What specific policies, plans and or programs are you involved with that could assist or impede a resilience planning approach and why?

6. In order to shift the resilience planning concept into a practical reality, what priority characteristics are necessary and what actions would you recommend need to be taken over the next 3-5 years to achieve these; who should be responsible for/involved in each action?

7. What three priority characteristics are most important and should be implemented into practice over the next 1-2 years and who should be responsible for/involved in each of these?

Appendix 5
Participant Consent Form

MASSEY UNIVERSITY
COLLEGE OF HUMANITIES
AND SOCIAL SCIENCES
TE KURA PŪKENGA TANGATA

School of People, Environment & Planning, Massey University, Palmerston North, New Zealand

Resilience Planning: Opportunities and barriers to institutionalisation and operationalisation in New Zealand

PARTICIPANT CONSENT FORM

I have read the Information Sheet and have had the details of the study explained to me. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I agree/do not agree to participate in an interview (circle one)

I agree/do not agree to the interview being recorded (circle one)

I agree to participate in this study under the conditions set out in the Information Sheet.

Signature: ..... **Date:** .....

Full Name – printed .....

Appendix 6A
Document Analysis Results Table: Basic Information

Table 5: Document Analysis – Basic Information

	Recovery Strategy	**Waimakariri District Plan**	**LGA**	**RMA**
What is the document title?	Recovery Strategy for Greater Christchurch	Waimakariri District Plan	Local Government Act	Resource Management Act
When was it published?	2012	Initial publication date – 28/11/2005 (subsequent plan changes and amendments from 2005-2014).	2002.	1991 (subsequent amendments and changes since initial publication).
What type of document is it and why is it relevant?	Recovery and rebuild strategy document for Canterbury including the Waimakariri District. Was developed after the 2010-2011 earthquake events.	District plan: statutory required document under RMA 1991.	New Zealand Act/legislation – key planning document in New Zealand.	New Zealand legislation/Act – key New Zealand planning document.
	Relevance: A key focus of the strategy is 'RESILIENCE'. Resilience and planning for/ aiming to achieve this is mentioned, discussed and highlighted throughout the document. The document was developed and put in place due to the earthquake events in Canterbury which this research is exploring.	Relevance: Leading document for guiding the district and directs the planning processes. Specifically it does address natural hazards (in terms of management, rules, objectives, goals and controls to deal with the local hazards and risks facing the region). This is required as a key function of the District Council under the RMA.	Relevance: Is a leading document which provides the requirements and necessity for long-term plans and focuses for councils on issues, planning processes and factors important to districts across New Zealand – natural hazards and the idea of resilience is becoming central to this and as such is a relevant document to explore. It provides the foundation for planning for the long term which is a central component to resilience planning.	Relevance: The RMA is one leading planning document for New Zealand and guides the planning process. Specifically, the legislation has significant bearings on how we choose to live, work and play which is central to the idea of resilience. RMA focuses on quality of life, vitality, welfare of communities and neighbourhoods which provides an avenue to explore resilience and resilience planning through.

	Waimakariri LTP	Canterbury CDEM Group Plan	CDEMA
What is the document title?	Waimakariri Long Term (10 year) Plan	The Canterbury Civil Defence and Emergency Management (CDEM) Group Plan	Civil Defence and Emergency Management Act
When was it published?	2012.	2005 (currently being updated).	2002.
What type of document is it and why is it relevant?	Statutory required document under LGA 2002.	Statutory required document under the Civil Defence and Emergency Management Act.	New Zealand legislation/Act – key New Zealand planning document.
	Relevance: Document directs a long-term focus and direction for the local Waimakariri community. One point of focus includes being sustainable and resilient which is a key starting interest point of this thesis. It is primarily relevant as resilience planning as the literature review revealed requires a long-term focus to be taken and as such this document provides the key avenue to providing this. The document sets out matters of importance for the district and how they will be provided for and enabled in the long term. The long-term plan provides a direct section focused on the earthquakes and natural hazards for the district which is now of primary importance and provides attention for goals and outcomes.	Relevance: Focus and CDEM vision 'resilience' (direct interest of this research). Document directly relates to natural hazards management.	Relevance: Central focus of the document is resilience and coping, managing and planning for emerging management event which is the central focus of this research. The legislation has significant bearings on how we choose to live, work and play in the face of emergencies and what can be done to deal with and respond to this – key to ideas of resilience. It places direct focus on natural hazards for example and sets the foundational planning for it.

	Recovery Strategy	Waimakariri District Plan	LGA	RMA
What is its purpose?	Key purpose: To guide and coordinate the recovery and rebuild of the entire Canterbury region – so as to build back better and stronger and be more prepared and 'resilient' in the future.	Key purpose: To provide guidance, controls, regulations, objectives, goals and methods to achieve those for the district.	Key purpose: To provide for a democratic effective local government.	Key purpose: To promote the sustainable management of natural and physical resources to enable communities to provide for their social, economic and cultural well-being.
	Strategy sets out a shared vision and future for Christchurch, building for and creating greater resilience.	To manage and control the land, space and activities for the region	To highlight important issues and areas of focus for local councils and communities.	
			To provide accountability for local councils, their actions and decision-making.	
			To provide a framework for deciding which activities to undertake and how.	
			To enable democratic local decision-making and action by and on behalf of communities and to meet the current and future needs of communities, for example, services and infrastructure.	
Who is the author/ publisher?	Canterbury Earthquake Recovery Authority – CERA	Waimakariri District Council	Department of Internal Affairs/ New Zealand Government	Ministry for the Environment/ New Zealand Government
Who is intended audience or users of document?	CERA, Canterbury Regional Council (ECAN), local Canterbury councils (Waimakariri, Selwyn, Christchurch), Canterbury community	Waimakariri Council, local planners, businesses and the Waimakariri community and residents	New Zealand Government and government departments, local councils New Zealand wide	Ministry for the Environment, the government and government departments, councils (regional and district), New Zealand communities, iwi/hapu

	Waimakariri LTP	Canterbury CDEM Group Plan	CDEMA
What is its purpose?	Key purpose: To describe the activities of the Waimakariri Council and the outcomes of the district community.	Key purpose: To enable efficient and effective management of regionally significant hazards and risks.	Key purpose: To improve and promote the sustainable management of hazards in such a way that it contributes to the social, economic, cultural and environmental well-being and safety of the public and also to protect property.
	To provide accountability of council's activity to the community.	To provide strategic direction for hazards and emergency management to create best outcomes in light of risks.	To provide for planning and preparation for emergencies and response and recovery after an emergency.
	To provide a long-term focus in terms of decisions and activities.	To seek commitment to achieve better outcomes.	To encourage coordination of emergency management approaches and responses.
	To provide an opportunity for public participation in council processes.	Encourage cooperation and strengthen relationships.	To provide a national basis for the integration of emergency management into the local levels.
	Identify key issues important and affecting the district so they can be adequately provided and planned for.	Overall guidance for the Canterbury region.	To encourage and enable communities to achieve acceptable levels of risk in terms of identifying, managing and assessing risk, consulting and communicating about risk, identifying and implementing cost-effective risk reduction strategies and monitoring and reviewing the process.
		Create strong emergency management.	
Who is the author/ publisher?	Waimakariri District Council	Canterbury Civil Defence Emergency Management Group	Ministry of Emergency Management and Civil Defence
Who is intended audience or users of document?	Primarily for Waimakariri community and residents, Waimakariri District Council	CDEM group, local Canterbury community and residents, Environment Canterbury (regional council), Waimakariri, Christchurch and Selwyn District Councils, local organisations e.g. welfare groups, lifeline utilities	New Zealand Government, regional and district councils

Appendix 6B
Document Analysis Results Table: Document Interrogation

Table 6: Document Analysis – Document Interrogation

	Waimakariri LTP	Waimakariri District Plan
What emphasis is given to including and/or utilising the concept of resilience or resilience planning?	No emphasis is given to including and utilising resilience planning. However the plan does mention under community outcomes, "*harm to people from natural and man-made hazards is minimised and the district has the capacity and resilience to respond to natural disasters*(WDC, 2012, pp7) which reflects and can link to the concept of resilience. Small reference is also made to recognising the importance and benefits of resilience.	No direct or specific reference is given to resilience planning (it is not explicitly provided for). The word 'resilience' is not evident throughout the plan, however there is some emphasis given to including and utilising resilience principles throughout the district plan.
What key principles of resilience are evident?	Promoting the social, economic and physical well-being of the community which was considered in terms of the earthquake recovery section in terms of looking at the recovery and rebuild phase in Waimakariri and how the community want to be in the future.	Communities responding and coping on their own and being able to help themselves (included through the explanation section on the natural hazards policies, objectives and outcomes as to what they are trying to achieve).
	Ensuring safe, stable communities where risk is minimised and the community can cope and is well served by emergency services – is provided for through the community protection section.	Preparedness and being better prepared (included in the natural hazards section, specifically the objectives, policies and methods).
		Good outcomes in the face of adversity (principal reason for adopting objectives, policies and methods).
		Adaptive capacity (included in the natural hazards section in terms of objectives, policies and methods).

	CDEMA	CERA Recovery Strategy
What emphasis is given to including and/or utilising resilience planning?	Links evident between some subtle emphasis on including the general concept of resilience, however these were not overly clear or explicitly evident.	Resilience planning is not explicitly provided for. To a reasonable extent, resilience is included/utilised through its key principles, ideas and actions which are identifiable through the strategy. There are ties to resilience ideas in terms of: strengthening the resilience of the community; building community resilience and building resilience for the long term. These concepts are each talked about as a result of the earthquakes, natural hazard events and the risks being faced by the community in the future.
What key principles of resilience are evident?	Ensuring the social, economic, cultural and environmental well-being is maintained and the safety of the public.	Building back better.
	Ability to overcome any hazard events, harm or loss associated with any emergency.	Creating new normal's (in terms of the community).
	Effective response and recovery within communities.	Adaptability of the community.
	Positively respond to adverse effects of emergency (functions).	Strong community in terms of safety and well-being being enhanced (better prepared and able to cope).
	Communities to provide for their own well-being; cope on their own.	Capacity of communities to build their own resilience and be in control EVEN in times of adversity.
	Safety of the public.	Cope with uncertainty.
	Function and continue to function during and after an event.	

	LGA 2002	Canterbury CDEM Group Plan	RMA 1991
What emphasis is given to including and/or utilising resilience planning?	No emphasis given to including or utilising resilience planning throughout the LGA. A couple of subtle links identified to the concept of resilience, however, for example: "*avoiding and mitigating natural hazards"* (Local Government Act, 2002, 40) and "*to provide for resilience by identifying and managing natural hazards and their risk"* (Local Government Act, 2002, pp129).	Resilience planning is not explicit or specifically discussed. However key topics, ideas, principles and actions of resilience are included in the Canterbury CDEM group plan to a reasonable extent. The CDEM vision= 'Resilient Canterbury'- creating socially and physically resilient communities, enhancing community resilient and building resilience. Whilst reference is made to resilience, the group CDEM does not accord significant focus towards resilience planning (Canterbury Civil Defence and Emergency Management Group Plan, 2014,11).	Concept of resilience or resilience planning not included or evident in the document.
What key principles of resilience are evident?	No resilience planning principles evident or included.	Reduce the impact and devastation of emergencies.	No resilience planning principles evident or included.
		Reducing communities' vulnerability and in turn improving their capacity to cope.	
		Communities and emergency response groups who are prepared for events.	
		Respond effectively and quickly.	
		Communities that can respond and cope together have success.	
		Learning from the past, creating new futures.	
		Reduce the impact and likelihood of events.	

	Waimakariri LTP	Waimakariri District Plan
What key resilience planning characteristics are included/provided for?	Social capital	Social learning, Communication
	Provided for through the idea of social networks and community relationships in the community outcomes section. These characteristics however were not included for the purpose of resilience planning but rather the other points of focus of the document directly relating to: *"creating a strong sense of community in our district"* (WDC, 2012, pp8).	Both identified as being important characteristics and key to processes, goals and purpose of the document, however they are not addressed specifically in terms of resilience planning but rather in a more general overarching context.
Is resilience discussed as a measure that will improve capacities to deal with, cope and prepare for future natural hazard events?	No – Resilience is not discussed in this context throughout the Long Term Plan.	Resilience is not explicitly used or discussed in this light throughout the district plan. The concept is hardly even mentioned or given attention in the plan.
		A link can be made between resilience and how it can improve outcomes and capacities to cope however through the statement of "*emergencies will be managed, and recovery achieved more effectively and efficiently when planned for in advance*" (WDC, 2005, s8.1.2). This statement ties back into the core of resilience and what it does stand for but this is by no means mentioned and explicitly laid out as resilience.
In the context of resilience planning or resilience, is it evident who is responsible for carrying out such characteristics and if so who?	Responsibilities not evident or included.	Responsibilities were not entirely clear. The plan does address the council and community rights throughout the document however as being involved. Council appear to be have dominant responsibility in the district plan for making sure actions happen.

	CDEMA	CERA Recovery Strategy
What key resilience planning characteristics are included/provided for?	Communication, Education, Participatory approach	Innovation, Social capital, Leadership, Communication
	All three characteristics were discussed and deemed important in the CDEMA, however these actions were not specifically related to resilience planning, but are key resilience planning actions.	These key characteristics are included and provided for in the recovery strategy for greater Canterbury, including the Waimakariri District. While they may relate back to the concept of resilience and the characteristics outlined in the resilience planning scholarship, they were not included and provided for in the context of resilience planning.
Is resilience discussed as a measure that will improve capacities to deal with, cope and prepare for future natural hazard events?	No – Resilience is not mentioned in this way throughout the CDEMA.	No – Resilience is not mentioned in this way in the strategy.
In the context of resilience planning or resilience is it evident who is responsible for carrying out such characteristics and if so who?	Responsibilities for the resilience planning/resilience characteristics identified in the CDEMA were explained to be, the function/responsibility of civil defence & the emergency management group.	Joint responsibility identified – no one group identified as having sole responsibility but rather the strategy discusses *collaborative* responsibility*: "no one agency, group or individual will be able to achieve this on their own"* (Canterbury Earthquake Recovery Authority, 2012b, pp20).

	LGA 2002	Canterbury CDEM Group Plan	RMA 1991
What key resilience planning characteristics are included/provided for?	Leadership, Communication	Education, Communication, Social networks, Reflection, Participatory approach, Social learning/education	
	Both characteristics identified in the LGA as being important and key to processes, however they are not addressed specifically in terms of resilience planning but rather in a more general overarching context.	All characteristics were identified in the CDEM group plan as being important and critical actions. However these were each discussed in a broader general context and not specifically in terms of resilience planning.	Resilience planning characteristics are not included or provided for in the RMA.
Is resilience discussed as a measure that will improve capacities to deal with, cope and prepare for future natural hazard events?	No – Resilience is not mentioned in this way in the document specifically.	The CDEM group plan does not explicitly address resilience in this way, however it does mention that: "*a resilient Canterbury will be more resilient to the impact of emergency events. Resilience will make us more aware and prepared to hazards being faced in Canterbury*" (Canterbury Civil Defence and Emergency Management Group Plan, 2014, 8). While this does not explicitly state that resilience is a key measure which would help abilities to cope and improve outcomes, this statement can be tied back to such intents.	No – the word 'resilience' is not mentioned throughout the document.
In the context of resilience planning or resilience is it evident who is responsible for carrying out such characteristics and if so who?	Responsibilities not included or evident.	Joint responsibility (between council, community, organisations and agencies) identified but in the Canterbury CDEM group plan. The council however are mentioned as having key responsibility in ensuring the processes and actions discussed in the plan actually take place. It is noted however that the community must be involved in the processes.	No actions were identified and so no responsibilities evident either. Only link to natural hazards in terms of responsibility was through the *Regional Council* section where it noted that "*the regional plan prepared by the council must give consideration to any threat from natural hazards which may be avoided or mitigated – mostly insignificant in terms of resilience planning*" (Resource Management Act, 1991, pp8). Hence it could be assumed that regional councils hold responsibility for planning in regard to natural hazards.