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Understanding the adaptive capacity of Australian small-to-medium enterprises to climate change and variability

Final Report

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UNDERSTANDING THE ADAPTIVE CAPACITY OF AUSTRALIAN SMALL-TO-MEDIUM ENTERPRISES TO CLIMATE CHANGE AND VARIABILITY

Institute for Sustainable Futures

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The role of NCCARF is to lead the research community in a national interdisciplinary effort to generate the information needed by decision-makers in government, business and in vulnerable sectors and communities to manage the risk of climate change impacts.

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ABBREVIATIONS

BAL	Bushfire Assistance Levy
BCA	Building Code of Australia
CCA	Climate change adaptation
COAG	Council of Australian Governments
EPBC	Environment Protection and Biodiversity Conservation (Act)
GDP	Gross domestic product
IPCC	Intergovernmental Panel on Climate Change
ISF	Institute for Sustainable Futures
NCCAF	National Climate Change Adaptation Framework
NCCARF	National Climate Change Adaptation Research Facility
NSW	New South Wales
PRG	Project Reference Group
SME	Small to medium enterprises
VBRRA	Victorian Bushfire Reconstruction and Recovery Authority
WA	Western Australia

ABSTRACT

Small-to-medium enterprises (SMEs) comprise 96 per cent of all private businesses in Australia. The SME sector is the economy's largest employer and the largest contributor to GDP. Moreover, SMEs play a significant role within socio-economic systems: they provide employment, goods and services and tax revenue for communities. Climate change may result in adverse business outcomes including business interruptions, increased investment and insurance costs, and declines in financial indicators such as measures of value, return and growth. After natural disasters, SMEs face greater short-term losses than larger enterprises, and may have lower adaptive capacity for various reasons. This study examines the underlying factors and processes shaping adaptive capacity of Australian SMEs' to climate change and associated sea level rise.

Specifically, the research asks the following questions: 1) How have SMEs considered and integrated adaptation into business planning? 2) What are the key underlying processes that constrain and influence the adaptive capacities of SMEs? and 3) What types of support are required to promote SME business continuity under a changing climate? The study adopts theories from Political Ecology and draws on literature on vulnerability and hazards to understand the processes that mediate the adaptive capacity of SMEs. The empirical research involved an online survey targeting SMEs, attending business engagement events hosted by chambers of commerce, 30 semi-structured interviews with secondary stakeholders, five case studies involving SMEs and secondary stakeholders, and finally a stakeholder workshop which brought together participants from both groups.

The central conclusion of this study is that underlying contextual processes are critical to enhancing the adaptive capacity of SMEs. These processes include: the social relationships between SMEs and support organisations; the relationships within support organisations themselves; the agency of SMEs to direct resources toward building resilience into business continuity; SMEs' perceptions of climate risks; and power struggles between support organisations. Unfavourable combinations of these processes have the potential to limit the adaptive choices that SMEs can adopt in order to overcome climate change and other related stresses on business continuity. These processes generate vulnerability and often occur at scales external to the SMEs; including relationships between different tiers of government as well as between various support organisations working with SMEs.

These contextual processes have been largely overlooked in formal programmes that aim to build business resilience. The programmes have tended to be reactive and have tended to focus on business recovery during and after disasters rather than on altering the vulnerability context of SMEs through anticipatory prevention and preparedness or adaptation planning. This study suggests that the success of efforts to build the adaptive capacity of SMEs to future climate and related stresses will depend on how they address these underlying processes to facilitate the ability of SMEs to exercise their agency in pursuing adaptive choices that they value.

EXECUTIVE SUMMARY

Much has been written about how climate change will affect the physical environment and how governments and local communities should respond. However, the responses of small and medium enterprises (SMEs) have not received the same attention. As a result, their need to plan for future climate impacts and the need to assess their adaptive capacity have been neglected. Even under current climate variability and extreme weather events, SMEs have not been adequately recognised as an affected sector and therefore appropriate support structures and processes have not been developed. This research shows that it is not only the direct impacts of climatic events that SMEs need to deal with, but also the emotional and financial consequences that are experienced some time after extreme events occur.

SMEs comprise the largest private business sector in Australia (and the world). SMEs employ more people than any other sector of the economy and contribute substantially to GDP. They range from very small family businesses to firms that employ up to 200 staff. SMEs operate within locally defined spatial and socio-economic systems, and so they are directly affected by the risks and stresses experienced in their local communities. Disruptions to the local economy affect both local residents and the small businesses that are dependent on them.

This study examines the ability of SMEs to adapt to the threat of climate change. The research addresses the following questions:

1) How have SMEs considered and integrated adaptation in their business planning?
2) What are the key underlying processes that constrain and influence the adaptive capacity of SMEs?
3) What types of support are required to promote SME business continuity under changing climatic conditions?

The outcomes of this research provide a rich understanding of the factors that influence the abilities of SMEs to respond adequately to the impacts of extreme events, both during the events and in the months and years that follow. These outcomes sit alongside those of other important studies into the experiences of SMEs in responding to climate change, and they contribute to a baseline understanding of adaptive capacity within the SME sector.

Adaptation in the context of climate change refers to any adjustment by natural or human systems in response to actual or expected impacts of climate change, aimed at moderating harm or exploiting beneficial opportunities. Adaptive capacity defines the conditions that enable or prevent anticipatory adaptation from occurring and it varies across regions and sectors. In identifying the underlying processes that shape adaptive capacity, this study draws on the literature on climate adaptation, social resilience and organisational change. The capacity of a SME to respond adequately to climate risks is affected by both internal and external determinants. Examples of external generic determinants examined in this study include government regulations, climate information and climate knowledge. Internal determinants include organisational values and perceptions about climate change, organisation size, the extent of business continuity planning, the extent of social networks, and access to resources and the extent of leadership in addressing climate adaptation.

The original design of the research proposed a predominantly bottom-up approach through direct engagement with SMEs. However, the initial survey activity showed that it was difficult to engage with SMEs due to their time and resource constraints.

In addition, it appeared from the survey responses that SMEs may have little knowledge of the connections between potential climate change impacts and their business operations. To address these issues, the study engaged directly with secondary stakeholders – organisations who provide support to SMEs (including national, state and local governments and non-government agencies), as well as willing SMEs.

The research included: a literature review; an online survey for SMEs; attending local government business engagement events; 30 semi-structured interviews with secondary stakeholders; five case studies involving SMEs and secondary stakeholders; and finally, a stakeholder workshop which brought both groups together.

In addressing the research questions, the project examined how SMEs have coped with past extreme climatic events, their perceptions of projected climate change impacts, and factors that motivated them to adapt to those events. In drawing out the key processes constraining and influencing the adaptive capacity of SMEs, a deeper analysis was undertaken of the context in which the stakeholders who support SMEs operate, as well as an examination of the day-to-day realities confronting SMEs in general. The results indicate that many of the measures required to enhance the adaptive capacity of SMEs under climate change can be integrated into existing processes and networks. There exist a range of opportunities to build on existing programmes and strengthen existing networks to reduce vulnerability.

The central conclusion of this study is that existing characteristics of SMEs, and the environments in which they operate, are critical to enhancing the adaptive capacity of the sector. These characteristics include: relationships between SMEs and support organisations; relationships within support organisations; the capacity of SMEs to use their resources to build resilience into business continuity; SMEs' perceptions of climate risks; and power struggles between support organisations. Unfavourable combinations of these characteristics have the potential to constrain the choices available to SMEs for responding to climate change and related threats. The processes which impact on SMEs operate largely at scales external to individual SMEs.

They involve all three tiers of government and the relationships between various organisations whose role it is to support SMEs. Such contextual processes have been largely overlooked in formal programmes that aim to build business resilience. These programmes have tended to be reactive and to focus on business recovery during and after disasters rather than on altering the vulnerability context of SMEs through anticipatory prevention and preparedness or adaptation planning. This study suggests that the success of efforts to build the capacity of SMEs to adapt to future climate and related stresses will depend on how they address the processes which affect their agency[1] in pursuing adaptive choices that they value.

[1] 'Agency' refers here to the extent to which a SME is able influence processes affecting their business continuity and the opportunities to pursue what they value.

The main findings of the study are summarised below as responses to the three research questions:

1. ***How have SMEs considered and integrated adaptation into business planning?***

Three main conclusions emerged:

Firstly, due to the different meanings they attach to the terms 'climate change' and 'climate extremes', SMEs are likely to adopt strategies which aim to address climate extremes rather than climate change. Moreover, because of the short-term planning horizons of SMEs (two to five years), they are likely to plan for climate extremes rather than long-term 'climate change', which is perceived as being outside these traditional planning horizons. The data revealed many of the SMEs in the study had started to take adaptive strategies to address climate risks, although they did not always label them as 'climate adaptation strategies'. The SMEs had integrated these strategies into their business plans but did not refer to them directly as addressing climate change. However, it seems that the process of climate risk assessment has not been formalised into business continuity plans. Certainly, for many, climate risks were assessed alongside other risks. The research was unable to assess the effectiveness of these planning efforts as they were usually responses to recent extreme events. However, the SMEs themselves assessed these adaptation strategies according to their social values, their cost effectiveness and their technical capacity. The results of this study also indicate that it is perhaps viable and practical for SMEs, particularly those with less than about 30 employees, to plan for climate change impacts within a horizon of 5-10 years rather than long-term impacts (beyond 20 years). SMEs who possess critical long-lived infrastructure or other assets, and larger SMEs, may need to plan more than ten years ahead..

Secondly, SMEs' past experiences with climate extremes act as motivators for introducing measures to adapt to future climate change. SMEs who had experienced the impacts of extreme climatic events were more aware of climate risks than those who had not. Many of the SMEs in this study had experienced extreme events such as bushfires, drought and cyclones and the direct and indirect impacts of these events had changed their operating environment and had left them vulnerable to future impacts. Key factors that contributed to their vulnerability included:

- the short-term nature of government-led business recovery programmes
- the limited support available to SMEs who were indirectly impacted by extreme events
- the limited support and recognition given to the psychological impacts on SMEs of extreme events
- the eligibility criteria for government recovery funds are rigid and inflexible
- recovery processes are reactive and overlook the underlying business vulnerability associated with prevention and preparedness.

Many of these processes which underpinned the vulnerability of SMEs are external to the SMEs themselves and reside within the broader landscape in which governments and other stakeholders operate. The data indicates that without addressing these factors, the capacity of SMEs to adapt to future climatic stresses will continue to be undermined.

Thirdly, the key resilient elements to building the adaptive capacity of SMEs to future stresses include: self-organisation capacity, strong social networks, self-efficacy beliefs and social learning from past experiences. Central to all of these is the 'agency aspect' or ability of SMEs to access opportunities (e.g., funding to develop new marketing strategies) and shape processes (e.g., the rigid criteria in accessing disaster funding) that support business continuity. These interrelated resilient elements also determine the capacity of SMEs to exercise agency and control the traumatic predicaments SMEs experience (e.g. bushfires or cyclones destroying their businesses).

The results also demonstrated the utility of examining SMEs' past experiences with extreme events. Indeed, an understanding of the ways in which SMEs had coped with past extremes is useful for understanding the adaptive behaviour SMEs exhibit in response to projected climate changes.

2. ***What are the key underlying processes that constrain and influence the adaptive capacity of SMEs?***

The research revealed that in their day-to-day operations, multiple challenges confront SMEs. These include limited access to financial and human resources, under-insurance, and distinct challenges associated with operating in a rural versus an urban setting. Together, these challenges can undermine the capacity of SMEs to implement adaptive strategies. Concurrently, the research examined the broader context in which SMEs are embedded in order to understand the challenges faced by the stakeholders supporting SMEs, and the implications of these challenges for shaping the adaptive capacity of SMEs. These stakeholders provide assistance which can help SMEs to enhance their adaptive capacity. For example, they provide SMEs with business advice, funding, networking opportunities, training and mentoring.

Two main conclusions emerged from examining this research question.

Firstly, several key socio-economic and political aspects of the broader landscape in which SMEs operate are likely to constrain and influence their adaptive capacity. These aspects include:

- limited access to funding and limited human resources for delivering programmes for SMEs
- the absence of dedicated climate adaptation-related programmes or business continuity planning targeting SMEs within local government
- linkages between SMEs and local government seemed weak
- poor coordination between government, non-government and private sector stakeholders who provide support to SMEs. This leads to limited information sharing and missed opportunities for joint learning and reflection amongst stakeholders. Underpinning these failures are struggles over power due to the desire of organisations to protect their niches in the wider landscape supporting SMEs.
- a lack of urgency amongst stakeholders about the need to develop climate risk reduction initiatives for SMEs. Such initiatives were not seen as a priority issue for SMEs in the short term (i.e. the next five years).

- the limited formal mechanisms for monitoring and evaluating current risk reduction initiatives and thus the constrained opportunities to learn and improve upon them.

Secondly, the adaptive capacity of SMEs are to a large extent shaped by the adaptive capacity of the organisations that support them. This limits the agency of SMEs in securing business continuity. Many constraints on the agency of SMEs were found to exist within the formal boundaries of the organisations providing support to them. These constraints can limit the capacity of SMEs to exercise their agency and transform their adaptive choices into outcomes that will support business continuity under a changing climate. It is these support organisations and their institutions (i.e. their norms, values and policies) that are likely to influence the types of opportunities that are available for SMEs in making adaptive choices. For example, many NGOs are dependent on government grants to offer support programmes such as business advice for SMEs and to employ staff to keep their organisations in operation. The tightening of government funding often limits the services NGOs can offer to SMEs. Government agencies funding climate risk reduction programmes for SMEs have limited formal mechanisms for monitoring and evaluating those initiatives. Thus, no information is available about the uptake of these initiatives or the extent to which they have assisted business recovery over the long term. This reduces the opportunity to improve future programmes for SMEs.

The abovementioned constraining processes also limit the abilities of SMEs to direct their resources towards implementing adaptive strategies. For example, the lack of a sense of urgency amongst support organisationsabout the need to implement programmes to assist SMEs deal with climate change is likely to hinder the opportunities available for SMEs to use their agency and implement proactive adaptation measures, particularly when the external context is not conducive or supportive of making such choices. Similarly, the poor coordination between stakeholders and the limited opportunities to share information may limit the agency aspect of the adaptive capacity of SMEs. For example, government departments delivering disaster recovery funding do not always obtain feedback from non-profits working on the ground on the significance of indirect impacts of extreme climate events on SME business recovery. Thus no future programmes are likely to be initiated by government agencies that will open up opportunities for SMEs to use their agency and adopt strategic planning initiatives (e.g. diversification of their customer bases).

A central conclusion is that in examining constraints to the adaptive capacity of SMEs, it is perhaps vital to understand the extent to which those constraints limit the choices of SMEs as well as their ability to exercise agency and direct their assets to supporting measures that will promote business continuity in uncertain conditions.

What types of support are required to promote SME business continuity under a changing climate?

The main finding for this research question was that many of the measures required to enhance the business continuity of SMEs under climate change can be integrated into existing processes and networks. The aims of the proposed measures are twofold. Firstly, they aim to move the focus of SME resilience strategies away from disaster recovery towards reducing conditions that may generate vulnerability of SMEs through an emphasis on adaptation planning. Secondly, they aim to move from a reactive to a long-term approach by focusing on strategies that promote flexibility and encourage learning which ensures business continuity.

Opportunities were identified on several fronts to build on existing programmes and strengthen existing networks to support vulnerability reduction. Proposals to help SMEs to deal with climate-induced stresses include:

- Training in business planning targeted at those who are starting small businesses. The uptake of such initiatives will be enhanced if they are embedded in the existing support programmes delivered to SMEs.
- Long-term and structured disaster recovery through the formation of a multi-stakeholder group focusing on business recovery. The group would also provide a united voice on issues related business recovery under climate change.
- Recognition of the indirect impacts that are often overlooked in formal disaster recovery interventions and the consequent limited support provided to SMEs who continue to trade within the affected areas. This recognition could entail:
    - access to one-to-one business advice/mentoring
    - reductions in interest payments made to banks for overdrafts during crisis periods
    - a business helpline
    - tax breaks
    - low-interest loans.
- The short-term nature of disaster recovery initiatives, and the rigid criteria for approving grants, could be overcome by extending support beyond three years and by providing case-workers or business advisors to provide one-to-one support to SMEs for completing the paperwork to access grants.
- There is a need for long-term psychological support for SMEs after extreme climatic events through expert councillors who understand business and mental health. Suggested actions include:
    - create a template for how to integrate psychological issues into recovery. Government can develop and lead this process.
    - create a national coordination centre for counselling to improve coordination between state crisis co-ordination centres
    - showcase longer-term psychological impacts during the response stage (e.g. through the development of case studies)

    - raise awareness of the issue through videos/podcasts to show the real experiences of SMEs
    - address vicarious trauma (i.e. the impact on people providing support to SMEs during disasters)
    - provision by government of education on the impacts of psychosocial stress.
- The poor coordination between support agencies, and the consequent duplication of services during the disaster recovery and response phases could be addressed by building stronger partnerships between local government and industry associations to encourage information sharing related to the needs of particular SME sectors.
- Monitoring and evaluation of government-led disaster recovery initiatives needs to be improved in order to inform and advance future delivery of support to SMEs.
- Awareness of climate change can be promoted through the use of multiple entry points rather than focusing exclusively on climate change. Due to the short-term planning horizons of SMEs, the information content must focus on a ten-year projection of climate change and its likely impacts on SMEs.
- Strategic planning as an entry point to climate adaptation planning. Given the short planning horizons of SMEs it is perhaps practical and profitable for SMEs to undertake strategic planning for a period of 5-10 years. Support organisations need to take an educative role in promoting the benefits of strategic planning to build adaptive capacity/business resilience. They also need to provide support in the form of grants, tax incentives and business advice to assist SMEs to develop and implement such plans.
- Increased government engagement with community organisations and investment in preparing them to be able to help them ensure business continuity and have the right skills and tools to do it.

The aim of this study was to gain an understanding of the adaptive capacity of SMEs to climate change and climate variability, and to gain an understanding of the external support SMEs need during and after extreme climatic events. It was not the intention of this study to develop action plans or allocate specific responsibilities to any agency or organisation. It is important to note that this study had methodological limitations which relate in part to the challenges of working with the small business sector.

Apart from the SMEs who were engaged in the online survey, other SMEs involved in the case study were selected through support organisations who contributed to the study and this may have introduced a sampling bias. Additionally, the study did not engage with those SMEs whose businesses may have failed after extreme climatic events. If we had been able to do so this may have increased our understanding of the processes that may have contributed to their failure.

1 INTRODUCTION

Small-to-medium enterprises (SMEs) are critically important to the Australian economy and form an important sector of society. They play a significant role within socio-economic systems; providing employment, goods and services and tax revenue within communities (Howe, 2011). The Australian Bureau of Statistics defines SMEs as those enterprises employing less than 200 people, which can be further broken down to medium business[2] (20-199 employees), small business (5-19 employees) and micro business (1-4 employees). SMEs make up 96 per cent of all private businesses in Australia, making them the largest employers and contribute a third of the country's GDP (DISR, 2010).

The location of SME's in a larger socio-economic system, with the associated spatial interconnections and dependencies, means that specific risks or stresses (e.g., global financial crisis or political upheaval) experienced at a particular scale are likely to shape the economic viability of SMEs. In relation to natural disasters, Tierney and Webb (2006) stress that businesses are dependent on the actions that their communities undertake or fail to undertake before, during and after the event. In addition, with the recent slowing of the global economy, together with a noticeable increase in natural disasters, SMEs are facing disruptions in global and local supply chains, difficulties in accessing financing and rising transportation and material costs (APEC, 2012). Within this context, a new challenge that SMEs are confronted with is the expected impacts of climate change and increased variability. Globally, the impacts of climate change, marked by extreme weather events, are being experienced by various ecosystems, sectors and communities, including SMEs (UNEP et al., 2011).

Warming of the global climate system over the past century has been well documented and is beyond doubt. Over the past 60 years, the Australian average temperatures have risen by 0.9^{o}C, with significant variations across the country. This has manifested in the frequency of hot days and nights increasing over this period. Since 1950, most of the eastern and south-western regions have experienced substantial rainfall declines. Extreme daily rainfall intensity and frequency have increased in the north-west, central and the western NSW tableland regions. Sea level rose by approximately 10cm from 1920-2000 at the Australian monitoring sites. These trends are projected to continue (CSIRO, 2007).

While mitigation efforts at an international and local level are increasingly urgent, society at a local level, including small businesses, will have to learn to cope with climate change over the medium and longer term. The impacts of climate change and variability such as droughts, flooding, storm surges and sea level rise have or will be experienced at the local level; requiring a wide range of local interventions in response (Corfee-Morlot et al., 2009). These impacts are likely to affect the supply and productions chains of SMEs through business interruptions, increased investment or insurance costs, property damage, declining financial measures such as value, return and growth (Karbassi et al., 2011). Simultaneously climate change will interact and

[2] A business is defined as a legally recognized individual organisation designed to provide goods and/or services to consumers with a profit motive whilst industry is made up of businesses that do similar things or serve the same customers (e.g., retail trade, cultural and recreational services).

exacerbate existing socio-economic stressors experienced by SMEs (e.g., regulatory pressures) to create possibilities of double exposure (O'Brien and Leichenko, 2003).

Anticipatory adaptation [actions taken in advance], through planned interventions, offers one such way to deal with this challenge whilst continuing to meet the economic and environmental performance standards to which it operates (Berkhout, 2012). Adaptation in the context of climate change refers to "any adjustment by natural or human systems in response to actual or expected impacts of climate change [and variability], aimed at moderating harm or exploiting beneficial opportunities," (Eriksen et al., 2007, p.10). Historically, business risk management has coped with climate variability but the uncertainty inherent in how future climate change will impact geographic areas and specific sectors brings to the fore the need to re-learn and challenge the way business planning is undertaken. This is critical to not only reduce impacts on SMEs but rather take advantage of market opportunities that may arise from certain impacts, for example, where SMEs are able to provide the technologies required to help communities to adapt (Karbassi et al., 2011). The effectiveness of such adaptation strategies is dependent on their levels of resilience and the extent to which they facilitate and further enhance their capacity to adapt. Given the spatial interdependencies within the larger system that SMEs operate in, the adaptive capacity of SMEs to projected climate change and variability will be vital to the overall adaptation efforts and thus the resilience of communities, government agencies and other sectors.

In the context of these challenges, limited research related to the understanding of the adaptation process within the SME sector exists in Australia and internationally in general (Berkhout et al., 2004; Busch, 2011). The literature to date has largely focused on mitigation rather than adaptation. However, both processes are significant and complementary; "whilst mitigation aims to reduce the principal *cause* of the global problem, adaptation aims to protect social and natural systems from the local *impacts* of the problem" (Anantram and Noronha, 2005, p.2). Adaptive capacity defines the conditions that enable or prevent anticipatory adaptation from occurring and it varies across regions and sectors (Cohen et al., 2004). It also reflects the ability of an organisation or an individual to generate or initiate change and even to challenge conditions that are external to them (Sussman, 2004). Research examining adaptive capacity of the private sector in general has been under-explored and is vital for framing strategies and policies supporting adaptation.

1.1 Study aims

The overall aim of this study therefore is to identify the underlying processes and factors shaping adaptive capacity of SMEs in Australia to climate change. The study seeks to gain an appreciation of the role socio-economic and spatial location plays in coping with the longer term impacts of once-off and repeated extreme weather events on the operational viability of their businesses.

Specifically the research asks the following questions:

1) How have SMEs considered and integrated adaptation into business planning?

2) What are the key underlying processes that constrain and influence the adaptive capacity of SMEs?

3) What types of support are required to promote SME business continuity under a changing climate?

A key objective of the project was to be end user focused in an effort to ensure the research is informed by end-user experiences and needs. This research has identified primary end-users as being SMEs who have recently experience some form of extreme weather event. Secondary end users of the research have been identified as being those working (in various capacities) with affected SMEs.

In this study, climate change adaptation specifically refers to the anticipatory plans and actions by SMEs to avoid or reduce the negative impacts due to the projected climate change through, for example, extreme temperatures, droughts, flooding, storm surges, sea level rise, etc. This study does not consider in the analysis any plans and actions to mitigate greenhouse gas emissions.

The research findings in this report will provide a baseline understanding of the level of adaptive planning and capacity within the SME sector in Australia. Additionally the research will contribute to validating the extent to which measures need to be operationalised to enhance the adaptive capacity of the SME sector in Australia.

1.2 Report structure

This report documents all work undertaken for this study, and draws on the survey analysis, targeted inteviews, case studies and the final workshop.

In the sections that follow, a synthesis the definitions and descriptions for SMEs, the impact of climate change and the adaptive responses by SME's and the documented challenges is presented in Sections 2, which are outlined in detail in the study's Preliminary Background Report (Murta et al., 2012).

Section 3 provides the theory and conceptual framework for this study, which leads into Section 4 – the approach and activities for this research.

Section 5 discusses the research results and outputs from the various activities and the key findings are summarised in Section 6.

2 BACKGROUND REVIEW OF ADAPTATION WITHIN THE SME SECTOR

This section provides an overview of the available literature analysing the adaptive capacity of SMEs to Climate Change and Variability internationally and nationally, with a view to inform the methods and to draw lessons for the development of enabling actions as an output of this study. Additionally it guides the development of a theoretical and conceptual framework.

2.1 Definition and characteristics of SMEs

These is no universal definition of SMEs, however, size and turnover are usually the distinguishing features. In Australia the maximum size is considered to be 200 employees, while in the United States it is 500 and in the European Union it is 250 (Chong et al., 2010).

Table 1: Definition by size (Allen Consulting Group, 2008)

Classification	Size
Micro Business	1-4 employees
Small Business	5-19 small business
Medium Business	20-199 employees

Based on the size as a classification, the SME sector in Australia can be classified further into categories according to the standard ANZIC codes, which include primary (the conversion of raw materials) and secondary industry sectors (ABS, 2011). As can be seen in Table 2, SMEs are prevalent across almost all industry sectors of the Australian economy. For the purposes of this study, only SMEs of secondary industries have been considered.

Table 2: Number of SMEs per sector

Sectors	Proportion
Primary:	
Agriculture, Forestry and Fishing	7.6%
Mining	0.4%
Secondary:	
Construction	16%
Professional, Scientific and Technical Services	13%
Retail Trade	10%
Accommodation and Food Services	6.7%
Manufacturing	6.4%
Health Care and Social Assistance	5.7%
Wholesale Trade	5.1%
Transport, Postal and Warehousing	5.1%
Financial and Insurance Services	4.4%
Administrative and Support Services	4.3%
Rental, Hiring and Real Estate Services	3.9%

A number of other qualitative features such as ownership, decision-making processes and how the organization is managed in general can also be useful in classifying SME's. This can contribute to understanding the underlying causes of adaptive capacity to climate change of the SMEs.

Hauser (2005) emphasizes the importance of distinguishing between independent SMEs and SMEs which belong to a larger enterprise group, as these tend to follow significantly different decision-making processes. Referring to this, three types of SMEs can be distinguished:

- **Family enterprises:** the manager is the owner or a member of the owner's family and is the one who takes short and long-term decisions.
- **Enterprises with board of owners:** the manager decides on short-term decisions and submits long-term decisions to the board of owners.
- **Enterprises belonging to an enterprise group:** strategic decisions are taken in the head office of the group. These are made with the interest of maximizing the profits of the whole group, which might not necessarily benefit the enterprise alone.

In order to reflect the psychological characteristics of the business owner and/or manager, the SME can be classified according to his or her willingness to seek support or advice.

The following types can be distinguished (Allen Consulting Group, 2008):

- *'Just do it'* enterprises – owner and/or manager's main focus is to attract resources and acts independently as much as possible
- *Flying solo* enterprises – typically owner and/or manager have record of business success but too proud and embarrassed to seek support
- *Support seekers* enterprises – owner and/or manager thinks strategically and seeks advice accordingly
- *Active network* enterprises – support and advice are considered as essential for business success by the owner and/or manager.

2.2 Climate change impacts and SMEs

Irrespective of how rapidly global emission targets are met through international action, the long residence time of greenhouse gases (GHGs) in the atmosphere will ensure its residual impacts will continue affecting communities and natural systems for many decades (IPCC, 2007). Climate change is likely to bring higher temperatures, changes in precipitation patterns, sea level rise and altered frequency and intensity of extreme events (CSIRO, 2007).

2.2.1 Primary Impacts of Climate Change on SMEs

These physical changes have direct consequences for the private sector and therefore SMEs. Physical climatic changes, both in terms of slow onset stressors (e.g. increases in temperature or sea level rise) and immediate shocks (e.g. severe storms or heat waves) can lead to loss of business viability via business interruption, damage to infrastructure and more expensive running costs. The primary impacts of climate change as defined by CSIRO (2007) and the consequences for SMEs are shown in Table 3.

Table 3: Primary physical impacts of climate change and consequences for SMEs

Primary climate change impact	Consequences for SMEs
Higher temperatures	• More hot days with corresponding health issues e.g. outdoor workers and heatstroke; increased illnesses • More expensive cooling systems needed for both people and potentially for food (cafes, restaurants) (WBCSD, 2008) • Implications for natural resource assets and biodiversity (impacts on agriculture and tourism – (Sussman and Freed, 2008)
Less rainfall	• Direct agricultural impacts (crop viability, livestock needs) • Higher water prices, water restrictions (VECCI, 2011) • Lower water quantity and quality (tourism impacts (Pham et al., 2010)
Sea level rise	• Affects business location operations, access to raw materials or human / natural resources (WBCSD 2008) • Potential need for relocation (Linnenluecke et al., 2011)
More frequent / intense storms (tropical cyclones, hail, thunderstorms, windstorms) and flooding	• Infrastructure damage • Damage to products • Impacts on industrial processes, transportation, energy supply • Enhanced risk of injury / death • Implications for natural resource assets and biodiversity (impacts on agriculture and tourism) (Sussman and Freed, 2008)
More frequent / intense bushfires	• Infrastructure damage • Damage to products • Enhanced risk of injury / death

2.2.2 Secondary Impacts of Climatic Change on SMEs

Secondary impacts of climate change for SMEs are indirect and occur as a consequence of the outcomes of the primary impacts. Social and economic responses to physical changes in climate conditions are usually considered secondary impacts, the most significant of which are described in Table 4.

Table 4: Some secondary impacts of climate change and consequences for SMEs

Secondary climate change impact	Consequences for SMEs
Changes in consumer behaviour	• Consumers may prefer products from companies taking a proactive approach to climate change • Disruptions due to climatic impacts hinder customer access to business
Changes in government policies, regulations	• Emerging / changing tools include financial incentives, codes and standards, tax incentives, legislation. These may change the ways in which SMEs conduct their business. See below for more details.
Declining financial measures	• Value, return, growth (Sussman and Freed 2008)
Changes in industry codes of practice	• Chambers of commerce, trade associations and business clubs can be influential in the attitudes of SMEs (Allen Consulting Group, 2008), including their response to climate change impacts
Larger enterprises that interact and influence supply chain	• If SMEs are part of a corporate / larger organisation's supply chain they can be influenced by the larger organisation (e.g. buying power) (Allen Consulting Group, 2008)
Impacts on the value chain	• Natural resource supplies, changing lifestyles, customer demands and other production inputs are considered value chain impacts (see 2nd inner ring of Figure 1 – Sussman and Freed, 2008).
Increased insurance costs	• More frequent / intense weather events, or extremes occurring in regions previously free of such conditions are likely to face increasing insurance premiums (WBSCD, 2008)

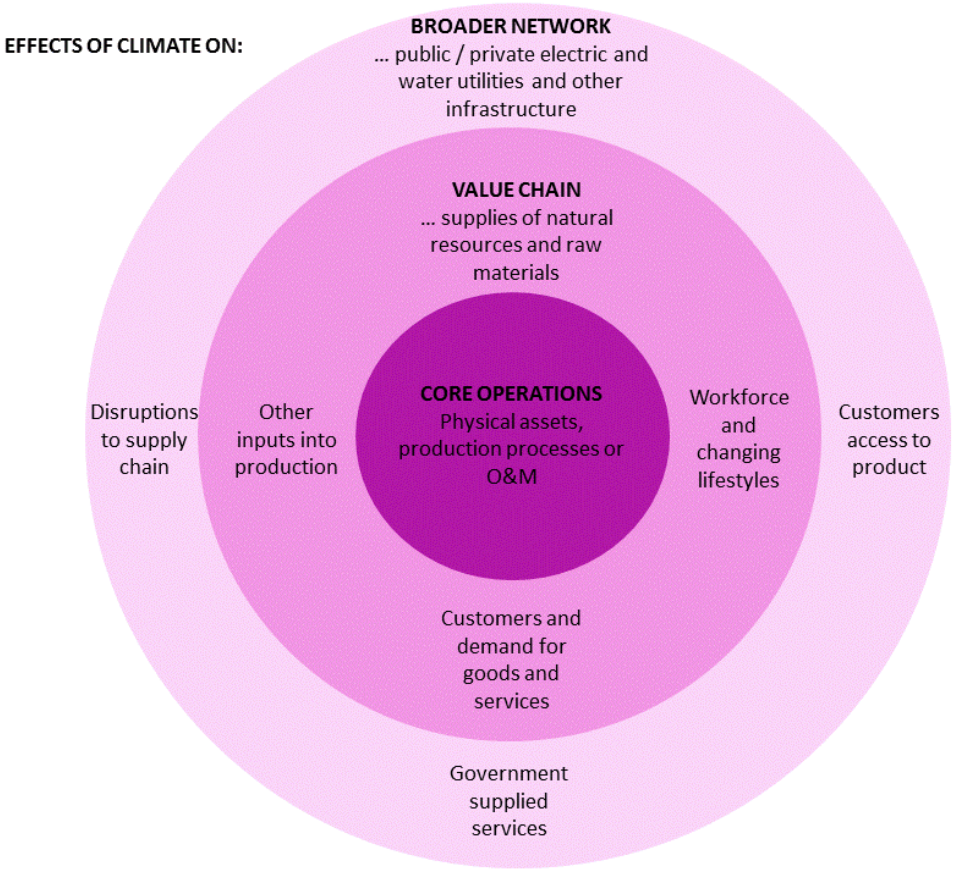

Figure 1: The "Risk Disk": Various risks and impacts of climate change on business (Modified from Sussman and Freed 2008:13)

Changes in government regulations and policies can have significant impacts of the ways SMEs function. For example, regulations regarding water restrictions, pricing, product standards, building codes, energy efficiency, planning guidelines and resource use all have the potential to affect the profit margins of SMEs, and all are affected by climate change. Climate change may also lead to regulators requiring new business processes for compliance management (WBCSD, 2008); increased insurance costs (Sussman and Freed, 2008) and increased waste management costs (Chamber of Commerce and Industry, Western Australia, 2011).

An illustrative example of the impacts of climate change on business is provided in Figure 1, which shows the primary impacts of climate change on businesses at the centre, moving out towards the secondary impacts.

2.2.3 Climate change impacts on specific sectors

The risks of climate change will not affect all businesses equally, with vulnerability partly dependent on how exposed production is to weather and climate (e.g. construction and agriculture) and how important decisions on long term capital investments are (Sussman and Freed, 2008). The following sectors are therefore selected as they all are significantly affected by primary and secondary climate change impacts.

2.2.4 Construction:

Construction comprises a significant proportion of the SME sector (ABS, 2011), and is highly vulnerable to climate change given the outdoor nature of operations and dependence on transportation of goods. Disruption to construction already occurs as a result of severe weather events, which are projected to become potentially more frequent and intense as a result of climate change (CSIRO, 2007). Severe weather also disrupts the delivery of materials and can damage to transportation infrastructure.

Higher temperatures limit the time in which construction workers can engage in outdoor tasks. Other infrastructure may be damaged by lack of drainage, and insurance costs may increase as some areas become high risk to work in. Despite these potential disruptions, climate change could also benefit some areas in which frost causes stoppages in working (due to exposure of workforce) and also possibly introduce new materials and products in the market (Sussman and Freed, 2008).

2.2.5 Agriculture:

Climate change driven temperature and rainfall changes will alter the viability of some crops and entire agricultural regions particularly in irrigated agricultural regions such as the Murray-Darling Basin, where projected climate change patterns of more frequent drought are already becoming evident (Quiggin et al., 2010). It is possible that climate change may also create incentive for new crop strains and potential to grow in areas previously unsuitable for agriculture (VECCI, 2011). Warmer temperatures and less rainfall are also likely to affect livestock, as are extreme event impacts.

More refrigeration and storage will be needed with higher temperatures, and challenges may emerge with regard to transporting livestock in hotter conditions (Sussman and Freed, 2008). Additional agricultural climate change impacts include interruption to irrigation supplies with unpredictable rainfall. Equipment and other investments, as well as expertise of farmers and workforce, are linked to specific crops which may become unprofitable or may no longer be viable (Sussman and Freed 2008). Consumers of agricultural products may find changes to the availability and price of the produce (VECCI 2011). These impacts will have broader implications on other sectors, e.g. food and beverages and tourism.

2.2.6 Tourism:

In Australia, tourism is highly focused on natural resources and the physical environment, thus vulnerable to the physical impacts of climate change (Pham et al., 2010). Tourism is also a major contributor to the regional economies of some regions, for example Northern Territory (Kakadu), North Queensland (Great Barrier Reef) and Victorian/NSW Alps (Pham et al., 2010).

Water availability and quality, biodiversity and presence of snow are all crucial to drawing tourists to a region and also all directly impacted upon by climate variability and change (Pham et al., 2010). For example, winter tourism and some ecosystem uses are already declining in some areas, with an adaptation strategy to extend the “use” of some as summer activity areas (Sussman and Freed 2008).

Higher temperatures may alter both the seasonal distribution of tourism and destination preferences. Working conditions in various outdoor facilities may become unsafe due to heat and UV exposure (AEA, 2009).

2.2.7 Food and beverages:

The potential of a greater frequency and/or intensity of extreme events heightens the risk of interruptions to food supply and operations (Sussman and Freed, 2008). Linked to agricultural impacts is the concern that potential changes in long term weather trends may affect the quality and reliability of supply of fresh produce, which has direct implications for SMEs in the café and restaurant sector (Sussman and Freed, 2008). Production of food is also vulnerable to the climate change induced physical risks to water supply and raw materials (Sussman and Freed, 2008). Furthermore, there is also the critical concern of greater risk of animal infections (e.g., avian/swine flu), insect infestation, plant disease and wildlife damage (Sussman and Freed 2008).

2.2.8 Manufacturing:

This sector may be highly vulnerable to climate change impacts; however it is partly dependent on the products being manufactured and the location of the business. Severe weather can interrupt the supply chain via the transportation system (Sussman and Freed, 2008). Products may also need to be redesigned to cope with more extreme climatic conditions, and the manufacturing environment may also change (i.e. become hotter), which affects workers and may force businesses to increase cooling systems (Sussman and Freed, 2008). The latter impact of increased cooling may lead to higher energy costs (WBCSD, 2008).

The physical location of manufacturing businesses may also be threatened by rising sea levels, flooding and the impacts of severe storms (torrential rain, wind, hail) which could damage business infrastructure and possibly force relocation (WBSCD, 2008).

2.3 Adaptation to climate change by SMEs

SMEs potentially face greater short-term losses after natural disasters and may have lower adaptive capacity than larger enterprises for various reasons. For example, they do not have diverse portfolios of products or operations to mitigate the risks, they do not generally have comprehensive contingency plans to offset the losses with other product gains, possess smaller cash reserves, and are less able to distribute risk through methods such as insurance against property damage and business interruptions (Runyan, 2006). Crichton (2006), in his study of SMEs in the United Kingdom, argue that these characteristics make SME's the most vulnerable economic sector to the impacts of climate change. Several studies have shown that SMEs have not adequately coped with extreme weather events and other natural disasters and thus undermine their capacity to adapt to climate change and variability (Tierney and Dahlhamer, 1996; Yoshida and Deyle, 2005; Dlugolecki, 2008). Additionally many SME owners' operate and reside locally and are thus hit twice by extreme climatic events; undermining their adaptive capacity (Bannock, 2005). Moreover, as elucidated by Nitkin et al. (2009), many small businesses have short-term planning horizons and have adopted a "wait and see" approach rather than proactively preparing adaptation plans and strategies.

2.3.1 Understanding the process of adaptation

Climate change adaptation has been defined as the process of reducing the vulnerability to current and/or projected climate change impacts (IPCC, 2007; Biggs et

al., 2011). Climate change adaptation comprises the management of climate risks to a tolerable level and taking advantage of any positive opportunities which requires an enhancement of a SME's adaptive capacity. However, theorisation of business adaptation to climate change is still in its infancy and thus limited empirical work exists that integrate the natural and social sciences to understand business continuity under a changing climate (Nitkin et al., 2009).

Adaptive capacity requires a shift from traditional responsive approaches to disaster and extreme events to ones which respond to changes in the future by building resilience, such as *flexibility* for the phasing of responses based on new information and trends, and *robustness* to withstand sudden shocks to the system such as droughts, floods, bushfires and heat waves. Some adaptation responses will address both shocks and trends (Mukheibir, Mitchell, et al., 2012). Adaptation is a continuous, ever-changing process involving cycles of decision making, planning, action, observation, and above all, social learning and continuous adjustment (Biggs et al., 2011).

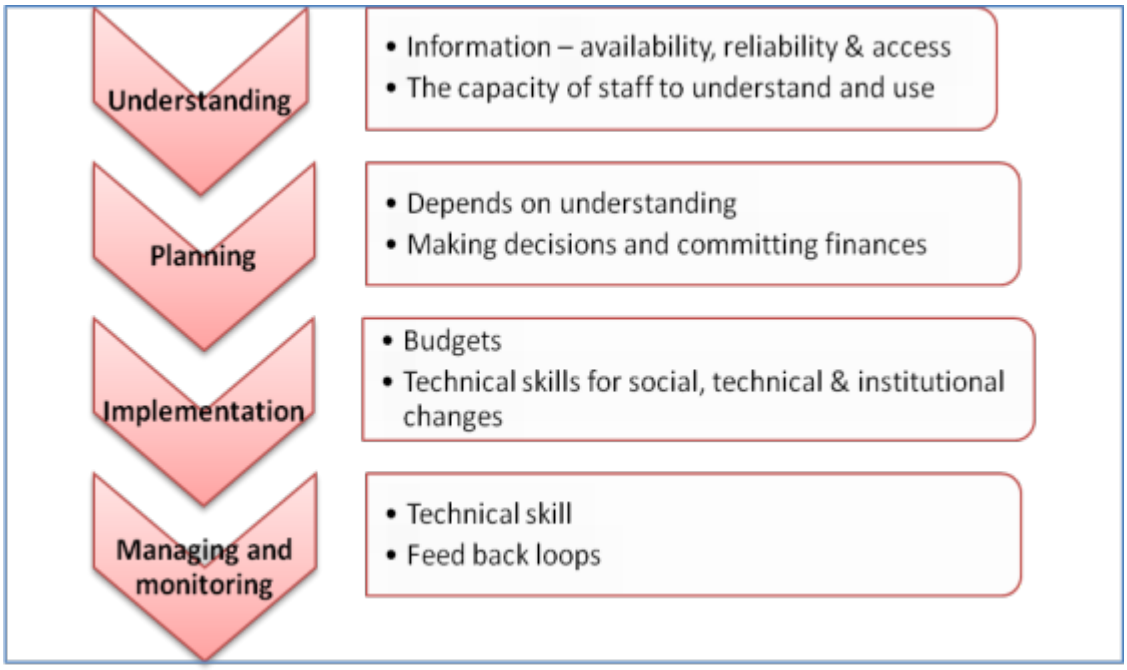

Figure 2: Conceptual framework for understanding the phases of adaptation (Moser and Ekstrom, 2010)

As illustrated in Figure 2, the process of adaptation involves four key steps and each step contributes to enhancing adaptive capacity and resilience to climate change impacts (FitzGerald and Holbrook, 2010; Moser and Ekstrom, 2010):

- aquiring an understanding of climate change to develop the organisation's institutional, regulatory, and managerial capacity and knowldege to develop climate change adaptation strategies and actions,
- developing appropriate strategies and plans to address the consequences of the impacts as they relate to the business,

- the implementation of the plans and actions via adequate budgets and technical staff capapcity to undertake practical measures and actions to reduce the threats of climate risk and exploit any opportunities, and
- finally, the monitoring and review of these actions with the aim of refinement and improving institutional knowledge

The nature of the challenges and opportunities for SMEs relate to certain internal and external characteristics that differentiate their responses to environmental and social issues – these characteristics are briefly described below (Loucks et al., 2010).

- **Ownership structure**: Many SMEs are owner operated, thus the owner/manager's influences, values and motivations drive the company (Loucks et al., 2010). If sustainable development and the impacts of climate change for example are prioritised by the owner, the implications are likely to resonate throughout the company (Beaver, 2007).
- **Business Culture**: Less formal business culture often means a lack of entry points to establish environment management systems (Loucks et al., 2010)
- **Organisational structures**: Many SMEs lack formal or sophisticated divisional structures which, in some instances, can lead to poor management and lines of responsibility which do not take advantage of potential opportunities (Tencati, A., Perrini, F. and Pogutz, 2004).
- **Knowledge, values, skills and experience of employees**: This characteristic has particular relevance for social and environmental performance in SMEs, and is specifically relevant when responding to potential climatic impacts (Loucks et al., 2010).
- **External personal relationships; social capital & business networks**: Networks, personal relationships and reputation are particularly crucial for SMEs when confronted with a crisis. The outside assistance is often key to the survival of the SME after an event that threatens the business (Loucks et al., 2010).
- **Relationships with government**: The role of government and regulations varies across jurisdictions, from being highly relevant to having minimal impact in SME behaviour (Loucks et al., 2010). This is discussed further in the Section 5.
- **Visibility**: Given the lower visibility of SMEs in the marketplace compared to larger firms, reputation relating to sustainability may be less relevant, thereby providing less of a push towards Corporate Social Responsibility (CSR) (Loucks et al., 2010)

Given the broader context in which SMEs operate, business stakeholders (e.g., regulators, trade organisations, communities, larger corporations) play an important role in driving climate change adaptation behaviour and actions of SMEs. Climate risks are often sector specific, therefore SMEs need to engage within and across sectors to evaluate the potential risks and opportunities (Nitkin et al., 2009). Thus, building adaptive capacity of SMEs occurs at two levels (UKCIP, 2010):

- Internal actions:
    - Create, gather or share information
    - Create a supportive governance
    - Create a supportive organisational culture
- External organisations:
    - Trade associations and professional bodies

- Regulators
- governments

However, ultimately SMEs themselves will need to build internal capacity to adapt to climate change. SMEs can implement various forms of adaptation actions or solutions in response to the threats or opportunities created by climate change, and these can range from (UKCIP, 2010):

- Strategic – change to a less vulnerable business/manufacturing process
- Temporary – emergency planning
- Technical – permanent physical changes
- Working practice – changing operational methods
- System for quick recovery – emergancy response plan, insurnace.

2.3.2 Legal framework for SMEs in adaptation planning in Australia

The Council of Australian Governments (COAG) produced its National Climate Change Adaptation Framework (NCCAF) in 2007, with several referenced to business, although none to SMEs in particular. The NCCAF recognises adaptation is a mechanism to manage risks and a way to improve business certainty, encouraging the development of business plans and long term views of resilience to build adaptive capacity within the business sector (COAG, 2007).

There are no specific Acts or regulations that govern or specify how businesses (SMEs of otherwise) should respond to climate change impacts. Many of the state regulations and elements of the legislative landscape relevant to SMEs in the climate change adaptation context are highlighted in Gero et al. (2012). Most relevant regulation in this field refers to the impact of businesses on the environment, including, pollution, GHG emissions, waste management etc. One of the most significant legislative responses for Australia in recent years has been the Environment Protection and Biodiversity Conservation (EPBC) Act. With its strong regulatory focus, SMEs (amongst other individuals and other big business stakeholders) are at risk of penalties should they contravene the EPBC Act (Martin, 2005). As stated above, climate change impacts may make it more difficult to comply with this legislation, resulting in changes to manufacturing processes and/or additional capital investments.

The *Fair Work Act 2009* contains relevant guidance for SMEs, providing entitlements to employees. However, it does not provide specific guidance on entitlements regarding changed conditions resulting from severe weather or disasters. However, specific awards or agreements may contain entitlements that are relevant to particular workplaces or sectors (Fair Work Ombudsman, 2011). These issues will become more relevant for some SME's, who would not previously have needed to consider issues such as extreme heat stress in the office environment or factory floor. Increases in the frequency of extreme weather events will put a strain on compliance with both indoor and outdoor working conditions.

The Building Code of Australia (BCA) provides a nationally consistent guide to the minimum standards required for necessary protection of health, safety, amenity and sustainability (Australian Building Code Board, 2011). There is currently a debate occurring as to whether the BCA reflects the potential heightened risks associated with climate change (e.g. stronger winds or extreme heat) (Redman et al., 2012). If the BCA

does come to reflect changing risk, implications for SMEs may result, particularly those in locations already exposed to severe weather.

Issues relating to water restrictions are relevant to some SMEs (e.g. nurseries) and controlled by state government, councils and individual water suppliers, and operate under the *Water Management Act 2000* or the *Local Government Act 1993* (see http://www.water.nsw.gov.au/Urban-water/Local-water-utilities/default.aspx).

2.4 Challenges to adaptation in the SME sector

Documented common challenges to implementing or progressing in climate change adaptation planning include the following:

Uncertainty of the business case	SMEs cite lack of time and resources for adaptation planning. This reveals a lack of evidence for a business case and return on investment (Grayson and Dodd, 2007) which relates to limited understanding (or uncertainty) of connections between potential climate change impacts and business operations.
Competing priorities	Financial sustainability is crucial for businesses, who already juggle competing priorities such as responsibility in business practice and financial sustainability (Allen Consulting Group, 2008). If environmental management is seen as a non-core business issue, resources are less likely to be directed towards concerns such as adaptation.
Resource costs	Tools may exist to assist with adaptation planning but these have usually been developed for larger firms where financial costs are less of an issue (Loucks et al., 2010).
Lack of expertise	Many SMEs lack personnel to initiate and maintain the adaptation process. Furthermore, many SMEs are unaware of environmental management systems thus are starting from a low baseline (NSW Business Chamber, 2008). Up-skilling in environmental management is often perceived as non-core business thus not prioritised (Walker et al., 2008).
Limited motivation of owner / manager	SMEs often take on the values and motivations of the owner / manager, thus if this person sees no benefits in integrating adaptation planning, progress and behaviour change is unlikely to occur (Walker et al., 2008).
Vast and heterogeneous group	The structure, size, industry and location of SMEs varies widely, as does the various stakeholders in the supply chain of SMEs, making communication with this sector challenging (Walker et al., 2008).

Complex regulatory landscape	Procedures of measurement and reporting against a growing number of regulations as well as additional bureaucratic frustrations can also provide a challenge to SMEs engaging with environmental compliance issues (Allen Consulting Group, 2008). Translation of national adaptation plans into relevant policy for the private sector is reported as a challenge in other regions of the world (CSR Asia, 2011).
Limited activity in industry groups	SMEs are reported to be less active in organisations that could potentially assist in adaptation and other environmental compliance issues (Walker et al., 2008) e.g. trade associations.
Uncertainty of local climate change impacts	The uncertainty of how climate change will manifest provides a challenge to adaptation activities. The lack of relevant and specific (geographically and temporal) climate information for businesses, contributes to the challenge of implementing adaptation initiatives (CSR Asia, 2011).

Recently in Australia, climate adaptation has received attention from the Productivity Commission which was tasked with assessing the regulatory and policy barriers to climate change adaptation (Productivity Commission, 2012). The Commission defined a barrier to climate change adaptation as anything that might prevent the community from using its resources in the most advantageous way to respond to climate change impacts (Productivity Commission, 2012). They noted that barriers could include market failures, policy and regulatory barriers, governance and institutional barriers, and behavioural barriers. This study has considered these wide ranging potential barriers to adaptation in determining how and to what extent the apply to SMEs.

2.5 Opportunities and Enablers to Adaptation in the SME sector

Global studies have shown that at the macro-level, SMEs that implement effective adaptation initiatives are contributing to driving whole countries towards resilient economies (UNEP et al., 2011). This may occur in localised operations, via supply chains, in partnership with surrounding communities and even in collaboration with the global community. More specific opportunities or enablers of climate change adaptation planning and implementation are provided:

New business opportunities	Demand for new products and systems are likely to emerge as a result of climate change e.g. water saving technology, efficient cooling systems, risk management systems, thus businesses positioned to tackle these needs are better positioned to capture the emerging market (Sussman and Freed, 2008).
Consumer and investor pressure	Pressure from consumers and investors provides an opportunity to proactively take up adaptation initiatives that result in consumer and investor loyalty (WBSCD, 2008).

Education and awareness	Education and awareness raising is a powerful facilitator of change in the SME sector (Walker et al., 2008), however motivation is needed from the SME owner / manager. Up-skilling is also an enabling activity that allows SMEs to assess their risks to climate change and implement appropriate adaptation strategies.
Flexibility of SMEs	Due to their small size, SMEs can be flexible and responsive to emerging issues in the business environment (NSW Business Chamber, 2007). This can maximise opportunities relating to new and innovative technologies, processes or practices (Louckes et al., 2010). SMEs may also have less restrictions on accessing financial resources for new opportunities (Loucks et al., 2010).
Cost savings	Most cost savings are related to reduced energy costs by implementing enhanced energy / water efficient technology, which can directly benefit the SME.
Diversification of operations	Diversifying business operations acts to spread risks by reducing exposure to specific hazards.

2.6 Initiatives to Build Business Adaptive Capacity

In responding to the lack of adaptive capacity within the SME sector, various institutions within Australian and the Asia-Pacific region have undertaken initiatives to assist SMEs cope with disasters, as discussed below. However, despite these attempts to improve resilience, SMEs have still found themselves vulnerable to the impacts of disasters.

2.6.1 Asia-Pacific initiatives

In the Asian-Pacific Economic Cooperation (APEC) region[3], SMEs account for 90% of all businesses operating in the region (APEC, 2012). It is acknowledged by APEC that natural disasters continue to impact on SMEs in terms of trade, investment and economic growth. Specifically, the disruption of supply chains and information and communication systems was noted. In 2012, APEC's SME Ministerial Meeting endorsed the adoption of the "Guideline on promoting SME Business Continuity Plans to strengthen the reliability of supply chains", and further encouraged the APEC members to cooperate in assisting the SMEs to develop pre-emptive disaster mechanisms (APEC, 2012).

APEC has initiated a project aimed at improving natural disaster resilience of APEC SMEs to facilitate further trade and investment. The project specifically aims to (APEC, 2012):

- Enhance the awareness of SMEs and governments on natural disaster risks

[3]Asia-Pacific Economic Cooperation (APEC) is a forum for the 21 Pacific Rim countries.

- Disseminate best practices and assist SMEs to implement pre-emptive disaster mechanisms. This will involve reviewing current policy frameworks and the collection of best practice business continuity plans.
- Identify challenges and possible solutions for SMEs

2.6.2 Australian initiatives

Overall, there are many resources available in Australia which may be relevant to supporting the process of enhancing adaptive capacity of SMEs but these are not disseminated under the banner of climate change adaptation. An illustrative list of programs and resources provided by the Australian Government is provided in Appendix A, some of which are no longer available such as the AusIndustry programs have been closed due to competing priorities and commitments. Other resources that refer to disaster resilience have relevance to SME's in this context as well (COAG, 2011).

At the national level, it appears that the Department of Industry, Innovation, Science, Research and Tertiary Education has been taking leadership in providing business assistance on a range of aspects, including climate change issues. In addition, many of these programs are competitive assistance programs, which makes access to them by SME's difficult, given their limited resources to make an application. In addition, communication of the available programs at first glance may appear to be a barrier in itself, since it may prove difficult for SME's to navigate the various websites and institutions.

3 THEORY & CONCEPTUAL FRAMEWORK FOR THIS STUDY

This section provides an exploration of theories that underpin adaptive capacity in the context of risk reduction. Additionally it presents and supports a justification for the conceptual framework that this study draws upon in addressing the research objectives.

3.1 Reducing climatic risks through enhancing adaptive capacity

> "Dealing with extreme weather events is not merely analogous to coping with recurrent financial shocks, it is also the means through which economics and social resilience is to be achieved" (Walker and Cooper, 2011. p.154).

Theorising adaptation to climate change rests on a long tradition of attempts to understand the human environment relationship. As mentioned in the previous section, a*daptation* in the context of climate change refers to "any adjustment by natural or human systems in response to actual or expected impacts of climate change [and variability], aimed at moderating harm or exploiting beneficial opportunities," (Eriksen et al., 2007, p.10). The research also makes a distinction between adaptation and coping strategies. The latter term refers to short-term strategies to deal with the immediate impacts of a stress whilst the former is associated with long-term strategies. *Adaptive capacity* which is the focus of this research is often defined by "the set of resources (natural, financial, institutional or human, and including access to ecosystems, information, expertise, and social networks) available for adaptation, as well as the ability or capacity of that system to use these resources effectively in the pursuit of adaptation," (Brooks and Adger, 2004, p.168). This definition suggests the importance of nature, institutions, information and social networks in a theory of adaptation as well as examining underlying processes that convert resources into valued adaptation strategies. The term adaptive capacity has its roots in biology and defined the ability of a system to live and reproduce to a range of environmental contingencies (Gallopin, 2006).

In its early stages, adaptation research in the context of climatic change often adopted economic frameworks for adaptation by considering costs and effectiveness in reducing exposure to anticipated impacts (Fussel and Klein, 2006; Shepherd et al., 2006). Other approaches are primarily driven by modelling that aimed to understand the physical impacts of climatic change on various systems and regions using biophysical frameworks. Through the impacts driven approach[4], various forms of adaptation were identified; they included: Autonomous versus Anticipatory; Planned versus Reactive; and Private versus Public (IPCC, 2001). These physical and economic studies were criticised for their failure to consider the human dimensions of the system that shapes its exposure to climatic stress (Cutter, 1996). A second phase of adaptation research was developed drawing on theories from the established field of risk and hazard management. Climatic risks are rarely shaped by physical forces alone (Hewitt, 1995; Liverman, 2001) but are an interaction of the *hazard* (i.e., climate related or other stresses) and the *vulnerability* context[5] of the system (Bankoff, 2003). Brooks et al., (2005, p.152) define vulnerability as "the degree to which a system is susceptible to injury, damage and harm". In overcoming vulnerabilities and reducing

4 Also referred to as 'first generation' adaptation research (Ford, 2008)
5 Both the hazard and vulnerability contexts are dynamic.

future risks, a system requires a level of adaptive capacity (Adger, 2006; Nelson et al., 2007). Vulnerability to climatic change "arises through particular levels of exposure[6] to underlying socio-economic changes as well as biophysical changes (Lorenzoni, Jordan et al. 2000, p.149). Adaptation within this context is recognised as a process that moderates climatic risks; requiring an understanding of both the likely impacts on the system as well as the attributes (both natural and social[7]) of the exposed system that drives vulnerability. Many studies – influenced by the critical political economy approach to hazards - have demonstrated that vulnerability is constructed socially; its underlying causal factors are predominantly social, rather than biophysical and are rooted in the socio-political processes that allocate resources in a society (Blaikie, Cannon et al. 1994; Hewitt 1997).

Many recent studies have adopted this conceptualisation of adaptation, initially identifying the underlying socio-economic factors causing vulnerability to climatic change and then recommending appropriate adaptations (Eriksen, 2000; Reid and Vogel, 2006; Lemos et al., 2011). These studies stress the need to consider the 'double exposure' of a system both to direct hazards stemming from climatic change as well as to indirect hazards such as changes to food prices (O'Brien and Leichenko, 2003; Heltberg et al., 2008). Thus, a broad range of adaptation strategies must relate not only to climatic stimuli but also to socio-economic stresses, often called 'no-regrets[8]' strategies.

In developing a conceptual framework for examining adaptive capacity of SMEs, this study adopts a risk management approach in which *reducing system vulnerabilities is central* to the analysis. The study also acknowledges that the adaptation actions that enhance adaptive capacity will simultaneously support resilience building of SMEs and the larger system it operates. *Resilience* is "the potential of a particular system to maintain its function [which may not be the most efficient way] in the face of disturbance and the ability of the system to re-organise following disturbance-driven change" (Holling and Walker 2003, p.1). The resilience approach provides a broader understanding of the adaptation process. It emphasises flexibility in responding to change, the potential for learning and experimentation and allows for the inevitability of failure/loss in parts of a system to maintain the ability to not only respond to disturbances but also consider system transformation (Brooks et al., 2005; Nelson et al., 2007). The research acknowledges that any given system is likely to possess inherent resilient characteristics which contribute to enhancing the adaptive capacity of the system; thereby resilience can be seen as a subset of adaptive capacity rather than the 'flip-side' of vulnerability (Gallopin, 2006). Furthermore, the study acknowledges the mutuality between nature-society relations where adaptation will not only be technical and specific to climatic change but will also address general socio-economic constraints and possibilities of double exposure.

Often this duality has been neglected in previous studies of understanding risk response of SMEs to natural hazards (Shrivastava, 1994; Heiskanen, 2002).

6 Exposure refers to the "degree to which a system come into contact with particular stresses" (McLaughlin and Dietz, 2008).
7 Often referred to as biophysical vulnerability (e.g., SMEs located in a flood zone) and social vulnerability (e.g., institutional constraints, poor regulation).
8 No-regrets strategies are beneficial regardless of whether climate change occurs or not (ADB, 2003).

3.2 Conceptual framework for examining SME adaptive capacity

> "Indicators are important for identifying who is at risk so interventions can be well targeted. But it is analysis of why they are at risk that tells us what can be done about it" (Ribot, 2011, p.1161)

This study interrogates the umbrella concept of adaptive capacity. SMEs and their internal business characteristics are the starting point of the analysis, embedded within the broader system context of organisations and institutions (Downing, 2003; O'Brien et al., 2004). In conceptualising vulnerability, one set of approaches have shown it to be a function of three dimensions: *exposure* and *sensitivity* to climatic risks, and *adaptive capacity* to deal with and overcome those risks (Ford, 2008, p.11). Generally a system with greater adaptive capacity will be less vulnerable because of its ability to moderate risks associated with specific hazards (Smit and Pilifosova, 2003, p.21). Sensitivity refers to the degree to which a system is affected by a set of stresses (McLaughlin and Dietz, 2008, p.101). Figure 3 demonstrates that an understanding of *adaptive capacity* is central to reducing vulnerabilities and exposure of SMEs to climate change and other stresses (IPCC, 2007). In this context, "adaptation interventions to deal with problematic exposures and sensitivities, reflect adaptive capacity" (Smit and Wandel, 2006, p.287). Adaptation is an ongoing process; given the dynamic nature of the hazard(s) and factors determining adaptive capacity.

The properties that support small businesses adapt at one point in time, under a given set of circumstances, may lead to maladaptation on a different occasion (Paine, 2001). It then becomes vital to identify context-specific determinants that enhance adaptive capacity. Moreover, it becomes significant to understand the underlying social processes that mediate or impede access to these determinants and this can be illuminated through adopting theories from political ecology. Together these forces work across multiple temporal and spatial scales (i.e., the local to the global) to shape adaptive capacity and ultimately catalyze the formulation of adaptation strategies. The research explored the term adaptive capacity, its determinants and the processes/structures that mediate adaptive capacity.

In identifying particular determinants that underpin the concept of adaptive capacity, the research draws on the literature from climate adaptation, social resilience and organisational change. These determinants can be considered at various spatial and temporal scales and they are dynamic over these scales. For example a SME's perceptions of climatic risks can be assessed at the individual (e.g., manager) or collective level (group of employees) at one point in time and these perceptions are likely to change with the availability of new information and resources. Furthermore, as discussed below, a SME's access to these determinants will differ due to various underlying structures and processes such as power inequalities or values (Few, 2007). Scholarship on adaptation suggests that the following objective and subjective factors or determinants are important to enhancing adaptive capacity and thus reducing vulnerabilities (IPCC, 2007; Yohe and Tol, 2002):

- the available technological options
- the resources (financial, social, physical, cultural, natural and human)
- the structure of critical institutions and decision making authorities
- the system's access to risk-spreading processes
- the credibility of information supplied by decision makers

- the public's perceptions of risks and exposure

These can be complemented by those determinants underpinning social resilience. The following determinants can limit the range of options available within a system during periods of reorganisation and renewal that follow a stress, (Folke et al., 2002):

- Learning to live with change and uncertainty
- nurturing diversity for resilience
- combining different types of knowledge for learning
- creating opportunity for self-organisation

Literature on organisational change also confirms the significance of understanding the functioning of a business as a complex open system in which the internal characteristics of a business are constantly interacting with the broader external context in which it is embedded (Dalziell and Mcmanus, 2004; Burke, 2008). It also suggests determinants that characterise the internal *(specific determinants)* and external context of the SME *(generic determinants)* which are likely to shape the adaptive capacity of SMEs (see Figure 3). Some of the external generic determinants adopted in this study include government regulations and climate information and knowledge. Inside the organisation various determinants include organisational values and perceptions about climate change, organisational size, extent of business continuity planning, extent of social networks, access to various resources and the extent of leadership in addressing climate adaptation.

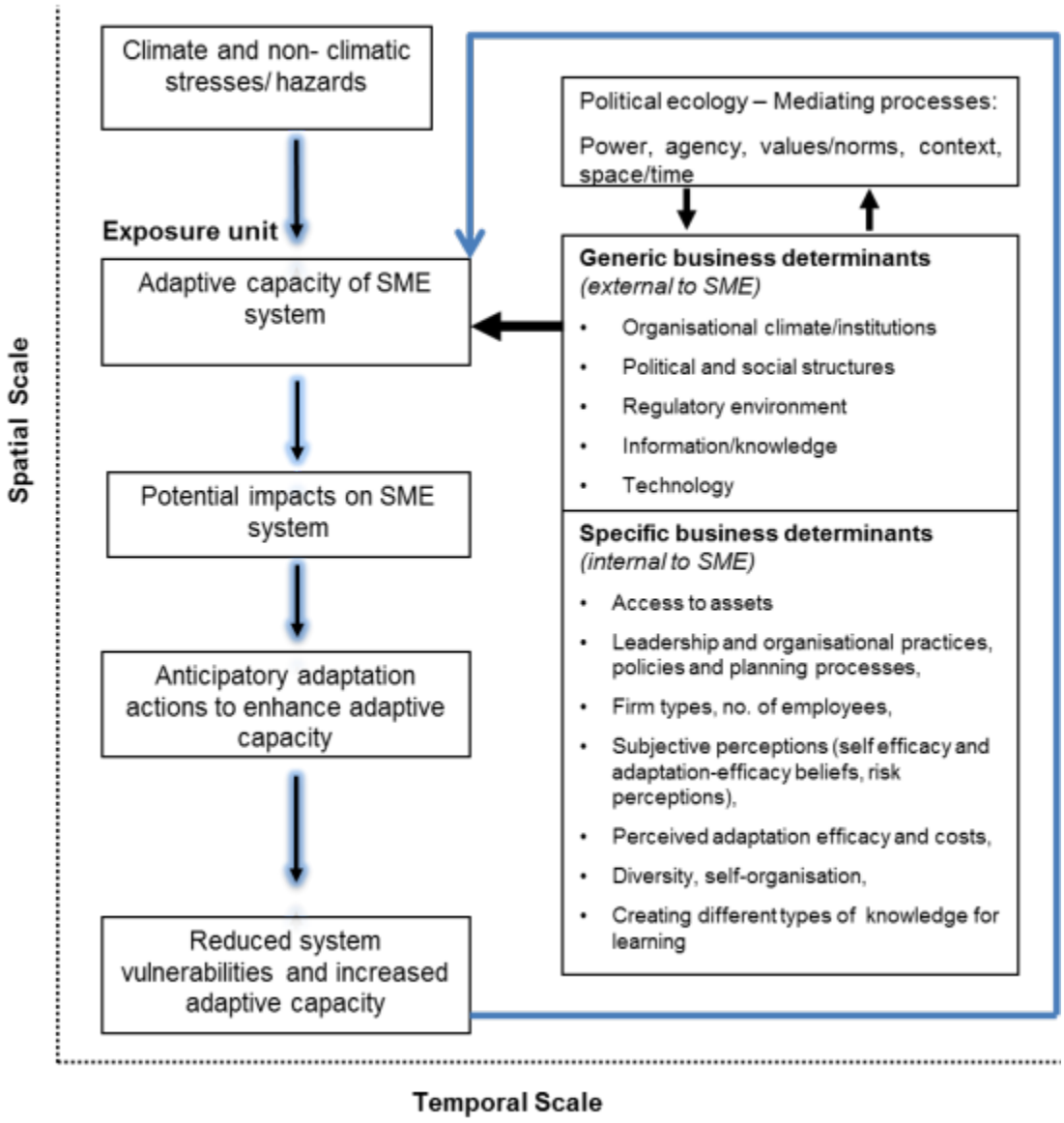

Figure 3: A framework for conceptualising how adaptive capacity of SMEs reduces overall vulnerability to climate and other stresses (Kuruppu, 2009)

The above buffet of determinants provide a guide to those factors underpinning adaptive capacity but they fail to elucidate the *how* and *why* aspects to the processes impeding adaptive capacity and thus creating vulnerability (Ribot, 2011). To understand the causal processes that mediate adaptive capacity such as social structure, power, cultural norms and human agency, this study expands the conceptual framework to include theories from Political Ecology. A political ecology approach to examining adaptive capacity commences with the premise that nature and society are inextricable linked with both forces constantly working together to produce reality (Hewitt, 1995).

This conceptualisation draws attention to the struggles over the relationships between human and non-human agents, mediated through social relations and institutions (Scoones, 1997; Hartmann, 1998). For example, political ecology pays attention to human agency and individual decision making which is important to understanding how SME owners shape the adaptation terrain.

Agency is defined as “the capacity of human actors to project alternative future possibilities, and then to actualize those possibilities within the context of current contingencies” (Emirbayer and Mische 1998, p.975 in McLaughlin and Dietz, 2008).

The social world evolves in response to the choices made by individuals which in turn influence structures[9] that condition future historical developments (Lansing et al., 2006, p.354). It also pays attention to power, for example the inequalities in access to knowledge and information across the larger system in which SMEs operate may also be relevant. In this sense individuals are the vehicles of power through which social and environmental outcomes are produced; giving rise to winners and losers. Political ecology also demands attention to both spatial and temporal scales. For example, the many interdependencies within the SME system ranging from communities to various levels of government need to be considered in an analysis of adaptive capacity.

This can be complemented by an analysis of the temporal dimension of how historical transitions have precipitated shifts in processes shaping adaptive capacity. Scales are dynamic with a history attached, they are constructed and may be destroyed or transformed through social and political practices and struggles (Paasi, 2004). Political ecology is a useful approach for examining adaptive capacity of SME systems by leading us to understand the interactions between the social-political, cultural and ecological processes across space and time that are likely to be the root cause of constraints to the adaptive capacity of SMEs.

9 “Structure encompasses the values that are embedded in the processes people engage in, as well as the institutions and organisations which are accorded relevance and legitimacy by repeated engagement with them,” (Gough et al., 2007).

4 RESEARCH DESIGN AND ACTIVITIES

This section outlines the research approach, methods and activities, including the thinking process and justification for decisions made in relation to the design of the research as the project evolved.

4.1 Approach

The research was guided by the theoretical framework described in section 3 and the background study (Murta et al., 2012) undertaken at the onset of the project. These provided an understanding that in order to grasp the full spectrum of challenges to adaptation confronting the SME sector, this research needed to include the engagement of both businesses (primary stakeholders) and organisations that provide direct or indirect support to SMEs (secondary stakeholders). The approach is illustrated in Figure 4.

The original design of the research in the proposal followed predominantly a bottom-up approach of engagement with primary stakeholders. The initial step was to undertake a survey of the SME's to gauge the level of their understanding of climate change, how they had coped during recent extreme events, and what they had done to avoid the impacts in the future. Due to their time and resources constraints SMEs were found to be difficult to engage with. In addition, it appeared that they may not have seen the value of participating in the research due to limited visibility and understanding to the connections between potential climate change impacts and business operations. In an attempt to overcome this, the research team attended two business engagement events with the aim of engaging directly with the SMEs without requiring them to be proactive in participating in the research project activities.

The challenges in engaging with SMEs at the early stages of the survey revealed a need to shift the approach to engage mainly with secondary stakeholders i.e. organisations who have provided support to SMEs during extreme weather events. The secondary stakeholders were able to provide insights into the challenges confronting the SME's and also acted as conduits to engaging with these SMEs for the case studies.

Through interviews with the 30 secondary stakeholders, researchers explored the possibility of developing case studies in collaboration with SMEs to illustrate the different types of extreme climatic events experienced by SMEs in various regions of the country. Five case studies were developed including heatwaves and floods in New South Wales (NSW), bushfires, floods and drought in Victoria, cyclones in Queensland (Qld), and drought in Western Australia (WA). These illustrate the capacity and support needs of the SME sector in the case study region to adapt and become more resilient to climate extremes and variability.

An advantage of developing multiple case studies is that they provide comparative data that can explain variations in phenomena or provide a tool for generalisation if there are trends between them. The objective of developing short case studies in this study was to demonstrate how some SMEs have overcome the impacts of extreme climatic events and the potential barriers, and highlight some of the findings emerging from the data collection with the secondary stakeholders.

The whole project was brought together with a stakeholder workshop at the end, with the main purpose of bringing the project participants together to share their experiences and challenges as well as discussing the emerging themes/ results.

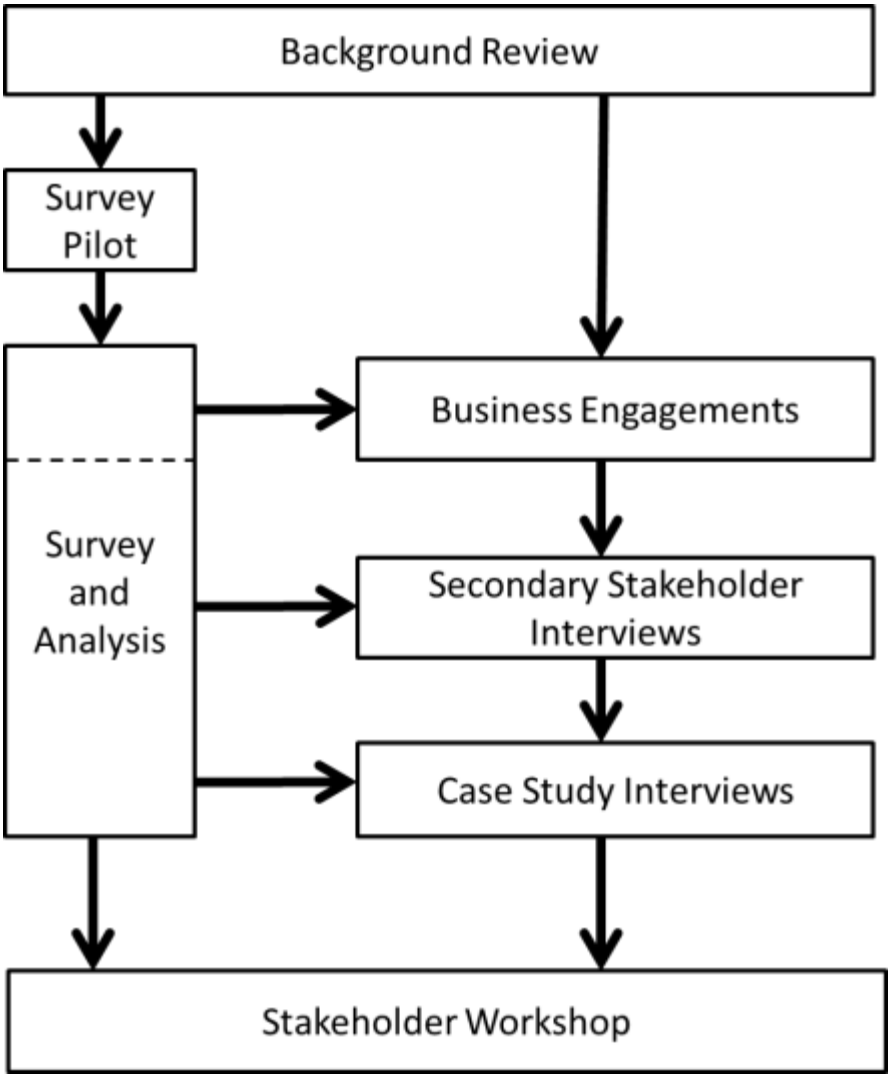

Figure 4: Research approach and engagement process

4.1.1 Project Reference Group

The research process was guided by a Project Reference Group (PRG). The purpose of the project reference group was to ensure relevance of the research process to important stakeholders, to guide the major decisions of the research process and contribute to uptake of the research findings. Participation of the group allowed members to gain insight to the research and its outcomes whilst the research was in progress and to influence its progression. The PRG also assisted in key decisions and facilitated links with policy and practice. Organisations represented on the PRG included:

- NCCARF;
- Climate Change Research Centre, University of New South Wales;
- Westpac Institutional Bank;
- CSIRO;
- Parramatta Chamber of Commerce;

- Western Australian Chamber of Commerce.

4.1.2 Ethics

Informed consent was obtained from participants either verbally or in written form depending on the type of consultation. All participants were advised either verbally or in writing that the research is covered by University Ethics Guidelines. Potential participants were directed to, and encouraged to read the documentation provided to them if they had any concerns.

Where the ISF project team sought to digitally record any meetings, verbal consent was sought prior to commencement of digital recording. It was the intention that responses would be used to inform the research and resultant research publications, but responses would not be attributed to individual respondents. However, generic types of organisations may be identifiable through the nature and content of the responses. If organisations were to be identified through respondent quotations then prior consent would be obtained prior to publication. Organisations would also have the opportunity to check their quotes that were intended for use in publications associated with this project.

All responses to stakeholder interviews were coded and corresponding names and personal details are being kept in a separate secured folder on the ISF server, in accordance with University Ethics Guidelines.

No direct payment or compensation was provided for stakeholder participation. For out of state participants, the cost of flights and accommodation associated with the workshop was covered by the project.

4.2 Engagement activities

A desktop background review of available literature in Australia assisted in the identification of key stakeholder groups, which were then invited to participate in the research through a combination of methods, as shown in Table 5, and further detailed in the sub-sections below.

Table 5: Research methods and activities used to collect data from primary and secondary stakeholders

Stakeholder	Online survey	Business events		Interviews		Workshop
		Aug	Oct	Targeted	Case study	
Primary stakeholders	✓	✓	✓		✓	✓
Secondary stakeholders		✓	✓	✓		✓

4.2.1 Online survey

An online survey was administered electronically using the programme Survey Monkey™, which allowed respondents to remain anonymous as well as supporting

researchers in the data analysis stage in which the results could be extracted easily in graphical format.

Questions for the survey were framed based on the findings in the Background Report (Murta et al. 2012). The survey was designed through input from the Project Reference Group in which comments related to the draft version of the survey were incorporated into the pilot version. The survey consisted of a total of 26 questions in which a mix of multiple choice and open ended questions were asked (Appendix B). The survey was designed to be completed within 15-20 minutes with respondents being taken sequentially through three survey sections:

- **Section 1.** Aimed at gaining relevant information about the characteristics of the businesses surveyed.
- **Section 2.** Aimed at gaining an understanding of how SMEs have coped in the past when confronted by damage, disruptions and/or operational challenges due to extreme weather events.
- **Section 3.** Aimed at gaining an understanding of how SMEs perceive climate change adaptation and its importance, and what barriers and challenges they may be facing in preparing for the projected changing climate trends.

A pilot version of survey was first sent to 100 members of the Parramatta Chamber of Commerce and was administered over a ten day period. The results of this pilot were then used to improve the final survey which was sent to the following business chambers who are key advisors to the research and was administered over a period of seven to fifteen days:

- Parramatta Chamber
- Hunter Chamber
- Western Australia Chamber

All invites including the link to the survey was forwarded by the Chambers to their database of members on behalf of the research project. The invite was further extended to Business Chambers and other SME support agencies in various Australian states which included:

- Ipswich (Qld)
- Hunter Indigenous Chamber (NSW)
- ACT Chamber
- Gold Coast Combined Chamber of Commerce (Qld)
- Cairns Chamber (Qld)
- Tasmanian Chamber of Commerce and Industry (Tas)
- Northern Territory Chamber of Commerce (NT)
- Orange Chamber of Commerce (NSW)
- Ballarat Chamber of Commerce (Vic)
- Wodonga Chamber of Commerce (Vic)
- Port Lincoln Chamber (SA)
- Kalgoorlie Chamber (WA)
- Fremantle Chamber (WA)
- Mount Isa (Qld)
- Mid West Chamber (WA)
- Port Adelaide (SA)
- LGSA NSW
- Economic Development Australia
- Sustainable Business Australia
- Real Estate Institute of Australia
- Lake Macquarie Business Growth Centre

- Hunter Region Business Enterprise Centre
- Tourism Queensland

Overall, a total of 45 businesses responded. Of these, 9 responded to the pilot survey and 36 responded to the actual survey which ran for the full period of the study. Initially there were 17 respondents to the survey. It was decided to keep the survey open and encourage participation through the other various stakeholder engagement activities. A further 19 responses were received. All industry categories from the ABS classification system for SMEs were represented in the survey apart from the electricity, gas water and waste services, mining and wholesale trade.

The low response rate would indicate that either: potential respondents were too busy to fill in the questionnaire, or did not see value in responding to a climate change related questionnaire. Whilst the sample size is statistically small, some interesting trends were observed and are discussed in the following sections.

4.2.2 Business engagement events

In addition to the online survey, an attempt was made to engage with SMEs directly at the business engagement events organized by the Parramatta Chamber of Commerce – viz. the 'Business after 5' events. Attending these events served two purposes:

- Raising awareness of the research and recruiting research participants for the online survey and interviews;
- Collecting information through a number of stakeholder activities, as described below and illustrated in Figure 5 and Figure 6.

In total four activities were undertaken at these events:

Business after 5 event, 7th August 2002, hosted by Suncorp Head Office Parramatta

- Activity A: Map your experience with weather risks

  In this activity participants were invited to map their experience with extreme weather events by rating the frequency of the event (seldom, sometimes, often or very often) and severity of the impact (no impact, low impact, medium impact or extreme impact). This activity served as a starting point of conversation to explain the purpose of the research and build rapport with the participants, which facilitated moving to activity B.

- Activity B: What would it take to ensure business continuity under extreme weather risks?

  In this activity participants were invited to brainstorm and discuss on strategies and actions that would contribute to ensure business continuity under extreme weather risks.

Figure 5: Set-up of stakeholder engagement activities, 'Business after 5' event, 7th August 2012

Business after 5 event, 2nd October 2012, hosted by the Sebel Hotel and Ronald MacDonald House

- Activity A: Map your support network

  In this activity participants were invited to map their support networks by writing down on post-it notes the name of the organisations that provide some sort of support to their businesses, and identify for each of these the types of support they provide (e.g. financial, networking, advocacy, training and education, business advice) and rank the link strength from 1 to 3 (1 –strong link, 2 – weak link, 3 – no link). This activity also served as a way of building rapport with the participants, and prompting them to think of the role their support networks could play to ensure business continuity when moving to activity B.

- Activity B: What would it take to ensure business continuity under extreme weather risks?

  In this activity participants were invited to brainstorm and discuss on strategies and actions that would contribute to ensure business continuity under extreme weather risks.

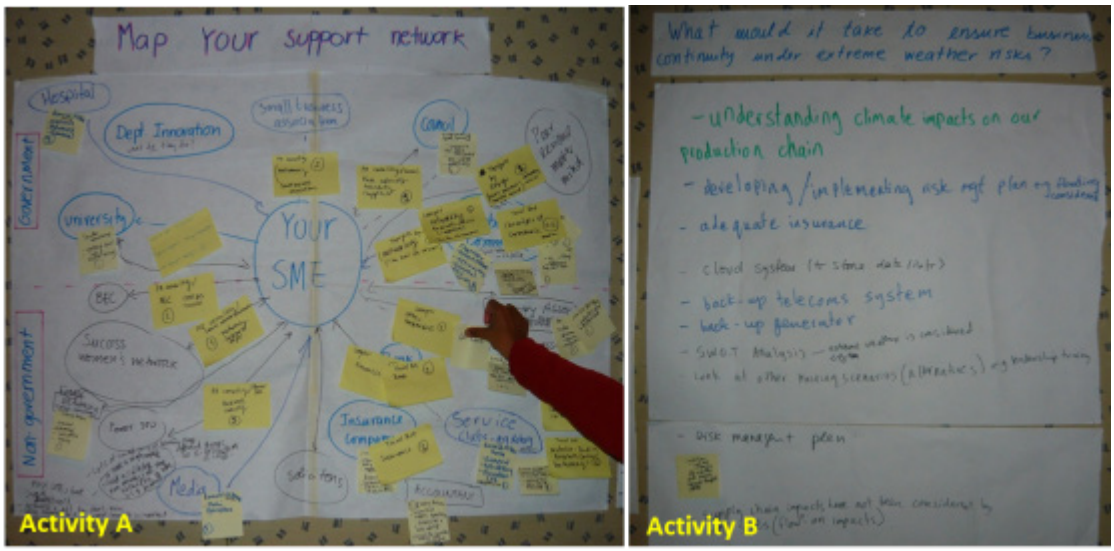

Figure 6: Set-up of stakeholder engagement activities, 'Business after 5' event, 2nd October 2012

4.2.3 Secondary stakeholder interviews

The low response rate to the online survey, as well as difficulties in engaging with SMEs at business events, led to a greater focus in recruiting secondary stakeholders for interviews.

Interviews were conducted with 30 representatives from a wide range of government and non-government organisations across Australia that provided direct or indirect support to the SME sector, as shown in Table 6.

The interview guide (see Appendix C) was developed based on findings of the Background Report (Murta et al. 2012) as well as on new contextual understanding of the SME sector researchers gained as the project evolved, from preliminary results of the online survey and stakeholder engagement at business events.

Most of the interviewees were identified through a desktop review. However, a few interviewees were identified using snow-ball sampling or recommended by members of the Project Reference Group. Interviews were conducted predominantly by telephone and semi-structured in nature, allowing for interviewees to contribute to predetermined questions but also allowing for flexibility in responses depending on their organisation and experience.

Interviews were recorded and transcribed, with transcriptions analysed using the qualitative software tool – Nvivo™. Common and recurring themes were coded with reference to the conceptual framework in Chapter 3. The coding was then assessed and aligned with existing findings.

Table 6: Secondary stakeholder organisations interviewed

Organisations	Scale of operation
Government	
Attorney Generals, National Disaster Recovery Program	National
Department of Innovation	National
Department of Agriculture, Fisheries and Forestry/ Rural Financial Counseling Services	National
NSW Office of Environment and Heritage	National
University of Western Sydney	State
NSW Small Business Development Corporation	State
WA Small Business Development Corporation	State
Northern Agricultural Catchments Council, WA	State
Cassowary Coast Regional Council, QLD	Regional
Newcastle City Council, NSW	Local
Parramatta City Council, NSW	Local
Maitland City Council, NSW	Local
Stirling Council, WA	Local
Non-Government	
Westpac Institutional Bank	National
CPA, Australia	National
Suncorp Bank	National
Business Networking International	National
Hunter Region Business Enterprise Centre, Inc, NSW	State
Wine Industry Association of WA	State
Chamber of Commerce and Industry of Western Australia	State
Girringun Aboriginal Corporation, QLD	Regional
Northern Agriculture Council, WA	Regional
Lake Macquarie Business Growth Centre, NSW	Local
Parramatta Chambers of Commerce, NSW	Local
Independent business advisors/consultants	National
Climate Risk	National
NSW Nursery and Garden Industry Association (NGIA)	State

4.2.4

4.2.5 Case study interviews

Five case studies were undertaken and are summarised in Appendix E. Case studies A, B, C and D draw on the experiences of SMEs in dealing with extreme weather events, whereas case study E draws on the experiences of four Business Advisors who were involved in supporting SMEs during and after periods of extreme weather events in rural/semi-rural areas of Victoria. Figure 7 shows the SMEs interviewed for the case studies A, B, C and D.

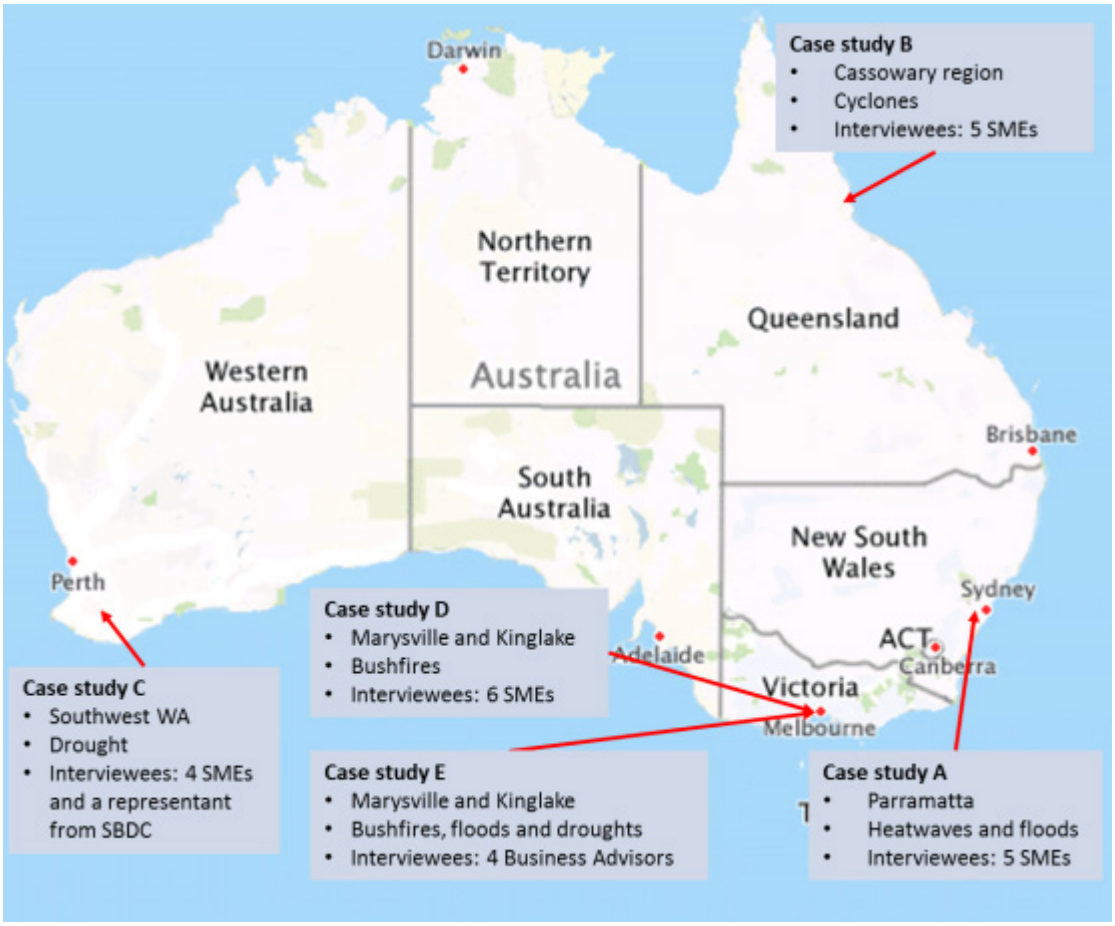

Figure 7: Location of case studies

SMEs interviewed as part of case studies A, B and C were recruited through secondary stakeholders working or representing organisations in the areas relevant to the case studies. These included:

- Parramatta Council and the NSW Office of the Environment and Heritage (case study A);
- Cassowary Regional Council (case study B);
- Western Australian Small Business Development Corporation (WA SBDC) (case study C).

For case study C, an interview conducted with the representative from the WA SBDC also contributed to the development of this case study. This case study draws on the experience of four SMEs who received funding under this 2011 Small Business Grant Scheme, and of the SBDC in administering and delivering the program.

SMEs interviewed for case study D were recruited through two independent consultants who worked with SMEs as business advisors during the Victorian fires and the floods:

- Sandra Slatter, Business Recovery Murrindindi Shire Council and Emeritus member Small Business Mentoring Service;
- Anthony Turner, Small Business Mentoring Service.

A total of four business advisors were interviewed for the development of case study E. These included Sandra Slatter and Anthony Turner, the independent consultants above mentioned, linked researchers to two additional business advisors who also contributed to the development of case study E. These included:

- Bruce Hall, Small Business Mentoring Service;
- Ken Slatter, Rural Financial Counseling Service.

Table 7: SMEs interviewed for case study A, B, C and D

Organisations	Industry or sector	Number of employees	Years of operation
Case study A: NSW (Parramatta)			
Scuba Warehouse/Geo Divers	Retail and Tourism	10	25
Bergs Hobbies	Retail	5	53
Dale Glass Industries	Manufacturing	16	31
Coleman & Greig	Law	85	75+
Sydney Markets	Wholesale and Retail Food	70	15
Case study B: Cassowary Region, QLD			
Coral Sea Kayaking	Tourism	5	14
Castaways Resort & Spa	Tourism	30	26
Paronella Park	Tourism	38	19
The Tinnie Shack	Marine repairing and retail	7	12
Mission Beach Interiors	soft furnishing and interior design		23
Case study C: SMEs in SW Western Australia			
Corrigin pharmacy	Retail pharmacy	6	13
Hyden IGA	Retail	7	15

Organisations	Industry or sector	Number of employees	Years of operation
Wagin Spreading Service	fertilisers and Ag-chemicals	3	22
H Rushton & Co	Retail- agricultural products and machinery	8	66
Case study D: Marysville and Kinglake, VIC			
Black Spur	Accommodation and catering	26	7
Pat's Hairdressing	Service provider	1	11
Kinglake Ranges Wilderness Camp	Education based tourism and accommodation	33	7
Kinglake Chinese Medicine	Health	2	4
Marysville Caravan and Holiday Park	Accommodation	4	3
Lake Mountain Resort	Alpine Resort	17+	42

4.2.6 Workshop

Stakeholder interviews provided the opportunity to invite project participants to engage with each other in a workshop. The invited participants included individuals representing both primary and secondary stakeholder organisations. As

Table 8 and Table 9 demonstrate, 16 participants attended the workshop, representing secondary stakeholder government and non-government organisations operating at different levels and providing different types of support, and four participants represented SMEs.

Table 8: Secondary stakeholder organisations represented at the workshop

Organisations	Scale of operation
Government	
Department of Innovation, Industry, Science and Research	National
NSW Office of Environment and Heritage	State
Wine Industry Association of WA	State
NSW Small Business Development Corporation	State
WA Small Business Development Corporation	State
Parramatta City Council, NSW	Local
Kuringai City Council, NSW	Local
Canada Bay Council, NSW	Local
Non-Government	
Green Cross Australia	National
Climate Risk	National
TAFE Western Sydney	Local
The Hills Holroyd Parramatta Migrant Resource Centre	Local
Expert consultants on disaster and small business (X2)	

Table 9: Primary stakeholder organisations represented at the workshop

SMEs	Location	Industry
The Tinnie Shack	Mission Beach, QLD	Tourism
Castaways Resort & Spa	Mission Beach, QLD	Tourism
Black Spurr Inn	Maryville, VIC	Accommodation and catering
Sydney Markets	Parramatta, NSW	Retail

The workshop was designed to:

1. share emerging research themes/findings the data most participants had contributed towards and then to explore and seek feedback on them from participants;
2. create a safe space to allow affected SME's to share their stories;
3. seek feedback on how best to disseminate the research findings so they are of value to the research stakeholders;
4. provide a networking opportunity to participants.

Participants were grouped into three tables to allow a balanced mix of government and non-government organisations, different scales of operation and (from local to national level), and the type of support provided.

The workshop started with a brief presentation of the workshop objectives, research background and preliminary findings. A panel discussion followed with small business participants presenting aspects of the case studies and sharing personal stories and experiences in coping with the impacts of extreme climatic events.

This was then followed by two group activities:

- Group Activity 1: Stakeholder perspectives on emerging themes/findings

  Participants at each table were invited to discuss the four research emerging findings or themes and write down what they as a group believed stakeholders in the government, non-government and private sectors could do to support and/or overcome the opportunities/constraints related to the findings or themes.

- Group Activity 2: How best to disseminate and publish research results?

  Each group was given a different list of four research emerging findings or themes. Participants at each table were invited to discuss and write down on sticky notes who they could and would like to send the research outputs to and who they would like ISF to send the research outputs to, as well as the best format to disseminate the research findings.

Participant feedback from the workshop is provided in Appendix D.

Figure 8: Set-up of workshop presentation and activities.

Figure 9: Workshop participants

5 DISCUSSION OF THE RESEARCH RESULTS AND OUTPUTS

The chapters that follow presents the research outputs related to three key research questions and provides a discussion of the results as it relates to this study and broader context. Following are the three research questions:

1) How have SMEs considered and integrated adaptation into business planning?

2) What are the key underlying processes that constrain and influence the adaptive capacity of SMEs?

3) What types of support are required to promote SME business continuity under a changing climate?

The results draw on the data from the online-survey, key informant interviews with stakeholders supporting SMEs, the five case studies produced as part of the study as well as the workshop with stakeholders.

5.1 Small businesses adapting to climate change

The objective of this section is to inform *how* SMEs have considered and integrated adaptation into business planning. It also provides a baseline understanding of the types of long-term strategies that have been adopted by SMEs. In doing so, the research examined initially how SMEs had coped with past climate extremes and variability and whether this had provided an impetus for adaptation planning. Several studies have demonstrated that past experience with stressful climatic events, particularly their severity, can promote self-efficacy beliefs (i.e., confidence in one's ability to perform actions successfully) and motivate people to adopt anticipatory adaptive behavior (Grothmann and Patt, 2005; Kuruppu and Liverman, 2011). As mentioned in the theoretical chapter, the research distinguishes between adaptation and coping. The latter term refers to short-term strategies to deal with the immediate impacts of a climate related stress whilst the former is associated with long-term strategies.

5.1.1 How have SMEs coped with past climate extremes and variability?

In attempting to understand the context in which SMEs have coped with past climate related stresses and associated impacts, the research asked several questions related to:

- the types of slow and rapid onset climate extremes experienced,
- the direct and indirect impacts on the business, including on supply chains,
- forms of coping strategies adopted during the response and recovery phases,
- the types of impediments to coping with the climatic stress.

Past extreme climatic events

The types of climate related stresses experienced by SMEs in this study varied according to geographical contexts. A majority of SMEs seemed to recall past experience with rapid on-set extreme events rather than the slower on-set events such as drought or sea level rise. Many of the SMEs interviewed as part of the case studies had experienced extreme weather events in the form of bushfires, cyclones and drought. The 2009 Black Saturday bushfires in regional Victoria destroyed five out of the six SMEs who were interviewed from Marysville and Kinglake. The remaining SME

had experienced a fire surge which engulfed their business; this was catalyzed by the bushfires. Changes to the snow season which is a slow onset stress, was becoming shorter and unpredictable as reported by two SMEs in the Victorian case study. All five SMEs interviewed from the Cassowary region, in Far North Queensland had been affected by both cyclone Larry in 2006 and cyclone Yasi in 2011 as commented by one respondent:

> *"In the whole ground floor of our building everything was removed to the second floor. So there was no furniture or there was nothing in the ground floor and then on the second and third floor - we have a three floor building everything was raised off the ground, because what happens in a cyclone is all the rooms get washed out with water. So there was a lot of work to relocate, protect everything that we had and then a huge amount of work to get back in-situ and to operate again."*

The 2010-2011 drought in south-west Western Australia (WA) impacted all four SMEs interviewed as part of the case study. Most SMEs interviewed as part of the Parramatta case study had not experienced the direct impacts of extreme weather events apart from two respondents. The respondent from the Gardening and Nursery Industry Association of NSW and ACT (NGINA) highlighted that many of the production and retail nurseries in the area had been affected by severe hail storms whilst the Sydney Markets mentioned they had been flooded in 2011 which had resulted in a 25% increase in food waste. Only 35% of the on-line survey respondents had experienced extreme weather events in which flooding, drought and rainstorms were the most commonly reported events (Figure 10).

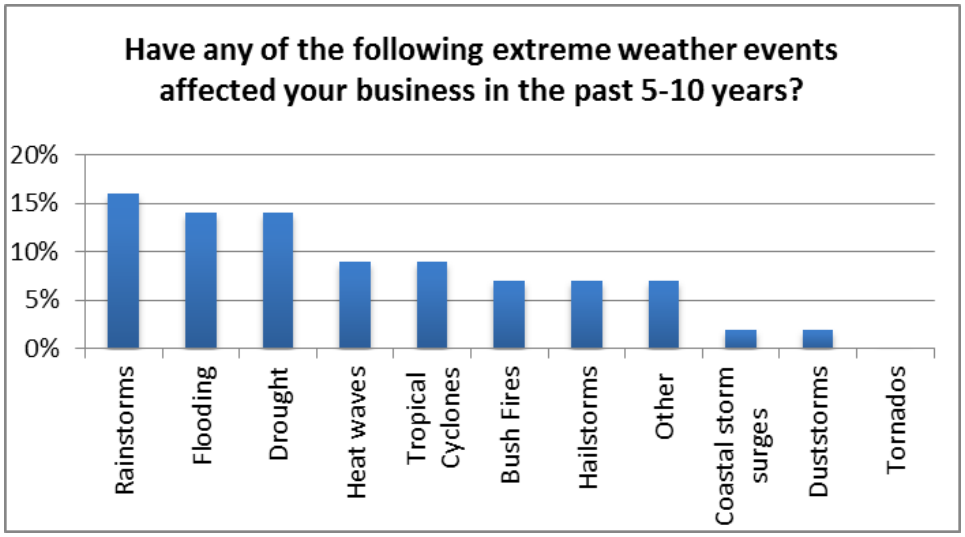

Figure 10: SME experience with climate extremes

Interviews with stakeholders also elicited the types of extreme climatic events that may have been experienced by the SMEs they directly support. These included drought in Western Australia (WA) which affected many of the SMEs that depended on the farming industry, as well as the Margaret River bushfires which impacted several home-based businesses and stand-alone workshops.

In the Hunter region, located in the central coast of New South Wales (NSW), respondents' mentioned that the 2007 floods which was caused by the Pasha Bulker storm was the most significant event to affect SMEs. This was a 1 in 100 year flood that affected the CBD area of Newcastle and surrounding centres such as Maitland.

Other extreme events that were mentioned included the 2010-2011 floods in Queensland which also affected parts of Northern NSW and the severe storms in WA which affected 119 Local Government areas. Victorian stakeholders identified the 2011 floods in Central and Northern Victoria as well as the 2000-2010 drought which had a gradual impact on SMEs supplying farmers.

The results suggest that extreme climatic events are not a new stress that SMEs are dealing with but rather they are ingrained in their social memory alongside other business risks they may experience (e.g., changes to regulation). Climate change will only stand to exacerbate these impacts through increasing the frequency and severity of extreme events (IPCC, 2007). As mentioned by two stakeholders supporting SMEs:

> *"It's hard when you talk to small businesses, they say oh, we're going to get the same amount of rain [under climate change]. I say yes, but the same amount of rain you might only get in the year will all come in one go".*

> *"I would say that the challenges that are facing us is that there are a lot more events these days. There is a lot more varied weather that seems to affect the same areas. I have worked in this area for under 2 years now and before I didn't really have any visibility of just how many disaster events occurred. In the last disaster season which is generally through December 1 - March 1, we had 505 of the 559 local government areas throughout Australia activated, of some more than once. There are a lot of areas that get affected more than once and there are a lot of small businesses in those areas."*

SMEs Coping with Direct and Indirect Impacts of Past Extreme Climatic Events

Sullivan-Taylor and Branicki (2011) suggests that extreme events often stand to expose SMEs to high levels of strategic uncertainties that not only affects business as usual functioning but can undermine the survival of SMEs. The impacts from the above mentioned climatic events produced both direct and in-direct impacts on SMEs. The most commonly reported direct impacts by SMEs included (Figure 11):

- Infrastructural damage,
- Production process and service disruptions,
- Staff working conditions affected
- Supply chains disruptions
- Transport for staff and customers disrupted, and
- Increased cost of insurance.

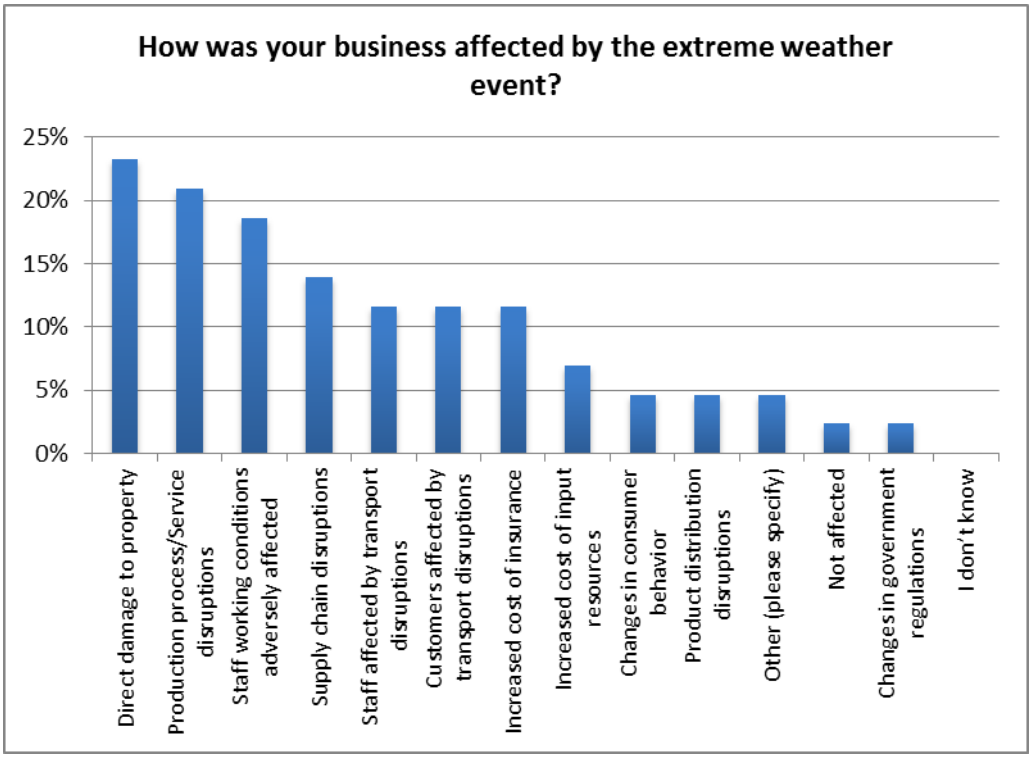

Figure 11: Direct impacts on SME's

For example, the infrastructural damage from both the bushfires in Victoria and cyclones in North Queensland was significant. Many of businesses involved in the case studies were burnt to the ground whilst the cyclones damaged key assets owned by the Queensland SMEs. One particular SME affected by the cyclones reported a loss of income worth approximately $200,000 in the first year after cyclone Larry in 2006 and $350, 000 after cyclone Yasi in 2011. This was compounded by the restrained spending patterns of communities in the devastated areas as well as the impacts on the tourism industry. Both the Queensland and Victorian case study regions are dependent on tourism but after the extreme events, visitor numbers to the areas declined significantly and have not rebounded to those numbers pre-disaster. Additionally, damage to critical public infrastructure such as water, energy, telecommunications and transport had flow on effects on the SMEs, which meant that many businesses could not trade for long periods. Several SMEs reported that there were often delays in the repair of critical infrastructure which led to loss of business income as customers went elsewhere and suppliers were unable to access their small business clients. Tourism based SMEs who were dependent on the natural assets were affected when the fires burnt vegetation or the cyclones destroyed walking trails through National Parks.

> *"There were no phones for four days (after cyclone Yasi), no power for a month and cut-off roads and this meant that there was no communications."*

> *"…a cyclone of Yasi's magnitude can cause a whole lot of disruption to any venture. It brings mass destruction but one of the big things for Indigenous tourism here is the access to country to take people out there [National Parks]."*

The direct and indirect impacts from flooding in Victoria were similar to the cyclones and bushfires apart from differences in having to wait for everything to 'dry out' before recovery could commence and the large clean up issues relating to the disposal of silt and sodden belongings. Similar to the flood experience many SMEs affected by long-term drought did not experience significant impacts on their infrastructure. However, the SMEs in the WA case study and those stakeholders supporting these SMEs stressed that the impacts on small businesses are gradual over time as drought tends to build up slower. Specifically, they experienced a reduction in both staff and income levels which often led to extra workload and pressure on owners and employees. The SMEs involved in the case study from WA were from diverse sectors dependent on the farming industry, but all respondents indicated that declining farmer spending had direct impacts on their business through loss of income. Consumer spending patterns during the drought was also impacting SMEs in the nursery and horticulture industry in Western Sydney. The water restrictions imposed on the industry during the drought period restricted opportunity for merchandising a broad range of plants whilst concurrently consumer demand for plants declined. As elucidated below by two respondents:

> *"In the 2010 drought farmers' incomes were reduced quite massively. Harvest was very much a non-event and my work the following season decreased but most farmers understand that they need fertilizer in their programme to achieve the results they're chasing. But what it meant was farmers, for example, might have wanted to spread 500 tons of lime and that could be usual practice for him but rather he spread 100 tons because his affordability from that bad season affected his income. So he still wanted to spread fertiliser but the amount was reduced."*

> *"Water restrictions have had a significant impact on the productivity and the profitability on those businesses to generate sufficient funds and income and investment for loans for future strategies as well. […] if there is no water to maintain the life of the plants you buy as a gardener, the demand won't be there, the market is diminishing in those areas because there' is not enough water to go out and garden for that activity."*

Paradoxically, alongside the negative impacts, the extreme climatic events also generated a few short-term positive economic and altruistic benefits to certain SMEs. For example, a manufacturer of soft furnishing and interior design consultation in Queensland saw the demand for their services increase immediately after the cyclones as a result of infrastructure damage. However, it was reported that the increase in workloads was difficult to manage at times. Similarly, a hospitality provider in Victoria who was not directly impacted by the bushfires reported that immediately after the fires their premises was used as a relief centre to accommodate all the in-coming personnel involved in bushfire recovery as well as temporarily housing those residents who had lost their homes. However, the SME stressed that they were functioning on donations for seven weeks as they were unable to trade as a business during this period. Another SME also saw benefits in rebuilding their infrastructure after it was destroyed by the fire, as illustrated by the following response:

> *"Now the organisations [customers] are happier to stay in our facilities here where they weren't in the past, so that's one of the up sides from having it leveled to the ground and rebuilt."*

Psychosocial impacts or post-traumatic stress experienced by SMEs was a significant impact that was reported across both the case studies in Queensland and Victoria, as

well as by four stakeholders who had worked on the ground in economic recovery after extreme climatic events. Many of the SMEs were still recovering from the psychological impacts despite having accessed counseling services that were provided during the recovery phase. The emotional stress meant that these SMEs found it psychologically difficult to access and deal with government assistance or other support mechanisms (e.g., insurance) during the post-disaster phase. Two SMEs in Queensland asserted that past experience with cyclones often meant the trauma would re-appear during future events. This alludes to the fact that there are strong cognitive constructs associated with past extreme events which are re-tapped and assimilated with SME experiences of new climatic stresses.

Cognitive theory, specifically Piaget's theory, refers to these cognitive structures that process and identify incoming stimuli as 'schema' which are updated constantly but never replaced via a process of assimilation and accommodation (Wadsworth, 1984). The impacts from vicarious trauma were also highlighted; this entailed stakeholders involved in supporting SMEs (in this case Business Advisors and other support workers) having to take on the trauma of others.

> *"I suppose the emotional side of that has to come into play. Because overall, that is the most important thing. I mean, you can rebuild a shop, you can put new stock back in but on the emotional level (…) that is something that I haven't dealt with. I haven't had time or space or maybe the tools to be able to get that out because I know that there's a lot of that emotional scarring (…)"*

Across the five case studies the indirect or 'flow-on' impacts from various extreme climatic events was significant, and thus, exposing the interdependencies between multiple stakeholders within the landscape in which SMEs operated. In WA all four SMEs were dependent on the farming industry and when farmers limited their spending during the drought or dry season, it flowed onto those dependent on the farmers (e.g., retail, contractors such as fencers or those vaccinating cattle). Thus, all SME sectors that provided services to the farmers tended to suffer considerably. However, as commented by one SME, the impacts were exacerbated for those in the retail trade as their infrastructure was fixed compared to tradespeople who were able to move to other areas to provide their services.

> *"Our customer base is mainly farmers, we're directly reliant on them for our income and when their budgets are tighter their spending patterns change. They're much more budget conscious, much more buying things on promotion which is a much lower margin for us, sometimes almost no margin at all."*

> *"It's retailers on most respects because they are fixed. They're in a fixed building so they rely on the local area for their income so it's the local hardware store, the grocery shops, the newsagents(…)."*

Similarly, the Sydney Markets, a SME based in Western Sydney mentioned that when the banana farmers were affected by cyclone Yasi in Queensland, the banana wholesalers at the markets were forced to shut down for six months. To alleviate these economic hardships on SMEs, the Sydney Markets had to absorb the financial costs by deferring the rents of the wholesalers until the banana trade recovered. Additionally, a ski resort based SME in Victoria mentioned that changes to snow season which was becoming shorter and unpredictable was impacting both visitor numbers during their

peak season and those SMEs downstream in the supply chain who were dependent on this industry (e.g. hospitality based providers).

An additional indirect impact associated with the disaster recovery phase was noted by two respondents. Many companies dumped unwanted goods as donations in the impacted towns but this had negative flow on impacts on the small businesses in the area who traditionally retailed these goods pre-disaster. Similarly, many tradespeople arrived to assist the the disaster affected towns on their own accord or through the support of government led recovery initiatives. At times, this limited opportunities that were available for local tradespeople as commented by a SME in Queensland:

> *"There was a large amount of anxiety in the community about external building companies. What happened after the cyclone was that there was almost a convoy of building people coming into town to pick up building work on the recovery. The local builders, who were looking after their mates and cleaning the streets and dealing with local issues, were very emotionally concerned at a time when they had to look after their families and had to look after their neighbours, about not getting a portion of the work available or getting the less enticing components of work."*

Three stakeholders who had worked on supporting SMEs during disaster recovery noted the consequences of indirect impacts of climatic events on neighbouring towns that had not been directly affected. For example, many of the SMEs in Marysville purchased fresh produce from local suppliers in neighboring towns, but when the fires destroyed these SMEs it had huge economic impacts on those suppliers. However, they commented that such issues are often overlooked during disaster recovery and support to outlying towns remained absent. On a similar note, both these stakeholders and SMEs hinted that the social vulnerability of SMEs to climatic stresses in regional as opposed to urban areas is much greater; there is often limited access to resources/assets whilst the available resources are found to be expensive in general. This made it difficult for SMEs to turn those resources into valued outcomes that addressed direct/indirect impacts. Additionally, most of the SME respondents from the regional areas also resided locally which meant their homes were also affected by the extreme climatic events. Three stakeholders providing disaster recovery support to SMEs highlighted that in the national context, it is the regional areas that are frequently affected by extreme climatic events. Thus it is pertinent to factor in the 'every-day' businesses continuity challenges SMEs face in a rural setting when examining disaster recovery.

> *"The conference centre [in Marysville] purchased all its meat from a butchery in another little village nearby and its eggs and fruit and vegetables from other towns. So, as well as the local businesses within the town that the fire occurred, these outlying villages and businesses were impacted greatly. One of them actually closed down and then another had to change the direction of their business."*

> *"It's probably easier of course, to be better absorbed in an urban area. If the one pharmacy in a town closes, or the hospital's destroyed, there's a hospital a couple of blocks away. So I guess there's those sorts of geographic issues. In the urban environment there's a bigger critical mass, it isn't as reliant on the one or two small businesses to keep things ticking over. There are businesses that tend to step in and take over in an urban area That's not possible in a rural or regional area."*

Other indirect impacts included a shortage in the workforce after the bushfires and cyclones. For example, those employed in natural resource based industries such as

logging industry in Marysville moved out of town as they lost their jobs; the fires destroyed thirty years of future harvesting. One SME in Marysville commented on how this affected their business as often the partner or wife of those working in the logging industry would be employed within the SME sector. In Queensland, a retail based SME noted that their customer database had drastically reduced from 1600 to 700 customers after cyclone Yasi. The SME highlighted that many of the people left town due to unemployment and the trauma of dealing with the cyclone event.

> *"Because we're surrounded by forest, we lost 30 years of future harvesting and a lot of the families that were employed in the logging industry also affected us, because we employ the partner who comes in and works as a cleaner or a cook who does breakfast or lunch. That's been the backlash on us because all those families are gone. They moved out of the region and gone to work elsewhere so there's no pool of workers, skilled or non-skilled."*

These results indicate that the impacts of extreme events are not homogenous across the SME sectors, but rather several layers of impact exists which need to be dissected and considered when designing business recovery programmes. This multilayered impact profile seems to be distinct for each SME within the same geographical area; some SMEs were not only dealing with the loss of their businesses but also their homes or a loved one. However, similar or common direct and indirect impacts may be experienced by SMEs during extreme climatic events as demonstrated by the results across the five case studies. The results also suggest that interdependencies between impacts are dynamic and fluid as well as wide reaching; one cannot draw cartographic boundaries to contain impacted geographical zones or sectors if business recovery is to be supported. Business recovery of impacted areas may also be dependent on the business continuity of SMEs in adjacent or outlying regions that may have not been directly impacted physically (e.g., being flooded). A distinction was also made between the impacts and associated recovery needs of regional versus urban based SMEs. Here, it seems that a majority of extreme events are experienced in regional areas in which SMEs have limited opportunities to access resources and at times struggle to turn these resources into outcomes that support business recovery.

SMEs Coping with Extreme Climatic Events: Past responses and challenges in responding

This section demonstrates the types of coping (i.e., short-term) strategies adopted by the SMEs in the study when dealing with the impacts of extremes climatic events. It also aims to tease out the underlying factors and processes that may have constrained and/or supported the coping process.

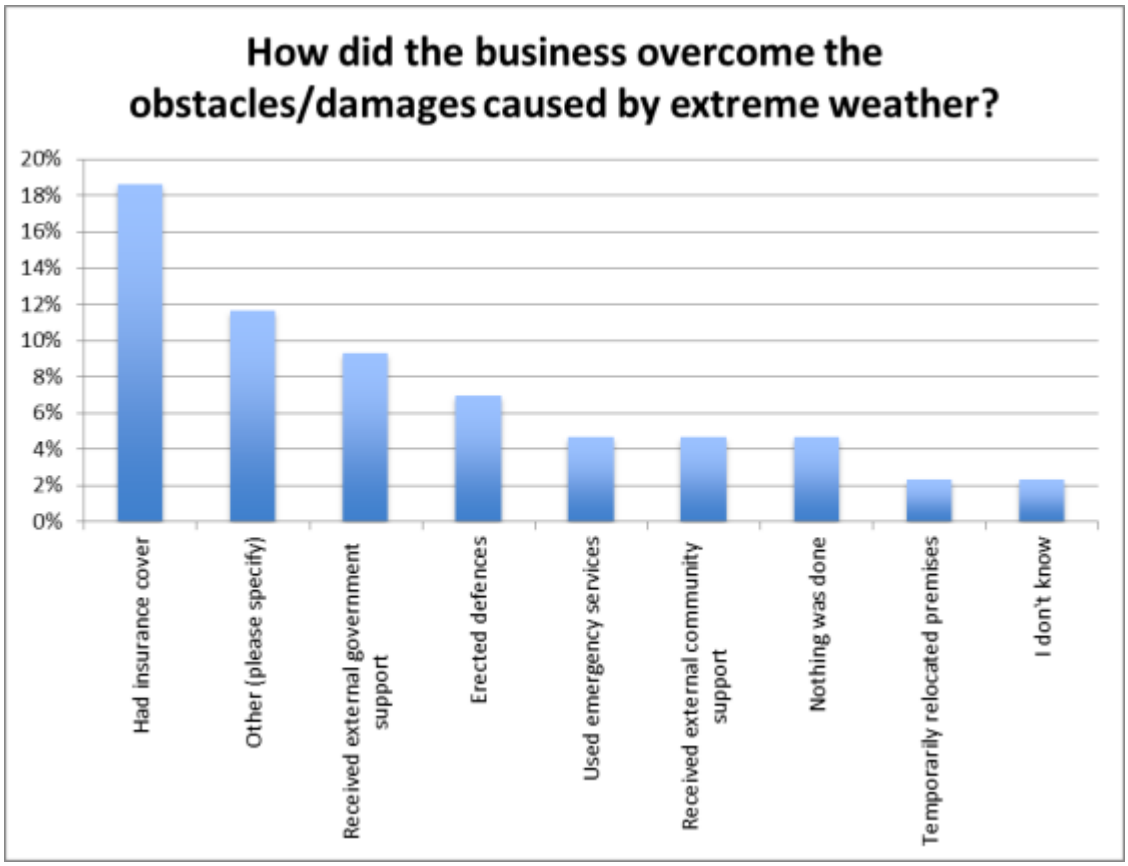

Figure 12: Coping Strategies Employed to Deal with Extreme Events

Various coping strategies were adopted by SMEs in dealing with the impacts of the extreme climatic events. However, the data revealed common coping strategies across four of the case studies and on-line survey (Figure 11) which included:

- claiming insurance,
- connecting with existing local business networks (e.g., Lions Club, Industry Associations) to share information and advocate for business recovery support,
- adopted technological measures such as erecting temporary defenses or shutters etc.,
- accessing Government recovery grants
- linking up with the business networks and community groups who assisted in psychological support and helped in identifying/accessing grants.

"Cyclone Larry had quite a severe effect on our business. We had to look to the government for assistance to survive for the following six months because there were hardly any tourists coming to the area. We couldn't run any tours for six months or so because the islands were so badly devastated, people weren't coming into the area and to run a tourist operation just wasn't an option.[…] It devastated us, we had no business and still our business is probably just half of what it was prior to the cyclone"

Across the case studies in Victoria, Western Australia (WA) and Queensland, SMEs respondents highlighted the various types of government funding that was available for business recovery. For example, in WA all respondents had accessed grants of up to $1500 to assist regional SMEs with extremely dry conditions which were funded through the WA State Government (Department of Agriculture) and administered by the WA Small Business Development Corporation. Two sets of grants had been available

under this scheme with the initial Dry Season Assistance 2010 grants directed towards crisis response, for example enablingSMEs to access an accountant to help reduce the costs associated with running a business. The latest 2011 Small Business grants were geared towards long-term resilience building to future dry season challenges and focused on strategic business planning through a professional service provider (accountants, financial planners, legal practitioners and management consultants).

All the WA case study respondents had accessed the 2011 grants initially to cope with the immediate impacts of the drought but had realised the long-term benefits of the advice they had received through the grants. For most, the grants provided an opportunity to re-look at their business plans and with the assistance of Management Consultants, determined appropriate interventions that allowed them to cope with the drought. However, many of the SMEs commented that the measures that had been recommended (e.g., re-looking at business plans, developing marketing strategies, detailed audits of expenditure etc.,) were not only addressing immediate impacts but were simultaneously assisting in dealing with long-term stresses (climate and non-climatic). For example, a pharmacy which had used the grant to develop and in-depth business plan and produce a marketing plan was able to cope better with the reduced customer spending during the drought. They were also able prevent declines in turnover which amounted to 5-6% rather than 10-15% during the drought period.

> *"We looked at the marketing schedule that we were doing and it was very ad hoc, we didn't have anything written down about when we were advertising or what we were going to advertise. So Craig [Management Consultant] developed a marketing schedule for us, so throughout the whole year he's got us planned about what we were going to advertise in what publication, when. […] we've made it that we definitely do a particular advert every two weeks, and the advertising schedule is all streamlined and the pharmacies do the same advertising and we have developed a strategy of a special offer each month. So putting these into practice definitely helped, and if we didn't we would have gone backwards at a lot greater rate, maybe like 10 or 15 per cent of the turnover."*

Most of these respondents found the grants easy to access and felt that the paperwork was straightforward. A stakeholder from WA involved in administering the grants reflected that the grants were successful as the paperwork was kept to a minimum intentionally to avoid the bureaucratic barriers.

> *"The process was fairly simple for that application. It wasn't complicated. If it had been complicated, I probably would have left it. It was a one page thing, just to say who I was, where I was and what I could do with the help."*

In Queensland and Victoria, SMEs affected by the cyclones and bushfires, accessed government (State and Federal) funding aimed at post-disaster business recovery. In contrast to the WA case study there were benefits and constraints associated with the funding. In Queensland, SMEs emphasised that the funding available to them after cyclone Yasi (2011) was much less than after cyclone Larry (2006), despite the devastation from Larry being greater. One SME commented that this may have been due to the loose criteria attached to the grants during Larry which meant the grants were likely to be exploited through the submission of false claims by some SMEs . The funding available after Larry supported business recovery through professional business advice, business planning and marketing plans whilst after Yasi the funding mainly covered the replacement and repair of damaged infrastructure, low interest

loans and wage assistance for staff over a period of 13 weeks. According to these respondents, the funding after Yasi did little to support businesses in long-term economic recovery; it was reactive and overlooked underlying vulnerability reduction.

> *"Initially after Cyclone Larry the grant was to help us to invest money into marketing and to looking at new areas of business. They also provided money for us to have a business plan written to help us get back on our feet and to help us advertise in new areas[…]. Although the devastation after Cyclone Yasi for us was much greater than after Cyclone Larry, the government gave us much, much less support. […] So nothing to help us get back up on our feet after the cyclone."*

Similarly, the funding available for SMEs post-fires in Victoria was valuable but had limitations. Four respondents commented on the Rural Finance grants of up to $25,000 (there were several tiers of grants) to purchase items for businesses that were fully destroyed but these were over the short-term. One SME respondent who was *indirectly* impacted stressed that the funding only extended to those businesses that were fully destroyed or directly damaged and there was no recognition of surviving businesses. In part, this had limited the choices available to the SME in coping and ensuring business continuity over the long-term. The respondent's business was not fully destroyed but the fires caused a power surge to go through their building exploding their computers, compressors and point of sale systems. The following two SMEs highlight this point:

> *"I said to them, you lost everything in one hour and now you have choices about what you're going to do. We didn't lose - we're losing everything on a drip feed, and we don't have any choices. Of surviving business, there has been no recognition at all. We weren't event eligible to re-finance for a low interest loan because we were seen as a surviving business. It would of given us the flexibility to maybe put in some accommodation for staff, improve what we had that had been damaged. But we did not have that option. It was a definite no, you're not eligible."*

> *'It [funding] all dependent on if you had things burned. Then you were okay, but all other aspects of it weren't recognized. The fact that you were still up and running and working in a devastated community. […] The people that are trying to hold the community together need support. That's where the gaps lie'."*

Unlike the WA case study, across both the Queensland and Victoria case studies, SMEs noted the rigid and inflexible assessment criteria attached to accessing the business recovery grants which slowed economic recovery efforts. It was reported that the paperwork was overwhelming particularly when many SMEs were psychologically traumatised by the extreme events and were dealing with other issues such as insurance and re-building. This led to many SMEs not taking advantage of the grants that were meant to support business recovery and as demonstrated by the response below, some SMEs left the devastated regions permanently. In Victoria, five of the bushfire affected SMEs stressed the value of having access to Business Advisors who were brought in specifically to mentor and assist SMEs in accessing the grants and provided support in completing the paperwork. The Business Advisors who acted as intermediaries between SMEs and government were part of a Business Support Team, coordinated by the Murrundindi Local Council's Business Recovery Officer with Small Business Mentoring Service and Rural Financial Counselling Services personnel. They also assisted SMEs by linking them with counselling services and organised a counselling session for SMEs. One of these Business Advisors commented on the

need for a greater streamlined approach to the way government deals with small business during disaster recovery. Moreover, it was stressed that government failed to understand the significance of long-term effects of trauma on SMEs which was often overlooked in formal recovery interventions.

> *"We've given up on all these grants that are set up to help us, but all they do is impede us. […] So they've left [the region]. These red tape structures need to be looked at. They're too rigid and they're inflexible and they're not fair."*

> *"It was just all too difficult. Because of the bureaucracy that was attached to it [the grant] -just made it extremely difficult for the people that were dealing with trauma and weren't in the head space to do it."*

In the WA, Queensland and Victorian case studies, SMEs stressed the need for long-term government led business recovery support post-disaster. The above-mentioned funds had been available only for a period of three years after the event. Similarly the mentoring services provided by the Business Advisors in Victoria ceased after three years. Four of the SMEs asserted that during the early stages of the disaster most businesses were running on adrenaline and were in survival mode; it was only between the three to five year mark that they began to start the process of long-term recovery and commenced strategic business planning. One SME overcame this by marketing their hospitality services as early as possible after the fires to address the slump in sales but confirmed that it will be only in five years after the event that they will start making a profit. Turner and Slatter (2012) also confirm that most SMEs go back to being start-ups after a natural disaster; it takes approximately five years before they start making a profit again. According to a tourism based SME from Queensland, who was a member of the recovery committee alongside government representatives, the cyclone recovery phase was quickly entrenched in bureaucracy which yielded limited outcomes for SMEs. The SME asserted that 'recovery' from extreme events often consists of many phases. However, the government led response focused largely on the immediate post recovery and not the long-term recovery or undertaking underlying vulnerability reduction attached to disaster preparedness and prevention.

> *"It's a huge percentage of the time, just to recreate the glue that makes a business operate, that's taken for granted when it is up and operating."*

> *"I know working with small business mentors was good but it was too early when they were around. Because I have been in survival mode for three years [..] you're not able to rationally sit down and talk about your business plans. So I think a little bit more patience, and not shutting down all these things after three years and going, okay, you should be over it now, off you go then. So it's more the length of services offered that needs to be looked at."*

Across the five case studies, the significance of social networks played a vital role in coping with climatic stresses, specifically their ability to self-organise during the response and recovery stages. Through these networks SMEs were able to use their agency[10] to influence processes that would support in economic recovery. All of the SME respondents were linked to various business (e.g., Industry Associations, Chambers of Commerce, etc.,) and community networks which were utilsed to gain information, business advice, counseling and assistance in rebuilding. These links had

[10] The extent a SME is able influence processes structuring their business continuity and the opportunities to pursue what they value.

been established over time and many of the SMEs had invested time previously in these networks (e.g., through attending business and other social events, member of the executive committee, attending courses). In the disaster affected regions, it was these local support networks that provided hope and enabled SMEs to self-organise and catalyse the recovery process prior to formal government interventions commenced. This self-organising capacity was demonstrated in Queensland, immediately after cyclone Yasi. The Mission Beach Tourist Association started producing a community newsletter twice daily which provided information on an audit of which accommodation providers had beds, power, equipment and what was available in general. One SME explained that this served two purposes in addressing some of the initial impacts: firstly to ensure the streamlining of resources that were channeled into the region and secondly to facilitate potential cashflow of many businesses as possible.

> *"It [Mission Beach Tourist Association newsletter] facilitated both ends of putting business into a town and making sure that the resources that were accessible were accessed. So there were some very good examples of how these organization interacted in the sharing of information and resources."*

> *"The support of all those groups [i.e., existing local business networks] was immediate and strong and that's all about relationships. They're not things that you can create immediately after an incident, they are things that had to be in place before hand."*

These social networks also acted as conduits to discuss the progress of formal interventions as well as presenting a united community voice when dealing with multiple government agencies. In the bushfire affected communities in Victoria, a key network that helped small businesses in this front was the Economic Leadership Group. The group was formed after the bushfires through a recommendation to Council from the Boston Consulting Group who developed an Economic Recovery Strategy. Both Council and Victorian Bushfire Reconstruction and Recovery Authority (VBRRA) resourced the group which comprised members of small businesses. This gave small businesses 'one voice' and a sense of power when dealing with government agencies and other stakeholders. Simultaneously, the network was able to build strong relationships (social capital) with key stakeholders such as Tourism Victoria, Department of Sustainability and Environment and VBRRA. These vital networking links have been sustained to date and seem to be useful in long-term resilience building of the small businesses. .

> *"The Economic Leadership Group worked extremely well and I think that really helped the economic recovery and my own personal belief is that government should look at it very closely and about actually putting that in place when other disasters arrive. It had all the key players around the table and its really helped to drive things forward…[] We've had one voice to the key players out there in government."*

An additional underlying factor that assisted in SMEs coping with the impacts was the strong beliefs in their own ability to recover and determination to ensure business continuity (i.e., self-efficacy beliefs). This also demonstrates the agency aspect of the coping capacity of small businesses in which respondents were driven to pursue opportunities they valued. Many of the SME respondents who were impacted by extreme events did not see themselves as passive victims but rather took action to alleviate those impacts and ensure business continuity. Two stakeholders who supported SMEs in business recovery after floods and bushfires also noted that the

Australian cultural norm of 'getting on with it' often prevailed amongst the SMEs whom they assisted.

> *'We decided as a family we would build a new shop [after cyclone Yasi destroyed it]. We knew we had to do it straight away because I was concerned that if we didn't have that security and another cyclone came – everything would have been gone."*

> *"The only thing I wanted to do was get back into Marysville[after the bushfires] and get my salon up and going again. I thought, I've been beaten down in the past by different things that have happened. For my own peace of mind and my own determination more than anything….I didn't want anything to stop me from doing what I wanted to do."*

Past experience with climatic events also seemed to have contributed to shaping self-efficacy beliefs. In the case of WA and Queensland, many of the SME respondents had experienced drought or cyclones previously and they believed that these experiences motivated them to adopt coping strategies to ensure that their businesses rebounded back. Several studies related to understanding the subjective dimension of adaptive capacity have shown that past experience with stressful events, can enhance self-efficacy beliefs and motivate people to adopt precautionary actions in anticipation of future events (Nicholls, 1999; Grothmann and Patt, 2005).

> *"I think I'm probably quite fortunate in my past experience; it has me well equipped for crisis situation, so probably we were able to contribute and have good outcomes".*

In terms of coping with the economic impacts, SME respondents adopted various strategies. These centred around lowering expenses by avoiding the replacement of equipment, reducing or increasing their marketing, reducing staff hours, and prolonging investments in their business. In Queensland, one tourism and hospitality based SME started marketing the recovery process of the natural heritage within their facilities by offering visitors a two year pass to their facilities so that they could come back to observe the progress in recovery. They also included the caravan park in their ticket price to attract the caravan market. A key positive coping strategy that was introduced after the bushfires in Victoria was the use of the voucher system ($50 in value) for redemption from businesses in the affected area or surrounding areas when specific businesses were not in impacted townships as part of the 'planned' economic recovery process. This system also assisted in overcoming some of the indirect financial impacts on surrounding towns which were not directly affected. Additionally, State government Victoria Department of Human Services through their Bushfire Recovery Wellness Voucher program also provided four vouchers per person to receive complimentary health care treatment through eligible treatment providers. Every effort was made to ensure that local alternate therapists were used and thus supporting economic recovery.

> *"Immediately realising the season was going to be quiet, I only employed somebody when I really had to and also undertook as much work as I could in maintenance myself. The main one was just any excess spending got cut, and operated on survival type mode on the bare margin because I got commitments to meet. Money is a cash flow, a premium in my business so I just cut any wastage of money in any possible way."*

The data in this section revealed various coping strategies adopted by SMEs as well as identifying underlying process that constrained and supported the coping process. Key

coping strategies identified included the accessing of government recovery funds targeting SMEs, the social networks, including Business Advisors who provided support that ranged for counseling to business advice, the savvy business practices and also the strong cognitive perceptions attached to the ability of SMEs to cope. In drawing out key elements that may support adaptive behavior of SMEs, the data suggests that resilient characteristics such as self-organisation capacity, strong social networks and self-efficacy beliefs may be vital. These inter-related elements also mediated the agency of SMEs to often change and take control of the traumatic predicaments SME respondents had experienced. Based on the case studies and interviews, the key processes that have constrained SMEs in coping with extreme events and may have implications for adapting to future climate stress included:

- the short-term nature of government led business recovery programmes,
- the limited support that was available for SMEs who were indirectly impacted,
- psychological impacts on SMEs received limited support and recognition,
- the rigid and inflexible criteria used in accessing government recovery funds
- the recovery processes, although vital, were reactive and overlooked underlying business vulnerability associated with prevention and preparedness.

5.1.2 Do SMEs consider and integrate climate risks into business planning?

In attempting to gain a baseline understanding of the extent to which SMEs had considered and integrated projected impacts of climate change and variability into business planning, the research asked several questions related to:

- SME awareness and perceptions of climate change versus extreme weather
- SME attitudes to risk management and business planning
- Types of adaptation strategies that had been adopted

The discussion that follows is also informed by the results in the previous section related to SMEs coping with extreme climatic events

SME awareness and perceptions of climate change and variability

In attempting to understand the extent of awareness of climate change, SMEs were questioned initially through the on-line survey on how they believed extreme weather events would change in the future. Most respondents (75%) believed that these events will become frequent and intense with 20% believing that they will be *less* frequent and intense. (Figure 13). In understanding SME perceptions about climate change, SMEs were questioned on the extent they believed that climate change was a problem for Australia. A majority of respondents (67%) believed that it was a problem with 29% thinking that it posed no real issue (Figure 14).

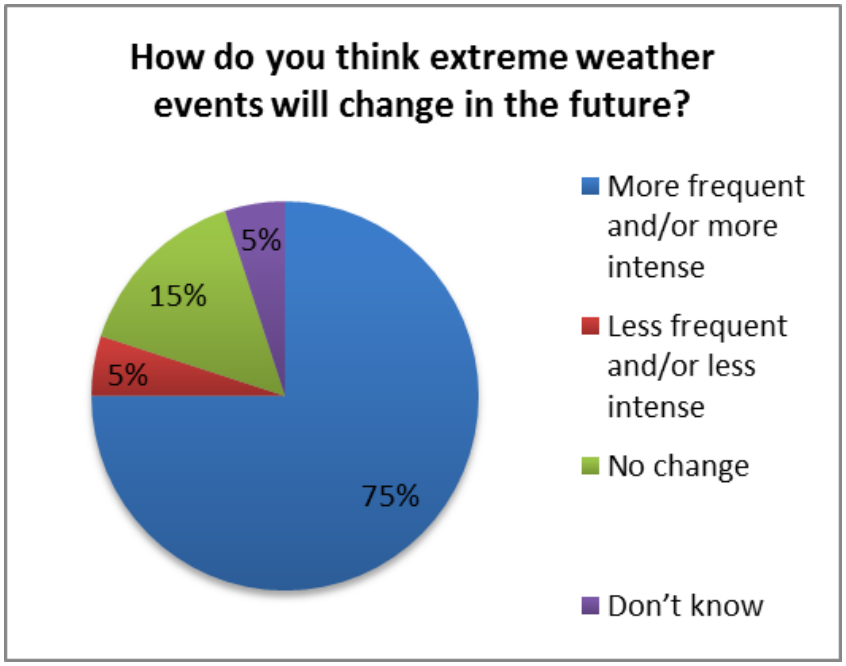

Figure 13 :SME perceptions of climate change

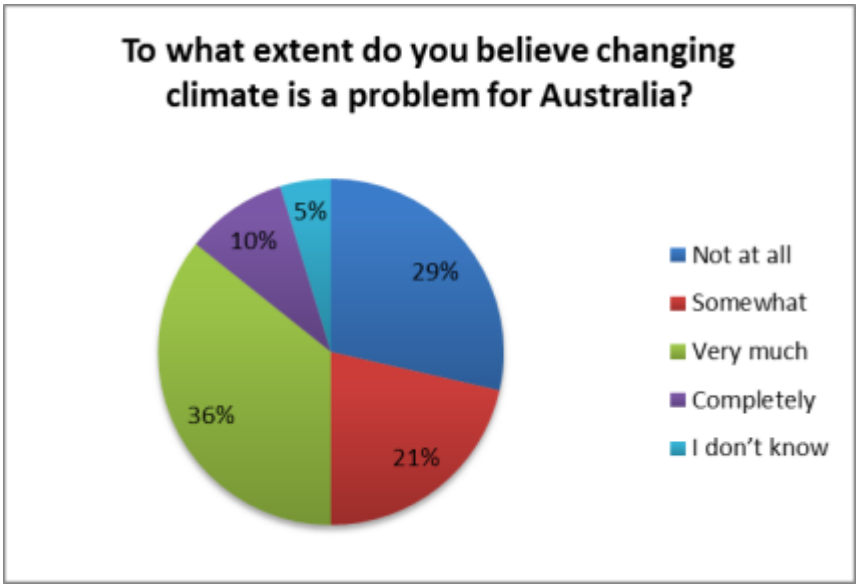

Figure 14: View of climate change as a problem for Australia

These responses were examined further through interviews with SMEs as part of the case studies. Many of these SMEs felt comfortable speaking about climate change in terms of variability (i.e., changes to climate extremes such as cyclones, bushfires and drought) and the future risks it may pose on their businesses. They were reluctant to speak about 'climate change' (i.e., long-term trends in climate averages) and associate the term with business risk planning. Five SMEs felt that term invokes perceptions of helplessness and an inability to act. As commented below:

"You know when we had the original discussion about climate change, people will just turn off, but if you use[terms] like extreme events, they'll prick their ears up a bit. You have to use very easy to understand language."

"I think climate change [i.e., the term] will turn a lot of people off. […] – they put it in their too hard basket. It scares people a bit, partly because they don't know enough about it, but if you reword it a bit differently, I think that certainly helps."

"The government didn't do a very good job in communicating climate change because its been such a contentious issue. There's been so much information pumped out, it has not been constructive in supporting decision makers in these far off places. Its confused and it has made the whole topic stale. […] we need to start calling this something else, you can't say climate change."

Other SMEs highlighted that irrespective of whether you attribute the changes in climate patterns to human induced 'climate change' specifically or natural variability, there remains a need for SMEs to act and address the associated risks to business. For two respondents in the gardening and financial sectors, projected climate change was perceived as a business opportunity where they could take advantage of new markets and maintain a competitive edge. For example, in a future scenario where there is less water coupled with government led water restrictions, a shift towards drought tolerant plants was seen as a new market opportunity. Additionally, there was a new consumer market trend for herbs, vegetables and fruit trees under the 'grow your own supply chain and sustainability' banner. Two SMEs also highlighted issues of double exposure; SMEs are also dealing with other non-climatic stresses such as coming out of the global financial crises and biosecurity issues that may have greater impacts on the nursery and horticulture industry through disease and pest incursion.

"We're seeing it happening already, the snow season is becoming more unpredictable, they're tending to be shorter seasons. So the summer is becoming warmer and the winters aren't cold or consistent with the snow as we have experienced in the past. Some people say it does go in cycles and that it's not really changed. But one of the consistent messages from all of us would be that in the future we do need to develop a year round product and further invest in snow making to ensure that we can offer the product that people want."

"Extreme events have a positive effect on our business as they represent an opportunity for us to provide financial assistance to SME's that have been impacted."

Additionally, the data suggests that SMEs past experience with climate extremes may shape attitudes and perceptions to future climate change. Such findings have been reported in other sectors and regions (Grothmann and Patt, 2005; Jones and Boyd, 2011). Three SMES in the Parramatta case study who were based in an urban area and had not been greatly affected by extreme events felt that climate change does not pose a real threat to their business and thus felt no need to adapt. All other SMEs had directly or indirectly been affected by extreme climatic events which had led them to incorporate climate risks into business planning initiatives. However, as mentioned above, these SMEs did not necessarily associate the initiatives as a method in addressing climate change risks specifically. As demonstrated by the comment of one SME in Queensland:

"We don't pay particular consideration to strategic planning in that nature [i.e., climate change specifically]. Understanding that nature and climate constantly changes and the

predictability is difficult then our business model in-situ is adequate. We have procedures for all of the events. It's because we're in such a dramatic climate. We're in an area where extremes are the norm."

The results suggest that SMEs do possess strong perceptions related to climate change but they are likely to link those perceptions to climate extremes. For most SMEs climate change was closely associated with variability and perceived as an extension of their previous experiences with climate extremes. According to SMEs in this study, climate extremes was perceived as a process they were able to address through risk planning given their past experiences with that stress. This may also be related to their business planning horizons, as discussed below.

Adaptation strategies of SMEs

"We don't just respond to disaster, it might sound outlandish but I think we have probably one of the most successful tourist attractions, in terms of sustainability, in Australia. The reason is that we don't wait for the disaster to happen to respond or react or prepare. We're prepared in advance."

In comparison to coping strategies discussed earlier, adaptation strategies refer to measures that support business continuity over the long term and address underlying business vulnerability to future climate stresses. Respondents were questioned through the on-line survey as to how important it was to prepare for a changing climate. A majority of SMEs (63%) replied that it was important whilst 30% felt it was not (Figure 15). However when questioned whether their business had undertaken any actions to address climate change, a majority (70%) had taken no action whilst 27% had been proactive. Despite this variance, when SMEs were questioned about the types of actions they had undertaken to avoid disruptions to business from future climate extremes, respondents provided various measures ranging from insurance cover, developing emergency/disaster plans, to weather proofing their facilities (Figure 16).

As highlighted previously, respondents may not classify or associate these types of actions as climate adaptation per se but what the survey data indicates is that a few SMEs are taking anticipatory measures to reduce climate risks to their business. Sullivan-Taylor and Branicki (2011) in their study of SME managers in England revealed that SMEs may have an inherent level of flexibility and capability to deal with future stress as many of the managers had dealt with past crisis or uncertainty. However, they warn that these capabilities may not withstand future climatic impacts and they may need to be more strategic and proactive in their approach.

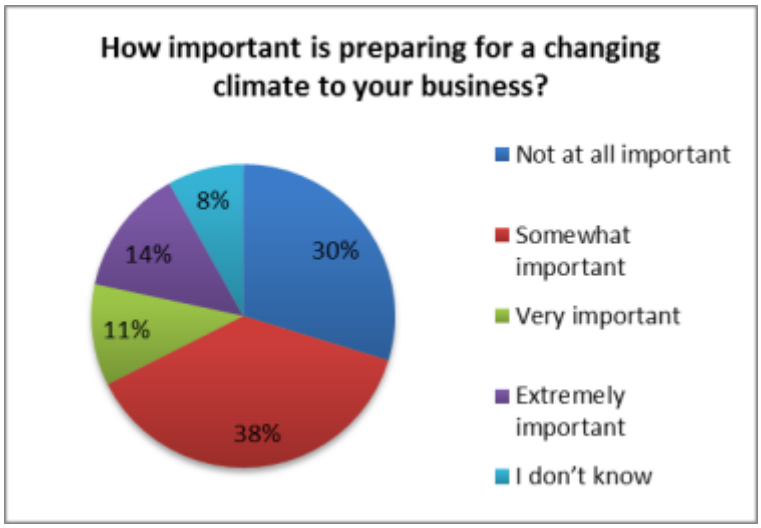

Figure 15: Importance of preparing for climate change

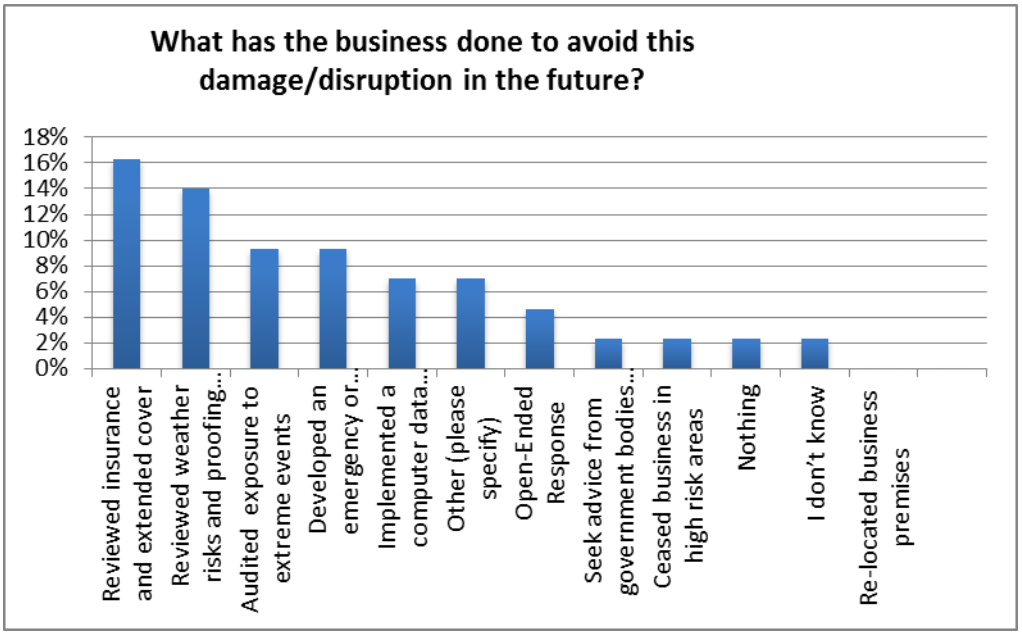

Figure 16: Adaptation strategies of SMEs involved in the on-line survey

Table 10: Adaptation strategies of SMEs involved in the case studies

STATE	ADAPTATION STRATEGIES
NSW	- Investing in protecting the natural assets the business is dependent upon - Installing rainwater tanks and improving waste management practices - Diversifying to other markets to take advantage of changing consumption patterns (e.g., increased interest in cultivating fruit and vegetables at home) - Investing in research and development to identify new technology to adapt to changing climate (e.g., adhesives that are suited to changing humidity conditions, irrigation efficiency equipment)
Victoria	- - Developing a new business plan or updating existing plans to incorporate bushfire risks through emergency management planning. - Investing in infrastructure that allows for self-reliance: Water tankers/trailers, generators and petrol driven pumps - Staff training on evacuation procedures - Changes to staff employment contracts; employer has the right to cancel a shift if it is a high bushfire threat day - Increasing insurance cover - Diversifying business markets to attract a new customer base - Investing in new technology such snow making technology to account for changes to snow cover - Using off-site computer back-up systems such as cloud storage - Preventing over vegetation of premises
Queensland	- Developing procedures for different stages of the disaster (pre-disaster, when disaster is announced, emergency stage (when disaster is imminent), and recovery) - Staff training on disaster procedures developed as well as what to expect and how to behave in the event of a disaster - Staff training on the operation of machinery and heavy equipment used during clean-up and recovery stage - Investing in new technology to increase efficiency during dry seasons - Implementing new policy of charging for repair quotations and demanding the payment before executing quotation service - Becoming more familiar with insurance cover and sending updates of stocks and photos of insured assets on a regular basis to insurer - Changing to a bank that offered more flexibility in timing of loan repayment - Cyclone proofing of buildings and infrastructure - Upgrading, supplementing and/or diversifying power supply - Investing in machinery and heavy equipment (e.g. chain saws)
WA	- Utilising a diversity of marketing strategies e.g. on-line and regular promotional specials - Sought professional business advice and guidance on strategic planning - Drawing on local support networks - Streamlined bureaucracy to ensure participation by all those affected.

As can be seen from Table 10, most respondents involved in the case studies provided examples of strategies that aimed to reduce their vulnerability to future climate stresses. These strategies were diverse and included technology based, planning and policy, education and ecosystem based strategies. Many of these were directly related to their core business operations and ensuring business continuity. However, a significant theme that emerged from the results was that diversification of markets (i.e., through products/services, customer market, geographical areas) was seen by SMEs across the case studies as an important adaptation strategy to future climate risks. This finding is also supported by literature on socio-ecological resilience which promotes the nurturing of diversification as a resilient system property to future stresses (Folke et al., 2002). Diversification was more relevant amongst the SMEs who had been impacted by recent extreme weather events and believed in the efficacy of such a strategy in terms of addressing both direct and indirect impacts of extreme events. Access to various government led business recovery initiatives (such as dry season grants or business mentoring services) had also supported these SMEs to examine diversification as a strategy to support business continuity. However, it must be recognized that a diversification strategy also has costs associated with it and such a strategy will be feasible only under conditions in which the resilience benefits that may arise exceed the costs. A few examples of the diversification strategies included:

- focusing on being a year round operation by offering activity based products in the off-season to attract tourists such as (mini golf, dune buggies, flying foxes),
- introducing product that are more off-site based such as Indigenous programmes to get young people into the surrounding bushland,
- providing other alternate healing practices
- Introducing a cash flow transport company to complement existing crop growing.
- marketing their catering services and promoting the venue for events such as weddings.

> *"After cyclone Larry [..]with the funding that was given to us by the government we could access new avenues of business that we hadn't looked at before. So, instead of just looking for tourists coming into the area, we looked at new markets of school groups. That wasn't a market that we had looked at before."*

The results suggest that the experience with recent extreme climatic events had motivated SMEs to adopt long-term strategic responses rather than react to crisis. Social learning from those events remained strong amongst the SME respondents. One SME in WA reflected on the importance of long-term climate risk planning after observing a colleague lose their business during the dry season.

> *"Across the road there was a computer store and he's been in business for 18 months and he closed down [during dry season] and he's still trying to sell his premises. You could see that they were just sitting there and they weren't putting into a plan any actions in making changes or initiatives. They just sat there and waited for their business to sell which was really sad."*
>
> *"We've always had a five year business plan. Obviously the 2009 bushfires dramatically changed all that. We have had to integrate the climate risks and it's much more major now because of the bushfires."*
>
> *We're in a region where extreme climate events are the norm. We would expect 2 -3 cyclone per year. It's only the magnitude of the cyclone that changes. We'd expect to*

be flooded 3-4 time per year. The ability to cope with that is something that is consistent with our current business plan."

SMEs in WA and Victoria also highlighted that the formal support they had received either through the dry seasons grant or through mentoring from Business Advisors, had also prompted long-term action. Most of this formal support had been directed at building resilience to future shocks, including climate extremes. Having been involved in these formal interventions these SMEs were able to see the benefits and the efficacy in such long-term adaptive strategies rather than the traditional reactive strategies they had adopted previously. One stakeholder who had been working with SMEs in providing support to increase business resilience commented:

"SMEs are very practical people and it's very hard to sit them down and say I know you're in the middle of a drought but we've got to start planning for the future. Just explaining that we know that dry seasons recur and we need to look at how to change what you're doing so that you can withstand those fluctuations in trade and then they saw the benefit in that."

A few SMEs in NSW highlighted that it was difficult to adapt to or plan for the indirect impacts of climate extremes (e.g., supply chain disruptions). For them it was easier to assess the direct impacts of climate extremes on their business and implement measures to anticipate such impacts. Others felt that it was up to the government to take the lead and implement policies and strategies to reduce the vulnerability of SMEs. For example, in Parramatta, one SME commented that Local Government should be improving land planning policies so that future development does not occur within floodplains.

"I know this property is in the flood plain for Parramatta River. There's nothing you can do. The authorities have to take that into account when they do their planning so that if there was a flood then what are they going to do about it?"

Most of the case study SMEs reported that they had a business plan in which the average planning horizon covered a period of 3-5 years. This was also consistent with the survey results in which most respondents (47%) had a planning horizon of 2-5 years (Figure 17).

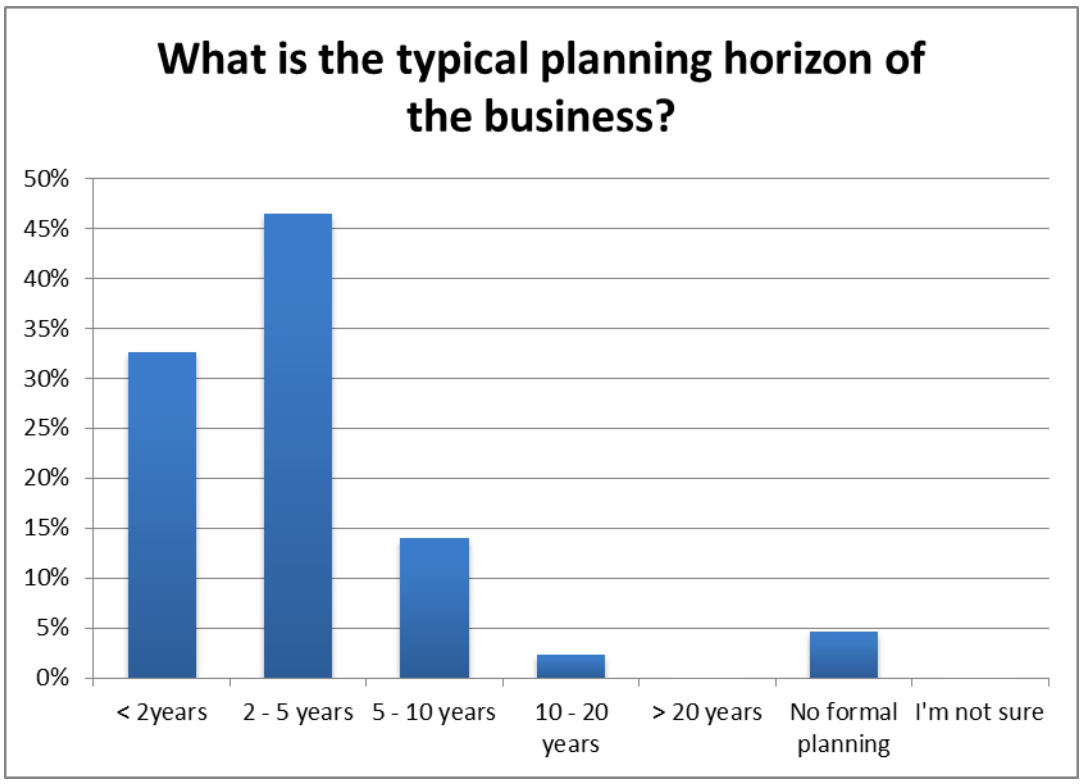

Figure 17: Typical planning horizons for the SMEs surveyed

Many of the case study SMEs had considered and started to integrate climate risks into their business plans through adopting various adaptation strategies outlined in Table 10. Most SMEs stressed that climate risk planning does not occur as a standalone practice but rather is integrated with other business risk planning initiatives. However, the motivation to consider climate risks seemed to be largely driven through their past experience with climate extremes rather than identifying climate change as a new threat to business continuity. In contrast those SMEs in Parramatta who had not been directly affected by extreme climatic events had not been proactive in climate risk planning.

However, two SMEs in Parramatta mentioned that they possessed sustainability or environmental plans that focused specifically on various environmental risks to their business; these plans had allowed respondents to also examine measures that addressed climate mitigation such as energy and water efficiency measures. A few of these strategies such as installing rainwater tanks and improving waste management practices had co-benefits (i.e. concurrently addressing both climate adaptation and mitigation). A combination of factors had motivated such behavior and these included social responsibility values, government legislation (e.g., all new building need to have a rainwater tank) and the economic value to the business bottom-line.

> *"We actually did an environmental review and I restructured my area to try and recycle more wastage and salvage more. We commenced an education process with our tenants to advise them of how they could help us recycle more and what they could do to prolong the life of fruit and vegetables. When it floods a lot of it [fresh produce] gets waterlogged and doesn't get sold so we get high volumes of waste. […] We've saved around $12, 0000 of water through our new rainwater tank system."*

> *"The challenge though is finding the economic investment to actually respond to those changes. So education and knowledge certainly is a prerequisite to be able to make the decisions in regards to monitoring and testing and managing and adapting to the change, but the financial viabilityis the key part to making those physical adaptions to allow it to basically safeguard against the risks of climate change."*

Only one of the case study SMEs had developed a formal business continuity plan and this may suggest that they are either unaware of the process or do not see the value in such a plan. Further investigation is required in this area. In line with the broader literature on SME planning horizons mentioned in Chapter 2, the data from this study confirms that most SMEs do not possess long term planning horizons. This may shape the perceptions of SMEs to climate adaptation and climate change in general; both concepts stand outside the boundaries of their average business planning horizons. Thus as the data indicated earlier, SMEs are more likely to relate to climate extremes rather than the long-term process of climate change. There seems to be distinct cognitive constructs attached to the two terms which is likely to be shaped by their short-term planning horizons.

Pringle and Conway (2012, p.112) warns that the tendency to frame climate change as a long-term issue in which the impacts will manifest in the future can at times disempower communities and act as a 'bottleneck' to adaptation. Unlike other sectors such as water and agriculture, the results of this study indicate that it is perhaps viable and practical for SMEs, particularly those with less than about 30 employees, to plan for climate change impacts within a horizon of 5-10 years rather than long-term impacts (beyond 20 years). SMEs who possess critical long-lived infrastructure or other assets, and larger SMEs, may need to plan more than ten years ahead.

> *"We have a traditional business planning framework, which has got a 3 year horizon and which have financial plans that support that. We also have emergency management plans which we always had, but they've been absolutely strengthened for sure [after the bushfires]."*

In addition to the short-term planning horizons, other key challenges faced by SMEs when planning for future extreme events included lack of up to date climate information, lack of finance, competing priorities, lack of staff expertise and lack of knowledge (Figure 18). These are discussed further in the Section 5.2.

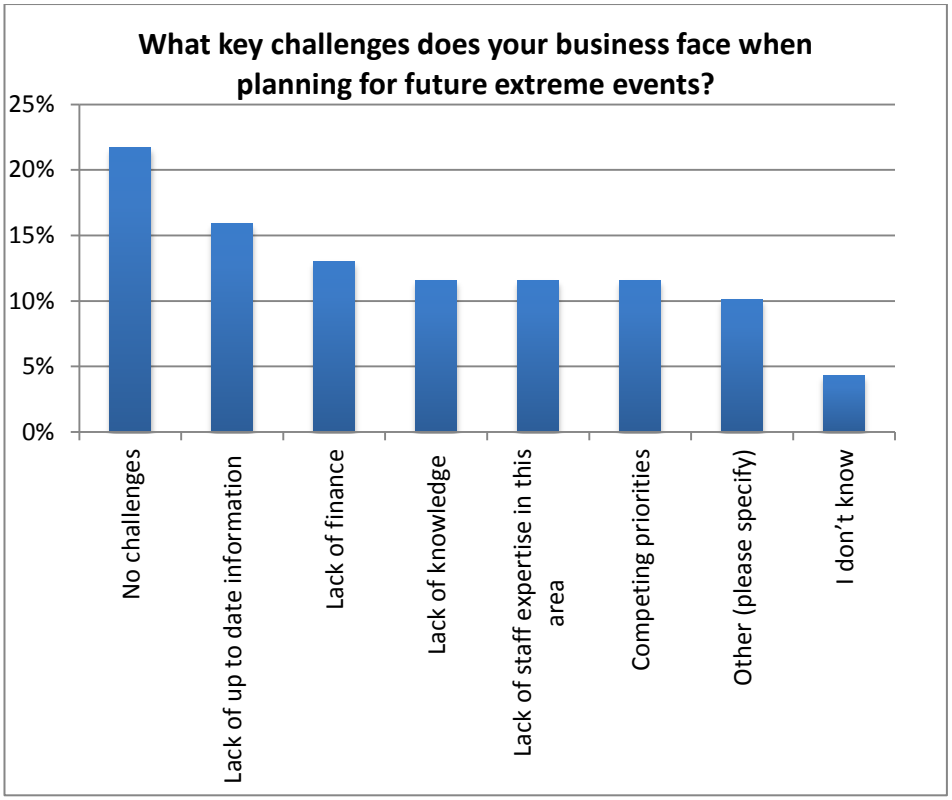

Figure 18: Challenges to planning for future events

5.1.3 Conclusions: How have SMEs considered and integrated adaptation into business planning?

> *"Adaptation is the only way to look at your own sustainability, and your own trajectory and your own capacity to work within such an environment. It's all about adaptability, because you can't predict something that you don't know is going to happen. These things need to be on the regular agenda and talked about. Whilst at the moment, we still operate on these old systems that have us back in the old world."*

In informing the research question, this chapter has examined both processes of how SMEs have coped with past extreme climatic events and their perceptions of projected climate change as well as their motivations to adapt to those impacts.

Three main conclusions can be drawn from the results.

Firstly, due to the distinct meanings they attach to the terms 'climate change' and 'climate extremes', SMEs are likely to adopt adaptation strategies which aim to address climate extremes rather than climate change. Moreover, because of the short-term planning horizons of SMEs (two to five years), they are likely to plan for climate extremes rather than long-term 'climate change', which is perceived as being outside these traditional planning horizons. *The data revealed many of the SMEs in the study had started to take adaptive strategies to address climate risks, although they did not always label them as 'climate adaptation strategies'.* The SMEs had integrated these strategies into their business plans but did not refer to them directly as addressing climate change. However, it seems that the process of climate risk assessment has not been formalised into business continuity plans. Certainly, for many, climate risks were assessed alongside other risks. The research was unable to assess the effectiveness of these planning efforts as they were usually responses to recent extreme events.

However, the SMEs themselves assessed these adaptation strategies according to their social values, their cost effectiveness and their technical capacity. The results of this study indicate that it is perhaps viable and practical for SMEs, particularly those with less than about 30 employees, to plan for climate change impacts within a horizon of 5-10 years rather than long-term impacts (beyond 20 years). SMEs who possess critical long-lived infrastructure or other assets, and larger SMEs, may need to plan more than ten years ahead.

Secondly, SMEs' past experiences with climate extremes act as motivators for introducing measures to adapt to future climate change. SMEs who had experienced the impacts of extreme climatic events were more aware of climate risks than those who had not. Many of the SMEs in this study had experienced extreme events such as bushfires, drought and cyclones and the direct and indirect impacts of these events had changed their operating environment and had left them vulnerable to future impacts. Key factors that contributed to their vulnerability included:

- the short-term nature of government-led business recovery programmes
- the limited support available to SMEs who were indirectly impacted by extreme events
- the limited support and recognition given to the psychological impacts on SMEs of extreme events
- vulnerability associated with prevention and preparedness
- the eligibility criteria for government recovery funds are rigid and inflexible
- recovery processes are reactive and overlook the underlying business.

Many of these processes which underpinned the vulnerability of SMEs are external to the SMEs themselves and reside within the broader landscape in which governments and other stakeholders operate. The data indicates that without addressing these factors, the coping and thus the adaptive capacity of SMEs to future climatic stresses will continue to be undermined.

Thirdly, the key resilient elements that are conducive to building the adaptive capacity of SMEs to future stresses include: self-organisation capacity, strong social networks, self-efficacy beliefs and social learning from past experiences. Central to all of these is the 'agency aspect' or ability of SMEs to access opportunities (e.g., funding to develop new marketing strategies) and shape processes (e.g., the rigid criteria in accessing disaster funding) that support business continuity. Given that many of the SMEs were in small business was an attest to their agency to pursue opportunities that they valued. These interrelated resilient elements mediated the capacity of SMEs to exercise agency and control the traumatic predicaments SMEs experience (e.g. bushfires or cyclones destroying their businesses).

The results also demonstrated the utility of examining SMEs' past experiences with extreme events. Indeed, an understanding of the ways in which SMEs had coped with past extremes is useful for understanding the adaptive behaviour SMEs exhibit in response to projected climate changes.

5.2 Processes shaping adaptive capacity of small businesses

"Every opportunity as business-as-usual is a missed opportunity for change" (Chambers, 2012).

In light of the findings in the previous section, this section aims to identify the key underlying processes that constrain and influence the adaptive capacity of SMEs in ensuring business continuity under climate change and other related risks. Various resilient elements were identified as increasing adaptive capacity and thus ensuring business continuity of SMEs. However, the extent to which these and other elements can be deployed and converted to serve these ends (i.e., the agency aspect of SMEs) is also contingent on the broader socio-economic system in which SMEs are embedded. Several studies have demonstrated repeatedly that there are various socio-economic, cognitive, technological, natural, cultural, informational and institutional barriers and limits to adaptation which can play a significant role in prescribing the pathway to adaptation as well adaptive capacity (Adger et al., 2008; Jones and Boyd, 2011; Mukheibir, Kuruppu, et al., 2012).

To understand these underlying processes we draw on the conceptual framework adopted in the study (outlined in Chapter 3) and complement this with the *capability approach* to conceptualise and evaluate adaptive capacity of SMEs (Sen, 1997). Although the capabilities approach has traditionally been applied to individuals or households to determine their wellbeing, this study expands the focus of its application to organisations, specifically small businesses. A key aspect of the approach pertinent to this study is that capabilities reflect the range of opportunities/choices available to a small business to generate outcomes that they value, factoring in relevant personal and external factors (Sen, 1999). Thus the aim of enhancing adaptive capacity can be seen as a process by which the opportunity or choice sets that SMEs value are expanded. For the purpose of this study, one such value that is vital for vulnerability reduction of SMEs is the opportunity to form and implement adaptive choices to ensure business continuity (for example through diversifying markets, self-organising, business continuity planning, etc). Additionally, the *agency* aspect is central to the capability approach and examines the extent to which a small business can act and bring about change in line with what they value; an expansion of agency is thus vital to adaptive capacity enhancement (ibid). The agency aspect also encourages a focus on external relations and the broader social context in which SMEs operate; these are seen as conversion factors or means of further expansion of agency and opportunities (Robeyns, 2005; Alkire, 2007).

In exposing these underlying processes the study asked both SMEs and stakeholders supporting SMEs, several questions related to:

- perceptions on current and expected stressors on SMEs
- perceptions on vulnerability of SMEs versus larger businesses to climate risks and other stresses
- constraints to adopting proactive measures to avoid business disruptions to climate and other stresses
- challenges in providing and delivering support to SMEs
- capacity needs of stakeholders in supporting SMEs in adapting to climate change

5.2.1 What is the every-day backdrop in which SMEs operate?

This section explores the day-to-day challenges experienced by SMEs in an effort to understand how these may shape the adaptive choices SME could make in overcoming climate and other related stresses. The results of key business related challenges are presented below.

Both stakeholders and SMEs made comments on the **lack of education** within the SME sector associated with the general operation of a business; this was related directly to the rate of business failure in Australia. A non-government stakeholder from the Business Network International noted that approximately 80-90 per cent of all businesses went broke in the first five years, and in general, 96 percent failed in the first 10 years. Respondents highlighted that the presence of interdependencies meant that such impacts had wider implications; financially affecting other businesses and connected networks. Three respondents mentioned that a factor contributing to such statistics was that anybody could open up a business, irrespective of whether one had the necessary skill sets. This seems to have also contributed to the short-term planning horizons of SMEs (as illustrated in Figure 17). Most stakeholders believed that many SMEs are focused on the day-to-day operations that they do not have formal long-term (5-10 years) business plans and if planning is undertaken, it is not a formalised process. The results in Section 5.1 also confirm the limited engagement in strategic business planning by SMEs. When strategic business planning had occurred, it was motivated in part by past experience with an extreme climatic event. However, even if businesses have formal plans, it may not necessarily mean that they will possess the resources to implement those plans due to other internal and external constraints (highlighted below).

> *"I guess the most common sort of thing that I pick up, I've been running businesses for 40 years – is that many of them [SMEs] actually don't know how to run a business. There's a significant portion of the business population who are in business because they just think it's a good idea. […] They don't have a particular business strategy or particular understanding."*
>
> *"Anyone can walk in and start a business and if they fail, as well as obviously affecting themselves, it can have a knock on effect on other businesses. The fact that they're not getting paid, they're owed money [..]."*
>
> Additionally, **various generic challenges** were highlighted by both SMEs and stakeholders which included the limited time, escalating cost of living pressures affecting cash-flow, resources available amongst SMEs and dependency on external stakeholders for support. Such challenges have been reported by other studies focused on SMEs (Ates and Bititchi, 2011; Sullivan-Taylor and Branicki, 2011). Time and resource constraints were underpinned by internal and external influences. Internal influences included those that related to SMEs with less than 25 employees; many of them were family owned businesses (mum and dad types), challenges of attracting skilled staff and dealing with high rental costs.
>
> External influences included the impacts of the global financial crisis, industrial relations, on-line retail competition, keeping abreast of regulatory changes, the impacts of the high Australian dollar and the slowing down of the mining

industry. Four interview respondents mentioned that there was also limited support for innovation and business planning to help businesses develop; largely attributed to the reduction in government funding to support innovation.

A common theme that was highlighted further included the level of **under-insurance** amongst SMEs. Without adequate insurance, respondents confirmed that many SMEs have limited capacity to cover the costs of impacts from extreme events on their business and at times this led SMEs to close down their business. Under-insurance had also been compounded by the ability to access insurance on-line. Three stakeholders mentioned that due to resource constraints, SMEs are increasingly obtaining insurance on-line but because there is no physical assessment of assets, many SMEs obtain lower insurance cover than necessary. ..Several SMEs highlighted the confusion in the terminology and fine print when claiming insurance. They stressed the need for insurance companies to also develop consistent legal definitions of events (e.g., floods) so there is less ambiguity around various terms.

> *"SMEs are generally under-insured which means their insurance is inadequate to cope with a disruption."*

Issues related to the challenges of operating a small business in rural versus urban settings was also highlighted. Specifically, these included the challenges related to **conducting business in remote areas**, access to expertise, poor transport services for customers, limited access to business advisory and financial services.

> *"Some of the registered financial advisors are a bit thin on the ground in a lot of country areas. Some accountants are just basically a tax agent so they're limited as to what they give as well."*

> *"The market in larger built-up areas is more diverse, whereas if you're in a rural community, the customer pool is more limited and less diverse and the options being available in other locations are not so readily available [in rural areas]."*

Almost all respondents agreed that the vulnerability of SMEs to various stresses, including climate change is much greater than that for larger businesses. Key reasons included that SMEs:

- do not have dedicated financial and human resources to implement risk mitigation strategies
- do not have a systematic approach to running a business; larger businesses will have an accountant or bookkeeper and thus better placed to access expert advice and finance
- lack the time and effort to develop and implement strategies impacted quicker and harder as they often live day-to-day
- may not have multiple offices spread over various locations and thus the impacts of various stresses are often felt locally

> *"[…] in a large business you can have a specialist marketer or a specialist operations person or HR person. In small businesses, the owner is everything."*

5.2.2 What underlying challenges confront stakeholders who provide support for small businesses?

Various challenges or constraints were highlighted by stakeholders involved in supporting and delivering programs for SMEs. These included processes that were internal to the support organisations as well those present in the wider landscape in which they operated. The common challenges are discussed below.

Limitations in Funding and Human Resources

Many of the stakeholders whether representing government, private or non-government organisations mentioned the issue of limited access to funding and availability of human resource capacity to deliver dedicated programmes for SMEs. Four non-government stakeholders (e.g., Business Growth Centres, Business Associations etc.,) mentioned that they were dependent on government grants to offer particular support programmes such as business advice for SMEs or to employ staff to keep their organisations running. However, decreased government funding often hampered the extent of services that could be offered to SMEs. Two NSW based stakeholders mentioned that the recent State Government spending cuts and the re-prioritisation of government investments (e.g., on infrastructure) has meant that they received less funding for staff training, which in turn affected the quality of their SME advisory services. Non-profit based organization such as the various chambers of commerce also mentioned that funding was an ongoing challenge given their dependency on membership numbers; during financial hardships members often cancelled their membership. To overcome these challenges one stakeholder mentioned that by providing various membership benefits and introducing joint membership with other organisations, enabled them to continue delivering programmes for their SME members.

> *"The biggest challenge we have is not having that government funding for our business advisory service. The lack of or withdrawal of government funding for the vocational training sector is hurting us directly in terms of substantial property income, but it's also hurting businesses in that they aren't getting the up-skilling of their employees, so it's essentially holding them back as well."*

> *"There's a minimal level of government assistance available for industry. There has been some as I've mentioned in that recent period to look at on- farm best management practices for adaptation of technology and management systems, but overall the direct dollar investment for those businesses in terms of grants or reduced subsidies to make the changes are not there on a wide level. ."*

Two non-government stakeholders reported that government funding for SME support programs often had associated administrative burdens which often constrained the limited human resource capacity of these organisations and thereby restricted the services available to assist SMEs during times of need. Human resource constraints were also emphasised by three stakeholders based in regional areas in which the supportive services they were providing had to cover vast geographical areas. However, the number of staff available to deliver that support did not reflect the size of their jurisdictions. This was compounded by the difficulty in recruiting personnel in regional areas with the appropriate experience and qualifications in working with SMEs; the quality of service delivery to SMEs was thus compromised. The stakeholders

highlighted that SMEs found their services easier to access rather than those provided by government agencies such as the Australian Tax office or Work Cover. The results suggests that non-government based support organisations had closer links with SMEs; they were closely attuned to SME needs and SMEs seemed to trust these organisations over government agencies. However, for these organisations the challenge was in the delivery of timely support under a constrained resource capacity.

> *"Generally, when small businesses are in trouble, they are in trouble right there and then and they need some help. You can't say, well, take a number and then wait in the queue and we'll get back to you when we can. It doesn't help them basically […]. That's the challenge for us, to have the resourcing to help small businesses."*

> *"The program increased the workload on staff […], to administer the program, verify the vouchers and invoices and process the payments. The funding did not include any administrative funding component."*

Two local government respondents mentioned that tight internal budgets for economic development initiatives meant they had to find new methods of building partnerships with various agencies to deliver programmes for SMEs. For example, one local Council had developed a collaborative partnership with a regional development body to bring in particular services to support local SMEs. Additionally, the economic development units within local Councils were often led by a sole officer which seemed to constrain the capacity of Councils' to lead business development strategies for SMEs. This limited opportunities available for SMEs to work with local government, particularly in developing networks that may enable them to strengthen economic development activities (e.g., diversifying their product base into other areas within the locality).

Local Government; limited programmes to support business continuity

All stakeholders from local government highlighted that they did not have specific programmes dedicated to supporting SMEs. Instead, they worked in partnership with other government or non-government agencies to support the delivery of programmes for SMEs. Three Councils' mentioned that they use a portion of their Council rates towards supporting these partnerships and introducing programmes such as infrastructure development for commercial centres, sponsoring business development forums and events for SMEs and strengthening the skill sets of partnering organisations. However, many of the economic development teams within Councils' mentioned that they undertake consultation (e.g., through surveys and business panels) with SMEs in their local area. This enables them to understand SME business needs whilst concurrently informing economic development strategies of the Council. However, these passive forms of engagement with SMEs may have also led to the poor support received by SMEs for Council led initiatives. Five SME respondents stressed that their Councils were inactive in their areas and offered limited support for SMEs. However, they perceived the role of Council to mainly entail the collection of rates and the delivery of programmes for communities, rather than supporting small businesses.

Three SMEs who had been affected by extreme weather events commented the specific need to strengthen the linkages between SMEs and local government as part

of vulnerability reduction initiatives to future climate risks and to recognise that SMEs are an integral part of the community. During the recovery phase of extreme climatic events it was often Councils who were left to administer long term economic recovery initiatives once other disaster support organisations had left but the absence of strong relationships with SMEs had at times stalled the recovery process. Moreover, these relationships with SMEs are pertinent given that local government often acts as a conduit in channelling support programmes of state and federal agencies.

> *"We don't have a lot of specific council-supported programs for SMEs; however, what we do is support other groups that support SMEs. We've got a business improvement association program within the city, which works with the major commercial centres around the city, who work with the small businesses. So we don't work directly with the small businesses; we work with a business-based committee."*

> *"It wasn't a great relationship between this community [i.e.,SMEs] and the local government beforehand, and that has been a very hard road for the local government in the last two years. Overall the relationship is probably a little bit better, just by going through adversity together [i.e., bushfires], but it's not where it should be. I'd say absolutely, local government to community linkages need to be strengthened. Everyone talks about community […], business is community."*

Most of the local government stakeholders mentioned that Councils' lacked dedicated climate adaptation related programmes or business continuity planning targeting SMEs. Two of the Councils' reported that they had recently developed climate adaptation plans to reduce the vulnerability of Council's assets and services to climate change. However, they noted that such plans, including Council emergency management plans, largely focussed on community resilience and overlooked long-term economic resilience building. They agreed that Councils' had a larger role to play in this area but lacked the resources to do so. They suggested the need to raise awareness of this issue through larger bodies such as the Local Government Shires Association. During the workshop one local government stakeholder highlighted that unlike road maintenance, climate adaptation planning often sits outside the recurring Council budget and thus Councils have to seek external funding to develop climate adaptions plans.

Despite these constraints two stakeholders highlighted a few initiatives that the economic development units in Councils' in Queensland and Victoria had undertaken to ensure long-term economic recovery of SMEs to future climate extremes. In Victoria this included the Murrindindi legacy project in which a 'how to guide' titled "Restoring Your Business Community" was being prepared for local government practitioners to support economic recovery and ensure business continuity. In Queensland, Cassowary Regional Council had recently launched the online programme, 'Together we're Stronger' which enabled small businesses to sign-up and access disaster preparedness plans and other material. The Council was also in the process of developing a Disaster Risk Reduction and Resilience Decision Support System which aims to support decision making related to small business recovery after cyclones.

Struggles over Power

"People talk about working together but they don't do it very smartly."

A familiar constraint highlighted by stakeholders was the poor co-ordination of support activities for SMEs between the various government, non-government and private sector stakeholders which also led to limited information sharing and missed opportunities for social learning. Stakeholders agreed that disconnections between different levels of government often led to poor engagement between each other. This has been confirmed by other studies which have demonstrated the power dynamics at play in collaborative governance arrangements related to adaptation planning (Measham et al., 2011; Mukheibir, Kuruppu, et al., 2012; Steele et al., 2012). Underpinning these processes were struggles over power and the need to protect one's particular niche in the wider landscape of supporting SMEs. These power struggles led stakeholders to resort to normative behaviour; limiting opportunities to engage in constructive dialogue over innovative methods to improve service provision for SMEs. One non-government stakeholder commented that such normative behaviour had led to competition between support agencies who had learnt quickly of the need to remain within their boundaries of support.

> *"Right now it just seems the whole landscape of supporting SMEs is quite messy. I mean, we send a heap of people [SMEs] to accountants, and I said to one, one day, we never receive referrals back from an accountant. They said, that's because they see you as a competitor. I said, what the hell do you mean? But the accountants see us as a competitor, and because we're low cost, if they tell people we're here, they might lose business and lose dollars. But where somebody starts encroaching on somebody's area, that's where you're going to start getting problems."*

> *"Information sharing is quite poor. In some cases it's just managerial or political issue and on other cases there's a fair bit of silo building. People can look for their own advantage which will also disadvantage someone else. You have to be careful about how you put things and what information you can share, not everybody shares the same ideals about that."*

Several SME respondents had similar views relating to the fragmented and overcrowded landscape in which support was being delivered. For SMEs this created confusion as to which support mechanisms were associated with particular organisations and at times such a confusing landscape stood to deter SMEs from accessing those support channels. To overcome these challenges, workshop attendees confirmed the urgent need for the integration between government led support processes; this would simplify the process of dealing with government for SMEs.

> *"There are so many organisations and agencies involved in providing services and it can be a bit of a minefield to try and navigate. We try as much as possible to be across as many initiatives and grants and programmes being provided at the state government level but we're a very small agency and we don't always have all the up to date information. It's really quite a confusing marketplace for SMEs, especially the time poor ones, to actually identify where the best source of information is."*

Several stakeholders mentioned that it was rare for various support agencies to meet to discuss issues as well as to share information and lessons related to the delivery of support programmes for SMEs. When information was shared it was done cautiously so that it would not provide others a competitive advantage in the broader landscape in which the stakeholders operated. It seemed that there was greater information sharing between the federal and state government agencies delivering support related to business recovery after disaster events. However, this did not extend to other agencies working within the landscape. This may have also contributed to issues highlighted in the previous section related to poor co-ordination between response organisations and the duplication of roles during the disaster recovery process. Stakeholders stressed the need for mainstreaming collaboration amongst various support organisations, to avoid the overlap and duplication of roles and to perhaps, build the ethic behind it which seemed to be lacking. They also suggested the need for such initiatives to be driven from a higher political level to not only improve coordination between various agencies in general, but to also ensure a coordinated response to disaster recovery. As commented by one stakeholder who worked on the ground after the bushfires in Victoria:

> *"It's very important that the help that is given from government be done better, in a coordinated fashion. We had one client [SME] who had eight support people working with them. If that's not confusion, I don't know what is. We had people giving direct business advice that had no business experience, people giving counseling advice that had no counseling qualifications. All of that actually need to be coordinated right up front to actually take all the pressure off the small business operator."*

> *"This could be a role for the federal or state governments' as part of their disaster preparedness to say how are we going to help businesses, lets get some of the associations [non-government and private sector] together. It needs better coordination with all different bodies."*

Climate Change Information Needs

A majority of stakeholders believed that most SMEs had a limited awareness of the process of climate adaptation specifically, and of how climate change would impact on their business in general. They also believed that if SMEs were aware, then climate change was not a priority issue to which they were willing to invest money in adopting adaptation strategies. These perceptions seem to differ from those results in Section 5.1, which indicated that SMEs had adopted adaptation strategies, even though they may not relate to those strategies as 'adaptation' specifically. Stakeholders believed that this awareness was also shaped by the limited discussions around climate adaptation and impacts on small businesses as well as the confusing and fragmented discourses in the media related to climate change. A few stakeholders mentioned that SMEs may not have an understanding of the difference between mitigation and adaptation. Four stakeholders asserted the need to not only understand the direct impacts of climate change but also those indirect impacts on supply chains. The stakeholders believed that there were limited awareness raising initiatives related such impacts on SMEs. Seven stakeholders discussed that personal experience with extreme events can act as a catalyst for anticipatory action in the form of adaptation. As one stakeholder from the insurance industry commented:

"It's [climate change] definitely not a priority for 90 per cent of SMEs. Some of them know they have to be cautious but it's not something which people give priority to. I think it's just got to do with people not being aware of the seriousness of it, if something happened. It's quite hard because unless it happens in their backyard like in Queensland [recent floods], then they just don't care. "

"But it's really having businesses understand as well that their supply chains can be affected by disasters outside their particular area. So, your tourism operation in central Victoria was affected by floods somewhere else because roads were cut - that's an example. Or else - you've got some inputs from a factory and you can't get them up the Pacific Highway to you."

Amongst a majority of stakeholders interviewed, there seemed to be limited urgency to deal with climate risk reduction initiatives for SMEs. This may be related to the results in which over half of the stakeholder respondents perceived that climate change was not a priority issue for SMEs within the short-term (i.e., next 5 years) but believed that climate change was a long-term issue that they would have to address eventually as part of their support programmes for SMEs. Of the few support organisations that were working on climate risk reduction programmes, these were largely focussed on disaster recovery rather than long-term climate adaptation (as discussed in Section 5.1). Issues that were perceived to be pertinent remained business-oriented such as a slowdown in the mining industry, labour/skills shortage, industrial relations, regulatory burden at different tiers of government and adapting to a high-cost operating environment. Three respondents suggested that it was essential to address climate risks initially on other critical sectors that business development depends upon such as on roads and infrastructure before focussing on SMEs. As one government respondent delivering programmes for SMEs commented:

"Regardless of what we do now in reduction measures, there is so much locked [i.e., emissions] in that's going to cause these events to occur. I don't think it's being communicated. I don't even hear the word [adaptation] raised and SMEs' are not asking. I mean for instance they may not have liked the carbon price but at least they asked about it, they wanted to know, get information. I mean they're not even asking about adaptation. It's so far down the list of what they think they need to be doing. [..] so much locked in that adaptation is unavoidable."

Stakeholders also discussed the challenges in delivering future climate adaptation initiatives for SMEs. For example, three stakeholders highlighted that many of the business networks and associations that SMEs were members, often provided mixed messages about climate change and at times, they had been open in their opposition to issues related to the carbon tax. Government based stakeholders reported that such a backdrop was not conducive for the delivery of future climate risk reduction programmes for SMEs whilst simultaneously spurring negative perceptions amongst SMEs of their need to engage in business continuity planning to future stresses. Four stakeholders highlighted the personal challenges in keeping abreast of the latest scientific findings relating to climate change in order to inform and make decisions on the types of climate related interventions that are needed to support SMEs. They stressed that these issues were also compounded by the absence of a national policy

related to climate adaptation as well as the absence of agreement around adaptation planning approaches between the various tiers of government. The absence of strong policy also limited opportunities for stakeholder to develop programmes that support the adaptive capacity enhancement of SMEs. Simultaneously there was an absence of dedicated programmes that support SMEs' in converting their adaptation intentions into activities that will enable them to build resiliency to climate risks. As commented by one stakeholder in the banking sector:

> *"The challenge for us is that we're still feeling our way here in terms of what's required. The science is still emerging [..]. For us it is very much continuously needing to learn and evolve and respond and incrementally formalise that response .Continue to engage and advocate for greater clarity and consistency around what's actually likely to happen in different parts of Australia and what we need to be adapting to."*

> *"So I do engage with professional bodies. Sometimes they're across climate change and sometimes it's completely conservative. A lot of the time they come with baggage about what their opinions are of this, that and the other."*

> *"I think adaptation to climate change is definitely a challenge [for support organisations] but I think a lot are definitely not aware of it as a challenge.*

Majority of the stakeholders also believed that because a very few small businesses undertake formal business planning or adopt business continuity plans, it was difficult for them to talk about climate adaptation. This was also associated with the short-term business planning horizons of SMEs. One stakeholder from the federal government, Department of Innovation, Industry, Science and Research, mentioned that they had extended their outreach on advice to SMEs, in preparation for natural disaster, through a website which included information on business continuity planning and links to state and local information. However, it was noted that the site was not regularly visited by SMEs.

> *"The difficulty is getting them [SMEs] to actually understand the importance of something as alien or foreign or unrelated as business continuity planning. Businesses don't think about these things until it's too late. They don't see the importance of it until they're actually caught up in a drought or a flood or a bushfire or whatever.*

Learning from past climate related interventions targeting SMEs

> *"Well certainly a lot of us would like to be more proactive because it's better to stop a problem before it starts rather than try and solve it once it's there."*

A key theme that surfaced through the interviews with stakeholders was the limited formal mechanisms for monitoring and evaluation of those initiatives and thus the constrained opportunities to learn and improve upon them in delivering future support for SMEs. Additionally, as the results demonstrated in Section 5.1.1, many of these programmes, although valuable, were reactive and addressed the immediate impacts of extreme climatic events and did little to alter the vulnerability context of SMEs to future stresses. For example, federal government agencies such as the Department of Innovation, Industry, Science and Research and Attorney Generals Office deliver disaster recovery programmes for impacted SMEs through grants and business advice

for SMEs. However, these were short-term and focussed on supporting business recovery of the affected SMEs. Similarly, state funded agencies such as the WA SBDC had crisis response programmes to help get SMEs back up and operating over the short-term. Stakeholders who had received government grants to deliver support to SMEs highlighted that often the evaluation follow prescriptive processes to giving feedback to government and overlooks key/new lessons. A respondent from the Rural Financial Services commented that their roles tended to be reactive rather than proactive; counselling services are only offered to SMEs who were in trouble rather than providing anticipatory business planning advice that may help build resilience to future stresses. Although these support agencies acknowledged the need for SMEs to consider the indirect impacts of extreme events when planning for risks, there was an absence of formal interventions to support SMEs deal with those risks. As discussed in Section 5.1, these indirect impacts were equally disruptive to business continuity as direct impacts.

> *"We do actually have what we call a crisis response service, so basically if there's been any natural disasters such as the flooding that happened in Carnarvon in December 2010 we can provide on the ground assistance to small businesses either directly with our advisory unit or through our Small Business Centre Network. So that's basically there just to help, over the short term, deal with any crises that do impact on small businesses."*

> *"The role of business recovery comes - it's not immediately. So, we don't need to jump up and be there and be putting sandbags down. That's not our job, but we come in later. We need to be a lot more focused on what we do. […] We need to make a broader range of people aware - particularly local government and state governments aware - their help needs to support those businesses that have been indirectly affected."*

A key principle of adaptive management of socio-ecological systems is a focus on continuous learning to inform future management practices (Gunderson and Holling, 2002; Pahl-Wostl, 2009). The results indicate that limited opportunities were available to reflect and learn from the outcomes of previous disaster related interventions to support business recovery. For example, the Attorney Generals Office who fund disaster recovery grants to support SMEs, noted that they do not evaluate the outcomes and the benefits of their programmes. The monitoring that was traditionally conducted was largely 'impacts' driven and related to the percentage of production affected or the total number of businesses that may have been impacted by an extreme event in a particular local government area. This type of information helped inform the agency whether disasters were becoming severe and whether assistance was being channelled to the correct locations. No information was available about the uptake of the grants or the extent to which the grants had assisted business recovery over the long-term; delimiting opportunities to improve future programmes. It was also highlighted that the federal agency often depended on their state counterparts who administered the grants to provide such data. However, at times, the information sharing had been hindered. Thus, they suggested that future efforts to monitor and evaluate programmes need to be planned formerly. This can be done by identifying the correct questions to ask and directing these to the appropriate organisations who have the capacity to gather the data to meet the monitoring needs. Workshop

participants also confirmed that future monitoring programmes need to be outcomes based and less governance based.

> *"That's not something thing that we request from the state, but it should be a requirement in the future to get an overall picture of just how effective these [recovery grants] are. […] we need to build up a picture after the event as well. Not just as the event happens and the damage that was caused but just how effective was the payment. Just trying to coordinate all that information and the requirements for all that information that we currently need is quite a large task. But that's not something that is currently happening at the moment."*

> *"The natural disaster element of that program was not separately evaluated. As a matter of fact, I think it was probably evaluated partially within the whole program evaluation."*

Three stakeholders also commented on the difficulty in conducting research within their own organisations to evaluate the effectiveness of existing programmes and to inform internal policies/strategies. Due to funding and human resources constraints they were dependent on industry associations or research institutes to provide the information to support policy formulation. In overcoming these resource constraints, one federal stakeholder commented on how they were building linkages with other government agencies who were able provide them with the scientific data needed make informed decisions related to business vulnerability. For example, producing terrestrial maps of business density that can be overlayed with the zone of disaster impact to identify the extent of impacts on SMEs. This would then enable the agency to promote business continuity planning for SMEs in areas which may be more vulnerable to disasters than others. Such proactive investments seem to also be in line with long-term vulnerability reduction and would likely reduce government spending on disaster recovery efforts for SMEs.

> *"As we go forward with this, we will be looking at the disintegration of information and potential program design. But a lot of government programs relating to disaster, traditionally have been reactive. Rather than taking an initiative. So, as an example, you might assume if we have more substantive relations with bureau of meteorology, geo-science Australia and CSIRO and others and then we can probably shape - according to our limited resources, where we might push for the idea of business continuity planning in particular valleys or regions of Australia, which are by empirical observation, more disaster prone then others."*

> *"One of the challenges that we're finding is increasing frequency of events, so happening more often and on a larger scale and with greater impact. At the moment it's probably still anecdotal but certainly that's what we're seeing, which is making it incredibly expensive for us to continue to roll our these [recovery] programs."*

In terms of reflective learning, one stakeholder from the banking sector mentioned that the increasing frequency and severity of disasters had highlighted the need for the organisation to become increasingly flexible in the delivery of support for SMEs during disaster events. To do so, required the presence of flexible internal governance structures that would enable the organisation to rapidly deploy emergency systems

whilst embedding it in existing operational risk management frameworks. However, the respondent noted that under a changing climate, there is a need for continuous learning by formalising the evaluation process to ensure that future response is backed by rigour.

> *"We have to have much more formal response that has all the rigour and the internal governance processes as normal services and products delivery, but which can be randomly triggered with little warning on a large scale. We have to be ready to do so."*

5.2.3 Conclusions: What are the key processes that constrain and influence adaptive capacity of SMEs?

In drawing out the key processes constraining and influencing adaptive capacity of SMEs, this section undertook a deeper analysis of the context in which stakeholders supporting SMEs operate as well examining the day-to-day realities confronting SMEs in general. The research revealed that in their day-to-day operations, multiple challenges confront SMEs. These include limited access to financial and human resources, under-insurance, and distinct challenges associated with operating in a rural versus an urban setting. Together, these challenges can undermine the capacity of SMEs to implement adaptive strategies. Concurrently, the research examined the broader context in which SMEs are embedded in order to understand the challenges faced by the stakeholders supporting SMEs, and the implications of these challenges for shaping the adaptive capacity of SMEs. These stakeholders provide assistance which can help SMEs to enhance their adaptive capacity. For example, they provide SMEs with business advice, funding, networking opportunities, training and mentoring.

Two main conclusions are drawn from the results.
Firstly, several key socio-economic and political processes operating in the broader landscape in which SMEs operate are likely to constrain and influence their adaptive capacity. These aspects include:

- limited access to funding and limited human resources for delivering programmes for SMEs
- the absence of dedicated climate adaptation-related programmes or business continuity planning targeting SMEs within local government
- linkages between SMEs and local government seemed weak
- poor coordination between government, non-government and private sector stakeholders who provide support to SMEs. This leads to limited information sharing and missed opportunities for joint learning and reflection amongst stakeholders. Underpinning these failures are struggles over power due to the desire of organisations to protect their niches in the wider landscape supporting SMEs.
- a lack of urgency amongst stakeholders about the need to develop climate risk reduction initiatives for SMEs. Such initiatives were not seen as a priority issue for SMEs in the short term (i.e. the next five years).
- the limited formal mechanisms for monitoring and evaluating current risk reduction initiatives and thus the constrained opportunities to learn and improve upon them.

Secondly, the adaptive capacity of SMEs is to a large extent shaped by the adaptive capacity of the organisations that support them. This limits the agency of SMEs in securing business continuity. Many constraints on the agency of SMEs were found to exist within the formal boundaries of the organisations providing support to them. These constraints can limit the capacity of SMEs to exercise their agency and transform their adaptive choices into outcomes that will support business continuity under a changing climate. It is these support organisations and their institutions (i.e. their norms, values and policies) that are likely to influence the types of opportunities that are available for SMEs in making adaptive choices. For example, many NGOs are dependent on government grants to offer support programmes such as business advice for SMEs and to employ staff to keep their organisations in operation. The tightening of government funding often limits the services NGOs can offer to SMEs. Government agencies funding climate risk reduction programmes for SMEs have limited formal mechanisms for monitoring and evaluating those initiatives. Thus, no information is available about the uptake of these initiatives or the extent to which they have assisted business recovery over the long term. This reduces the opportunity to improve future programmes for SMEs.

The abovementioned constraining processes also limit the agency of SMEs in converting their resources towards implementing adaptive strategies. For example, the lack of a sense of urgency amongst support organisations about the need to implement programmes to assist SMEs deal with climate change is likely to hinder the opportunities available for SMEs to use their agency and implement proactive adaptation measures, particularly when the external context is not conducive or supportive of making such choices. Similarly, the poor coordination between stakeholders and the limited opportunities to share information may limit the agency aspect of the adaptive capacity of SMEs. For example, government departments delivering disaster recovery funding do not always obtain feedback from non-profits working on the ground on the significance of indirect impacts of extreme climate events on SME business recovery. Thus no future programmes are likely to be initiated by government agencies that will open up opportunities for SMEs to use their agency and adopt strategic planning initiatives (e.g. diversification of their customer bases).

This section also demonstrated the utility of adopting a capabilities approach to understanding the adaptive capacity of SMEs. *A central conclusion is that in examining constraints to the adaptive capacity of SMEs, it is perhaps vital to understand the extent to which those constraints limit the opportunity or choice sets of SMEs as well as their ability to exercise agency and transform their assets to supporting measures that will promote business continuity under uncertainty.* The crucial role of these social processes must be to expand the realm of human agency and choice sets of SMEs (Sen, 1999; Robeyns, 2005).

5.3 Future support to promote SME business continuity under a changing climate

The aim of this section is to identify and suggest possible points of intervention that may contribute towards overcoming the challenges identified in the previous sections. Specifically, to strengthen the adaptive capacity of SMEs and ensure business continuity under climate and other related stresses. In doing so, the study does not

aim to be prescriptive and propose what should be done. Rather, the focus is on what can be done and how to do this by working within the constraints and opportunities available through existing formal (e.g., government agencies) and informal support systems (e.g., community networks). These measures aim to drive anticipatory behavior amongst both stakeholders and SMEs in adopting climate risk reduction measures to reduce vulnerability; rather than reacting after impacts have occurred.

> *"The resources already exist it's a matter of mobilizing and coordinating that to facilitate this support in a better way. [..] rather than creating a new infrastructure just for an event."*

In identifying possible points of interventions, the study draws from the findings in Sections 5.1 and 5.2 as well as responses to SME and stakeholder interview questions relating to:

- the types of support needed to overcome the challenges in addressing climate impacts
- who is best placed to deliver this support and the most effective formats what can be done by various tiers of government as well as corporate organisations to support business continuity under a changing climate.

5.3.1 What types of support are required to build adaptive capacity of SMEs to ensure business continuity under a changing climate?

> *"That's how we're viewing our role at the moment, continuing to change and evolve as we better understand the issues along with everyone else."*

Tierney (2006) rightly stresses the pertinence of building long-term resilience in SMEs by arguing that climate change stands to radically alter the SME business climate in which no amount of loans or insurance may be able to compensate for this. Adopting the above stakeholder comment as the point of departure, this section examines how flexibility can be embedded into the system in which SMEs operate in order to enhance adaptive capacity of SMEs. In doing so, theories from 'adaptive management' of socio-ecological systems stress that managing for flexibility demands new ways of thinking, requiring the collaboration of diverse stakeholders and has the potential to alleviate many of the constraints to adaptive capacity that was noted earlier (Allan, 2007; Pahl-Wostl, 2009). Moreover, adaptive management theories highlight particular principles that may support the building of flexibility in order to continuously learn and evolve under uncertainty (Berkes and Seixas, 2005). These include:

- *Nurturing diversity for reorganisation and renewal by:*
    - Nurturing a diversity of institutions to respond to change
    - Creating political space for experimentation
- *Combining different kinds of knowledge*
    - Building institutions that encourage learning, memory and creativity
    - Creating cross-scale mechanisms to share knowledge
- *Creating opportunity for self-organisation* through:
    - Building capacity for SMEs to self-organise

- Building conflict management mechanisms
- Creating multi-level governance

It is against the backdrop of these principles that the study suggests specific interventions to enhance the adaptive capacity of SMEs. One significant finding of this study was that disaster response and recovery initiatives that aim to support economic recovery of SMEs were reactive and did little to change underlying vulnerability contexts. These largely focussed on disaster recovery with limited attention to preparedness and prevention. The interventions suggested below aim to shift this focus and inform the process of long-term vulnerability reduction through enhancing adaptive capacity. Moreover, investment in vulnerability reduction through preparedness and prevention is likely to reduce costs associated with formal disaster recovery initiatives for SMEs.

Education and training to instil business planning

One of the key constraints to adaptive capacity identified in the previous section was the significant lack of education and training on how to operate a business. One respondent commented that as part of the Enterprise Connect programme administered by the federal government, there is funding available for SMEs to facilitate the exit or transition out of business by offering ten months of business education for the incoming management. However, respondents suggested the need for such programmes to be tailored and delivered to those who are starting a small business rather than exiting business. They also commented that completing such courses should perhaps be mandatory and viewed similarly to obtaining a licence to provide services such as electrical or building work.

These training courses can provide various skills in profit and loss statements, marketing planning, business plans, managing cash flow, Occupational Health and Safety. Stakeholders and SMEs suggested that the training programmes should be continuously updated and SMEs provided with opportunities to undertake annual refresher courses to keep abreast of new materials related to business continuity. Stakeholders suggested the TAFE system (technical colleges) or other academic institutions could step in and provide this type of training. Moreover, such training was seen as starting point to ingraining a culture of business continuity planning. Stakeholders stressed that these initiatives need to be catalysed through higher levels of government but non-government organisations such as chambers of commerce and industrial associations can play a role in lobbying government for such educational services.

> *"If you want to actually form a company and have the sheltered protection of having a company to protect your personal assets from the creditors, then you shouldn't be allowed to get that unless you have the qualifications to say, well, I'm competent enough to run a business."*
>
> *"They [SME start-ups] really need to be almost be made to go through this educational period. It may run for one to two years but it just basically makes them more capable of actually running their business. They're not failing just because they didn't know how to run a business. I think that's a key area."*

Additionally, two stakeholders highlighted that if such programmes were standardised as best practice when starting-up a small business then non-government organisations, who have closer links to SMEs, should to take a lead role in marketing the benefits of such training to SMEs. The uptake of these initiatives were seen to be greater if it was embedded in the existing support programmes non-government organisations deliver to SMEs.

Long-term and structured disaster recovery

In Section 5.1, the study exposed several weaknesses in the disaster response and recovery initiatives that aim to support economic recovery of affected SMEs. One such measure to address these challenges was the suggestion of forming a multi-stakeholder **National Disaster Expert Group** focussing on business recovery. The group would comprise representatives from various tiers of government, non-government, the private sector and SMEs and would be led by a federal government agency such as Department of Innovation. The group would act as a key medium to oversee and mainstream the types of interventions highlighted below. Respondents agreed that such a group would also provide a united voice for issues related to business recovery under climate change.

A significant finding was that **indirect impacts were often overlooked** in formal disaster recovery interventions and therefore limited support was available for those SMEs who were continuing to trade within the affected areas. Concern was also raised relating to those neighbouring towns in which the flow-on impacts affected SMEs through the loss of customers and markets. Several SMEs and stakeholders stressed the need for formal interventions to recognise and support these needs and reconsider how formal recovery programmes define and zone 'impacted' areas. Respondents highlighted that support for indirectly affected SMEs does not necessarily have to include financial hand-outs, but instead, explore support options in the form of:

- access to one-to-one business advice/mentoring,
- banks to reduce the overdraft during the crisis period
- business helpline,
- tax breaks,
- low interest loans (e.g., patient finance).

> *"I think it's important for government to look at how business in the area that has been impacted have been affected, including those which haven't been physically touched."*

An additional finding was the **short-term nature of disaster recovery** initiatives which often had a lifespan of three years and had **rigid criteria** attached to accessing various support measures (e.g. grants). However, the results indicated that after a disaster most SMEs become almost a start-up and thus, require at least five years to recover; it is often after the third year that they have the emotional capacity undertake formal business planning. Government led recovery initiatives, thus require a long-term approach, beyond three years, in which the response is visionary and structured. SMEs also noted the large volumes of paperwork and the need to go through

bureaucratic processes in order to access the grants. This was overwhelming for many SMEs, particularly when they were psychologically affected from the disaster events. Stakeholders stressed that one such way to overcome this was for recovery authorities to provide case-workers or business advisors who could provide one-to one support to SMEs in completing the paperwork necessary in accessing the grants. However, there is a need for such support representatives to have the adequate business mentoring skills. The experiences of the case study small businesses demonstrated the limited availability of grants to assist in long-term business recovery; many of them focused on immediate disaster response phase. As pointed out earlier, without small businesses, there is no community. The small businesses emphasized that the issue needs to be acknowledged at all levels of government and integrated into existing disaster response planning.

> *You need to be talking and saying, we're just here for support now [i.e. during first year], and then after two to three years, looking at-alright, now here's some services to help you redefine your business and re-evaluate where you stand."*

The results indicated the overwhelming need for long-term **psychological support** for SMEs after extreme climatic events; this component has had limited focus in past formal recovery initiatives. Respondents noted that most counselling services tend to target the community but the psychological needs of SMEs were distinct. They highlighted that the resources for dealing with the trauma of an event are abandoned prior to when they start becoming a problem (i.e., often after 2 years). It was highlighted that in rural areas SMEs are reluctant to often talk about psychological aspects. However, there is a need for the government to mainstream this into their recovery plans and ensure the support is available. . Respondents suggested the need for expert councillors who understand business and mental health. Workshop participants suggested:

- developing a template on how to integrate psychological issues into recovery which government can produce and lead.
- the need for a national coordination centre for counselling which requires better co-ordination with State crisis co-ordination centres.
- showcase longer term psychological impacts through the response stage (e.g., through the development of case studies).
- raise awareness of the issue through videos/podcasts to show the real experiences of SMEs
- vicarious trauma (i.e., those people providing support to SMEs during disaster) needs to be addressed

An additional challenge indicated by the results was the poor coordination between support agencies during the disaster recovery and response phases. Many of the SMEs highlighted that there was duplication of roles and responsibilities. This support needs improvement, both on how it is structured and coordinated between various government and non-government agencies so that it meets the needs of small businesses and opens up choices. Both SMEs and stakeholders stressed the need for greater co-ordination for business recovery which must be led through the State Emergency Management Centres.

It was also suggested that the States should appoint Economic Development Officers to the Local Councils in the affected areas who can then act as key contact points between other agencies providing support for SMEs (e.g., Insurance Council, law societies etc.,). Stakeholders also suggested the need for a **formal taskforce** or a coordinating body to be set-up to facilitate economic recovery during future disaster recovery phases which comprises personnel with knowledge and understanding of the needs of small businesses. The taskforce was seen as an initiative that would assist in overcoming the duplication of government support mechanisms and ensure a smoother and faster path towards business recovery. Representatives from different levels of government should be included in the Taskforce alongside non-government and community representatives. It should be driven from the ground-up rather than a State led initiative with members having experience in previous disaster recovery initiatives. Much of the focus during the bushfire recovery phase had been on community recovery whilst business recovery had gained limited attention. A framework should also be in place to guide the set-up and activation of the Taskforce. This Taskforce should have the legitimacy to apply for funding and draw on other resources to support business recovery. Simultaneously, there is a greater need from the banking and finance sector to recognize these long-term recovery needs (often sales cycles take a very long time to rebound) and include support mechanisms to allow for business recovery/continuity.

There is also a need for **improved monitoring and evaluation** of government led disaster recovery initiatives in order to inform and improve future delivery of support to SMEs. This was discussed in Section 5.2 which emphasised a need for existing feedback seeking processes to shift away from prescriptive approaches focussing on impacts and instead aim to understand the softer social processes (e.g., how were the grants able to support SME recovery) that the grants were able to influence.

Strategic planning as an entry point to climate adaptation planning

Currently there seems to be limited attention to formal adaptation planning within the small business community whilst the adaptation discourse has been overlooked in government led disaster recovery initiatives. However, adaptation was perceived by SMEs as a process in overcoming uncertainty in business continuity through continuously working towards reducing business vulnerability to climate and other related risks. The results in Sections 5.1 and 5.2 indicated that many SMEs do not undertake strategic long-term (beyond five years) business planning to ensure business continuity. Thus there, is a need for support organisations to take an educative role in promoting the benefits of strategic planning to build adaptive capacity/business resilience and also provide support in the form of grants, tax incentives and business advice to assist SMEs develop and implement such plans. Given the short planning horizons of SMEs, the results in Section 5.1 indicated that unlike other systems such as water management or health, it is perhaps practical and profitable for SMEs to undertake strategic planning for a period of 5-10 years. Support organisation need to focus on understanding the climatic projections and their likely impacts on SMEs within a ten year time frame and thus reduce SME vulnerability to such impacts.

As demonstrated by the case study in WA, those SMEs who were able to undertake strategic planning through a government grant were able to see the economic benefits and build long-term resilience through adopting diversification strategies. However, it

was suggested that it is not useful to offer such grants during a crisis, in this case in the middle of a drought. Additionally, such support must be offered over a longer term to provide incentives for SMEs to implement the actions in their strategic plans.

> *"If government funding can be offered when there's no drought to help people restructure for when there is or when there's likely to be, it can be better used because they're [SMEs] not in immediate pain but they know it's going to occur again."*

Seven stakeholders pointed out that it is vital that SMEs are formally guided in the process of strategic planning through utilising existing networks they often seek regular support from, for example, their accountants, insurance brokers, finance lenders, small business mentoring services etc. These stakeholders may initially need training themselves to understand the impacts of climate change on the small business operating environment. This will enable them to provide effective advice on how to make climate related risks part a suite of risks that small businesses normally consider. For example, one stakeholder noted the programme that Zurich Insurance had piloted in training insurance brokers on raising awareness of climatic risks to SMEs; obtaining insurance was seen as opportunity to engage SMEs in thinking about climate risks. This programmes also aimed to address the issue of high under-insurance within the sector, particularly to extreme events. The brokers were initially trained on climate change issues and irrespective of whether they believed in climate change or not, the brokers had a fiduciary responsibility to disclose those risks. Conversations with SMEs would occur on how much turnover and if there were disruptions, or strains on the business how well the SME would respond and what the potential impacts would be on business continuity. Similar programmes have been piloted in England by training accountants as entry points. Accountants were seen as effective intermediaries for raising adaptive capacity of SMEs, particularly in cases where SMEs cannot access insurance brokers (due to cost or geographic location) (UKCIP, 2011).

> *"Basically you got to help them, help themselves. It's not about grants, it is about providing them with the right skills and the knowledge and they need somebody who can support them while they're going through the implementation process.[..] so you can show them the direct benefits of engaging in these practices."*

> *"I think for a lot of them [SMEs], it needs to be simplified and built into existing requirements for basic business resilience rather than separated out and made hugely complicated."*

In promoting strategic planning, two stakeholders mentioned that it may be valuable to also bring SMEs in contact with other small businesses who have successfully implemented their plans. This would encourage the cross fertilisation of knowledge and demonstrate the benefits of undertaking proactive risk planning. They suggested that Industry Associations and small business mentoring services may be able to lead the way in facilitating such initiatives. Five respondents also highlighted that it can be useful to promote climate adaptation planning alongside sustainability planning initiatives which SMEs may be already undertaking. The results also demonstrated

that climate risks were assessed alongside other business related risks rather than in isolation.

Stakeholders mentioned the need to take an educative role themselves in promoting business resilience and encourage proactive planning under climate change by offering various programmes. Such action was seen to generate cross-scale mechanisms for learning and information sharing. For example, Westpac Bank was offering a business financial management course titled "Beyond Survival" to build resilience. Three stakeholders commented that climate change will offer new business opportunities and there is a role for support organisations in identifying future growth opportunities and assisting SMEs in strategically planning to take advantage of these opportunities in order to increase business resilience. They also highlighted the need for these organisations themselves to build their capacity to offer the support services for new companies and industries that may emerge to meet the needs of climate impacted business communities. Concurrently, stakeholders stressed the need for their own organisations to start by acknowledging the increasing pressures and demands on SMEs in terms of dealing with climate change issues. Thus, there is a need to integrate flexibility into their own core products and programmes of support for SMEs. As one SME reflected:

> *"We're on the ground level, we have to adjust to our customers. If we don't adjust to our customers, we go broke. Whereas banks and insurance companies and government and that, they don't flex. That makes it very hard because I don't think that we should be responsible for the consequences of extreme climate conditions. If it was just doing bad business figures or going broke on our own, that's fine, we can be accountable but it seems that we're still held accountable when we suffer from these extreme climatic changes and I just don't think that's fair."*

Raising awareness of climate change through multiple entry points

The results indicated that SMEs and stakeholders had various levels of understanding and awareness of the terms climate change and climate adaptation. For SMEs distinct cognitive constructs were attached to the terms climate change and climate extremes and because of this, SMEs were more likely to integrate adaptation strategies to address climate extremes into their business planning initiatives rather than to climate change. Multiple entry points and channels will be required when raising awareness of climate risks to business. A, majority of respondents stressed that such information must be packaged and delivered in a simple format which encompasses what SMEs need to know about climate risks, what they need to do, how to address those risks and who or what they could specifically access to gain support in addressing those risks. Due to short-term planning horizons of SMEs, the information content must focus on a ten year projection of climate change and its likely impacts on SMEs. Potential entry points to engaging SMEs on climate change include: integrating it with initiatives related to preparing for climate extremes or disasters, financial risk planning as well as utilising sustainability and environmental education initiatives. These mediums can be used to translate the concept of climate change or extremes to how the impacts could affect the SMEs financial context. To help shape the cognitive constructs SMEs attach to 'climate change' one stakeholder commented on the need to associate the term with other parts of their business (e.g., through water and energy efficiency measures).

"I think for most SMEs, it's like well I don't know who to talk to, I don't know where to go and what information they do find is incomprehensible to them. I think the biggest constraints is it's too hard, it's too complicated and they don't have the time."

"If we run climate change specific themes, people are not too interested. Put that into a broader business subject and people get it because the financial implications are nothing new."

There is also a need for stakeholders to take an educative role by sharing their own experiences with SMEs on how stakeholders manage climate risks. In Section 5.2 stakeholders also highlighted the lack of national policy and consistent frameworks related to adaptation planning in Australia. Thus five stakeholders stressed the need for all support organisations, who work directly with SMEs to use their size and influence in the community to lobby and engage with policy makers and other organisations to encourage better policy frameworks around climate change and clarity and consistency in information related to what the risks are for particular regions and sector. They also believed that they need to be proactive in advocating for greater clarity and clearer processes around understanding what SMEs need to do to understand and mitigate climate risks in the next 5-10 years. There was also a need for federal government to take a strong role in advocating for the need to build adaptive capacity of SMEs to climate change as well as providing a central hub or go to place for SMEs to obtain information on climate risks to business. This should also include a matrix or map of what programmes and support mechanisms they are offering in this area.

Given their strong links to SMEs, industry associations and chambers also need to be proactive in this area by for example demonstrating pilot projects that have integrated climate risks into business planning. They also acknowledged the need to promote champions of SMEs undertaking adaptation planning; these early adopters were seen as having good local networks which could be utilised to promote climate risk planning further. One industry association mentioned that they had field days for SMEs to encourage learning and sharing of information. This entailed taking SMEs out to visit other business that had implemented climate adaptation strategies.

Strengthening linkages for self-organisation

The results in Sections 5.1 and 5.2 highlighted the significance of promoting self-organisation for building the adaptive capacity of SMEs to climate and other related stresses. For example, the case studies demonstrated the vital role played by community organisations and local business networks in mediating business recovery prior to government interventions.

"That's what I feel very strongly about that all of these community associations, which are fantastic, but they do need a little bit of prop up"

"Both government and non-government organisations need to utilise the local organisations like the community associations, business and tourism associations because those organisations have a communication, have a trust and have a relationship with the people on the ground."

Several suggestions were made on how to strengthen the self-organisation capacity of SMEs and stakeholders. These included the strengthening of partnerships between local government and industry associations to encourage information sharing related to the needs of particular SME sectors. Respondents believed that these pre-existing relationships were vital to building the resilience of economic development within local communities whilst it was acknowledged that these relationships take time to develop through the building of trust and mutual respect.

Several stakeholders highlighted the need for local government take a leadership role in building these relationships as it is often local government that many recovery and business development programmes are delivered through. The results, in Section 5.2 indicated that many Local Councils were already developing partnerships with other formal non-government stakeholders in delivering various support programmes. There is an opportunity to strengthen these and also focus on understanding how these channels can be utilised to deliver climate risk reduction programmes, for example, promoting strategic planning. Concurrently local government also needs to reach out to those informal business networks and strengthen the linkages, to build trust and work towards bridging these networks with the wider networks within their regions.

> *"I think it's just a social network of being in contact with local government and state government as well to make sure that everyone is aware of the same things, we're all reading from the same page if you get what I mean. We're more or else working together to make sure that things grow instead of dying off."*

> *"Local government is the obvious partner in a sense that those really micro local economic issues, that grass roots stuff is fairly and squarely their domain. The need is to keep their communities liveable and thriving so it's in their interest to make sure that businesses are retained. It is in their interests that businesses are given all the right tools."*

An additional need was for government to increase their engagement with these community organisations and invest in preparing community organisations to be able to help themselves and have the right skills and tools to do it. Support in the form of small grants for community and small business organisations is needed to allow them be sustainable over the long term. Many of these organisations were run by volunteers and retirees but respondents stressed that there is a need to have funding for a principle administrator to ensure the organisations are sustainable.

> *"I'm the president of the Small Business network and we can't get any funds to continue it. It's impossible to event get any funding from government level to support the business network, that they are trying to be representative of small businesses. These are major impediments. What about support for small business organisations that are non-profit, obviously all we're trying to do is support small businesses."*

Coordination between support organisations

A key finding in Section 5.2 was the overcrowded landscape in which support organisations functioned as well as the duplication of roles and responsibilities; this was underpinned by struggles over power to protect one's own niche in the market. Several stakeholders and SMEs stressed the need for improved coordination between

support organisations to enhance the sharing of information, encouraging learning and cross fertilisation of knowledge. Stakeholders noted that there is no current platform that allows different support organisations to come together and discuss issues related to climate risks or strategic planning to build resilience of SMEs. They highlighted that the workshop on climate adaptation that was delivered as part of this study was the first occasion that these multi-level stakeholders and SMEs had an opportunity to come together to discuss climate adaptation and business continuity issues. Workshop participants suggested a starting point may be the formation of the multi-stakeholder National Disaster Expert Group suggested earlier in this section. This would act as a medium to share information and use one voice to advocate for changes to policy or other impeding governance structures.

> *"There's no coordination between associations like the Insurance Council and the law societies. There's value in coordination between various agencies. This could be a role for the federal government or the state government as part of their disaster preparedness to say how are we going to help small business, let's get some of the associations together."*

Other stakeholders commented on the need for such a multi-stakeholder group to take a lead role in centralising the information available related to business planning and climate change adaptation. This may require additional funding to ensure that the information platform is constantly updated and also marketed amongst SMEs so they are aware of such an information portal. Particular organisations such as the WA SBDC highlighted that they were currently attempting to develop this at the state level but lacked the resources to maintain the information channel. Thus there may be an opportunity to use these existing channels and develop it further so it can also account for national to local initiatives.

> *"It could be a place for the federal government, the Department of Innovation, to coordinate some sort of portal that could provide linkages to relevant state and territory resources."*

5.3.2 Conclusions: Future support needed for SMEs

A central finding of this section is that many of the measures required to enhance the adaptive capacity of SMEs in ensuring business continuity under climate change can be integrated into existing processes and networks.

The aims of the proposed measures are twofold. Firstly, they aim to move the focus of SME resilience strategies away from disaster recovery towards reducing conditions that may generate vulnerability of SMEs through an emphasis on adaptation planning. Secondly, they aim to move from a reactive to a long-term approach by focusing on strategies that promote flexibility and encourage learning which ensures business continuity. Opportunities were identified on several fronts to build on existing programmes and strengthen existing networks to support vulnerability reduction. Proposals to help SMEs to deal with climate-induced stresses include:

- Training in business planning targeted at those who are starting small businesses. The uptake of such initiatives will be enhanced if they are embedded in the existing support programmes delivered to SMEs.

- Long-term and structured disaster recovery through the formation of a multi-stakeholder group focusing on business recovery. The group would also provide a united voice on issues related business recovery under climate change.
- A recognition of the indirect impacts that are often overlooked in formal disaster recovery interventions, and the consequent limited support provided to SMEs who continue to trade within the affected areas. This recognition could entail:
    - access to one-to-one business advice/mentoring
    - reductions in interest payments made to banks for overdrafts during crisis periods
    - a business helpline
    - tax breaks
    - low-interest loans.
- The short-term nature of disaster recovery initiatives, and the rigid criteria for approving grants, could be overcome by extending support beyond three years and by providing case-workers or business advisors to provide one-to-one support to SMEs for completing the paperwork to access grants.
- There is a need for long-term psychological support for SMEs after extreme climatic events through expert councillors who understand business and mental health. Suggested actions include:
- create a template for how to integrate psychological issues into recovery. Government can develop and lead this process.
- create a national coordination centre for counselling to improve coordination between state crisis co-ordination centres
    - showcase longer-term psychological impacts during the response stage (e.g. through the development of case studies)
    - raise awareness of the issue through videos/podcasts to show the real experiences of SMEs
    - address vicarious trauma (i.e. the impact on people providing support to SMEs during disasters)
    - provision by government of education on the impacts of psychosocial stress.
- The poor coordination between support agencies, and the consequent duplication of services during the disaster recovery and response phases could be addressed by building stronger partnerships between local government and industry associations to encourage information sharing related to the needs of particular SME sectors.
- Monitoring and evaluation of government-led disaster recovery initiatives needs to be improved in order to inform and advance future delivery of support to SMEs.
- Awareness of climate change can be promoted through the use of multiple entry points rather than focusing exclusively on climate change. Due to the short-term

planning horizons of SMEs, the information content must focus on a ten-year projection of climate change and its likely impacts on SMEs.

- Strategic planning as an entry point to climate adaptation planning. Given the short planning horizons of SMEs it is perhaps practical and profitable for SMEs to undertake strategic planning for a period of 5-10 years. Support organisations need to take an educative role in promoting the benefits of strategic planning to build adaptive capacity/business resilience. They also need to provide support in the form of grants, tax incentives and business advice to assist SMEs to develop and implement such plans.
- Increased government engagement with community organisations and investment in preparing them to be able to help themselves ensure business continuity and have the right skills and tools to do it.

6 KEY FINDINGS

The overall objective of this study was to identify the underlying processes and factors shaping adaptive capacity of SMEs in Australia to climate change. The study also sought to gain an appreciation of the role socio-economic factors and spatial location plays in coping with the longer term impacts of once-off and repeated extreme weather events on the operational viability of businesses. In conceptualising adaptive capacity of SMEs, the study drew on established scholarship on vulnerability analysis. This emphasised the significance of focussing on both the subjective and objective dimensions of adaptive capacity whilst acknowledging their dynamism across space and time. Political ecology – with its focus on both structure, agency and material nature - was used to provide an understanding of the factors that constrain and influence the adaptive capacity of SMEs and their support organisations. The empirical research involved a an online survey targeting SME's, attending business engagement events hosted by Chambers of Commerce, thirty semi-structured interviews with secondary stakeholders, five case studies involving SMEs and secondary stakeholders, and finally, a stakeholder workshop which brought both groups together.

6.1 Main findings

The main findings of this project are discussed in detail in Section 5 and summarised below.

The central conclusion of this study is that underlying contextual processes are critical to enhancing the adaptive capacity of the SME system; These processes include social relations between SMEs and support organisations as well as within support organisations, the agency of SMEs to convert resources to build resilience into business continuity, SME's perceptions of climate risks, and power struggles between support organisations. A combination of these processes has the potential to curtail the adaptive choices available to SMEs in responding to climate change and other related stresses on business continuity. These processes generate vulnerability and operate mostly at various spatial scales external to the SMEs.

They involve all three tiers of government and the relationships between various organisations whose role it is to support SMEs. Such contextual processes have been largely overlooked in formal programmes that aim to build business resilience. These programmes have tended to be reactive and to focus on business recovery during and after disasters rather than on altering the vulnerability context of SMEs through anticipatory prevention and preparedness or adaptation planning. This study suggests that the success of efforts to build the resilience of SMEs to future climate and related stresses will depend on how they address these underlying processes which affect their agency in pursuing adaptive choices that they value.

6.1.1 How have SMEs considered and integrated adaptation into business planning?

Three main conclusions emerged from this section.

Firstly, due to the distinct meanings they attach to the terms 'climate change' and 'climate extremes', SMEs are likely to adopt adaptation strategies which aim to address climate extremes rather than climate change. Moreover, because of the short-term planning horizons of SMEs (two to five years), they are likely to plan for

climate extremes rather than long-term 'climate change', which is perceived as being outside these traditional planning horizons. The data revealed many of the SMEs in the study had started to take adaptive strategies to address climate risks, although they did not always label them as 'climate adaptation strategies'. The SMEs had integrated these strategies into their business plans but did not refer to them directly as addressing climate change. However, it seems that the process of climate risk assessment has not been formalised into business continuity plans. Certainly, for many, climate risks were assessed alongside other risks. The research was unable to assess the effectiveness of these planning efforts as they were usually responses to recent extreme events. However, the SMEs themselves assessed these adaptation strategies according to their social values, their cost effectiveness and their technical capacity. The results of this study also indicate that it is perhaps viable and practical for SMEs, particularly those with less than about 30 employees, to plan for climate change impacts within a horizon of 5-10 years rather than long-term impacts (beyond 20 years). SMEs who possess critical long-lived infrastructure or other assets, and larger SMEs, may need to plan more than ten years ahead

Secondly, SMEs' past experiences with climate extremes act as motivators for introducing measures to adapt to future climate change. SMEs who had experienced the impacts of extreme climatic events were more aware of climate risks than those who had not. Many of the SMEs in this study had experienced extreme events such as bushfires, drought and cyclones and the direct and indirect impacts of these events had changed their operating environment and had left them vulnerable to future impacts. Key processes that contributed to their vulnerability included:

- the short-term nature of government-led business recovery programmes
- the limited support available to SMEs who were indirectly impacted by extreme events
- the limited support and recognition given to the psychological impacts on SMEs of extreme events
- the eligibility criteria for government recovery funds are rigid and inflexible
- recovery processes are reactive and overlook the underlying business vulnerability associated with prevention and preparedness.

Many of these processes which underpinned the vulnerability of SMEs are external to the SMEs themselves and reside within the broader landscape in which governments and other stakeholders operate. The data indicates that without addressing these factors, the capacity of SMEs to adapt to future climatic stresses will continue to be undermined.

Thirdly, the key resilient elements that are conducive to building the adaptive capacity of SMEs to future stresses include: self-organisation capacity, strong social networks, self-efficacy beliefs and social learning from past experiences. Central to all of these is the 'agency aspect' or ability of SMEs to access opportunities (e.g., funding to develop new marketing strategies) and shape processes (e.g., the rigid criteria in accessing disaster funding) that support business continuity. These interrelated resilient elements mediated the capacity of SMEs to exercise agency and control the traumatic predicaments SMEs experience (e.g. bushfires or cyclones destroying their businesses).

The results also demonstrated the utility of examining SMEs' past experiences with extreme events. Indeed, an understanding of the ways in which SMEs had coped with past extremes is useful for understanding the adaptive behaviour SMEs exhibit in response to projected climate changes.

6.1.2 What are the key underlying processes that constrain and influence the adaptive capacity of SMEs?

In the backdrop of their day-to-day operations, multiple challenges confront SMEs. These include limited access to financial and human resources, under-insurance, and distinct challenges associated with operating in a rural versus an urban setting. Together, these challenges can undermine the capacity of SMEs to implement adaptive strategies. Concurrently, the research examined the broader context in which SMEs are embedded in order to understand the challenges faced by the stakeholders supporting SMEs, and the implications of these challenges for shaping the adaptive capacity of SMEs. These stakeholders provide assistance which can help SMEs to enhance their adaptive capacity. For example, they provide SMEs with business advice, funding, networking opportunities, training and mentoring.

Two main conclusions are drawn from the results.

Firstly, several key socio-economic and political processes operating in the broader landscape in which SMEs operate are likely to constrain and influence their adaptive capacity. *These aspects include:*

- limited access to funding and limited human resources for delivering programmes for SMEs
- the absence of dedicated climate adaptation-related programmes or business continuity planning targeting SMEs within local government
- linkages between SMEs and local government seemed weak
- poor coordination between government, non-government and private sector stakeholders who provide support to SMEs. This leads to limited information sharing and missed opportunities for joint learning and reflection amongst stakeholders. Underpinning these failures are struggles over power due to the desire of organisations to protect their niches in the wider landscape supporting SMEs.
- a lack of urgency amongst stakeholders about the need to develop climate risk reduction initiatives for SMEs. Such initiatives were not seen as a priority issue for SMEs in the short term (i.e. the next five years).
- the limited formal mechanisms for monitoring and evaluating current risk reduction initiatives and thus the constrained opportunities to learn and improve upon them.

Secondly, the adaptive capacity of SMEs are to a large extent shaped by the adaptive capacity of the organisations that support them. This limits the agency of SMEs in securing business continuity. Many constraints on the agency of SMEs were found to exist within the formal boundaries of the organisations providing support to them. These constraints can limit the capacity of SMEs to exercise their agency and transform their adaptive choices into outcomes that will support business continuity under a changing climate. It is these support organisations and their institutions (i.e.

their norms, values and policies) that are likely to influence the types of opportunities that are available for SMEs in making adaptive choices. For example, many NGOs are dependent on government grants to offer support programmes such as business advice for SMEs and to employ staff to keep their organisations in operation. The tightening of government funding often limits the services NGOs can offer to SMEs. Government agencies funding climate risk reduction programmes for SMEs have limited formal mechanisms for monitoring and evaluating those initiatives. Thus, no information is available about the uptake of these initiatives or the extent to which they have assisted business recovery over the long term. This reduces the opportunity to improve future programmes for SMEs.

The abovementioned constraining processes also limit the agency of SMEs in converting their resources towards implementing adaptive strategies. For example, the lack of a sense of urgency amongst support organisationsabout the need to implement programmes to assist SMEs deal with climate change is likely to hinder the opportunities available for SMEs to use their agency and implement proactive adaptation measures, particularly when the external context is not conducive or supportive of making such choices. Similarly, the poor coordination between stakeholders and the limited opportunities to share information may limit the agency aspect of the adaptive capacity of SMEs. For example, government departments delivering disaster recovery funding do not always obtain feedback from non-profits working on the ground on the significance of indirect impacts of extreme climate events on SME business recovery. Thus no future programmes are likely to be initiated by government agencies that will open up opportunities for SMEs to use their agency and adopt strategic planning initiatives (e.g. diversification of their customer bases).

This section also demonstrated the utility of adopting a capabilities approach to understanding the adaptive capacity of SMEs. **A central conclusion is that in examining constraints to the adaptive capacity of SMEs, it is perhaps vital to understand the extent to which those constraints limit the opportunity or choice sets of SMEs as well as their ability to exercise agency and transform their assets to supporting measures that will promote business continuity under uncertainty.**

6.1.3 What types of support are required to promote SME business continuity under a changing climate?

A central finding of this section is that many of the measures required to enhance the adaptive capacity of SMEs in ensuring business continuity under climate change can be integrated into existing processes and networks.

The aims of the proposed measures are twofold. Firstly, they aim to move the focus of SME resilience strategies away from disaster recovery towards reducing conditions that may generate vulnerability of SMEs through an emphasis on adaptation planning. Secondly, they aim to move from a reactive to a long-term approach by focusing on strategies that promote flexibility and encourage learning which ensures business continuity. Opportunities were identified on several fronts to build on existing programmes and strengthen existing networks to support vulnerability reduction. Proposals to help SMEs to deal with climate-induced stresses include:

- Training in business planning targeted at those who are starting small businesses. The uptake of such initiatives will be enhanced if they are embedded in the existing support programmes delivered to SMEs.
- Long-term and structured disaster recovery through the formation of a multi-stakeholder group focusing on business recovery. The group would also provide a united voice on issues related business recovery under climate change.
- A recognition of the indirect impacts that are often overlooked in formal disaster recovery interventions, and the consequent limited support provided to SMEs who continue to trade within the affected areas. This recognition could entail:
    - access to one-to-one business advice/mentoring
    - reductions in interest payments made to banks for overdrafts during crisis periods
    - a business helpline
    - tax breaks
    - low-interest loans.
- The short-term nature of disaster recovery initiatives, and the rigid criteria for approving grants, could be overcome by extending support beyond three years and by providing case-workers or business advisors to provide one-to-one support to SMEs for completing the paperwork to access grants.
- There is a need for long-term psychological support for SMEs after extreme climatic events through expert councillors who understand business and mental health. Suggested actions include:
- create a template for how to integrate psychological issues into recovery. Government can develop and lead this process.
- create a national coordination centre for counselling to improve coordination between state crisis co-ordination centres
    - showcase longer-term psychological impacts during the response stage (e.g. through the development of case studies)
    - raise awareness of the issue through videos/podcasts to show the real experiences of SMEs
    - address vicarious trauma (i.e. the impact on people providing support to SMEs during disasters)
    - provision by government of education on the impacts of psychosocial stress.
- The poor coordination between support agencies, and the consequent duplication of services during the disaster recovery and response phases could be addressed by building stronger partnerships between local government and industry associations to encourage information sharing related to the needs of particular SME sectors.

- Monitoring and evaluation of government-led disaster recovery initiatives needs to be improved in order to inform and advance future delivery of support to SMEs.
- Awareness of climate change can be promoted through the use of multiple entry points rather than focusing exclusively on climate change. Due to the short-term planning horizons of SMEs, the information content must focus on a ten-year projection of climate change and its likely impacts on SMEs.
- Strategic planning as an entry point to climate adaptation planning. Given the short planning horizons of SMEs it is perhaps practical and profitable for SMEs to undertake strategic planning for a period of 5-10 years. Support organisations need to take an educative role in promoting the benefits of strategic planning to build adaptive capacity/business resilience. They also need to provide support in the form of grants, tax incentives and business advice to assist SMEs to develop and implement such plans.
- Increased government engagement with community organisations and investment in preparing them to be able to help themselves ensure business continuity and have the right skills and tools to do it.

6.2 Implications for future research

6.2.1 How do the research conclusions compare to other studies related to adaptation within the SME sector?

A theoretical framework based on political ecology and climate risks can be a powerful explanatory tool in examining the adaptive capacity of SMEs as well as understanding the wider context in which SMEs operate. In particular, it forces us to move beyond solely examining a person's or an organisation's access to key determinants of adaptive capacity such as information, technology and financial resources and instead, to question the relationships, perceptions, power inequalities and institutional structures that condition and mediate access. The research highlights that, although SMEs may have access to a certain resources, they may not necessarily be able to utilise their agency and transform these resources in making adaptive choices to ensure business continuity.

Previous studies on disaster management indicate low to moderate levels of preparedness amongst SMEs. For example, Howe (2011) in his study of SMEs located on the coastline of Florida in the United States found just over half the respondents had developed business emergency management plans which included high levels of precautionary actions amongst business owners. The study concludes that the key determinants of adaptive capacity include the types of businesses, their locations, and socio-cognitive characteristics of business owners. Similar insights related to the influence of cognitive factors were also found in our research. Turner and Slatter (2012) confirm the significance of integrating psychological aspects of extreme climatic events to resilience building efforts targeting SMEs. This finding resonates with the results in our study related to the need for long-term psychological support for SMEs affected by the impacts of extreme events. Vogel (2009) explores the extent of adaption within the business community in South Africa and stresses the overwhelming need for climate scientists and those stakeholders involved in formal adaptation efforts to interact with small businesses so that best-practice cases can be

promoted, constraints and opportunities can be documented and shared. Similar insights were also found in our study, particularly the need to create spaces for cross-fertilisation of knowledge between support organisations and SMEs. Keogh et al.,(2011) undertook a study of climate adaptation amongst various stakeholders, including a business community in Queensland, located in an area prone to frequent flooding. They conclude that businesses perceived cost as a barrier in adapting to future extreme events and perceived the risks of floods as a significant threat to business continuity.

Our study also confirmed that access to financial resources was a key barrier to adaptive capacity alongside time and human resources. Berkhout et al., (2006) in their study of direct and indirect impacts of climate change on business organisations conclude that businesses rarely take proactive adaption action autonomously; their behaviour is largely influenced by policy and market conditions and tend to draw upon resources external to the business. This finding also resonated with this study in which the adaptive capacity of SMEs was largely dependent on the adaptive capacity of the support organisations. Roggio (2011) in his study of the resilience of SMEs found that the internal resources of SMEs were significant predictors of business resilience in which self-efficacy beliefs was found to be a key predicator of resilience. Our study also revealed the importance of self-efficacy beliefs in coping with impacts of extremes events, particularly in the disaster recovery phase.

6.2.2 Future research directions

The aim of this study was to gain an understanding of the adaptive capacity of SMEs to climate change and variability, and to gain an understanding of the external support SMEs need during and after extreme climatic events. It was not the intention of this study to develop action plans or allocate specific responsibilities to any agency or organisation. It is important to note that this study had methodological limitations which relate in part to the challenges of working with the small business sector. Apart from the SMEs who were engaged in the online survey, other SMEs involved in the case study were selected through support organisations who contributed to the study and this may have introduced a sampling bias. Additionally, the study did not engage with those SMEs whose businesses may have failed after extreme climatic events. If the research team had been able to do so this may have increased our understanding of the processes that may have contributed to their failure.

To ensure that the key findings of this research are found to be valuable to both SME's and their supporting organisations, the following further work is suggested:

- An assessment of the efficacy of proactive adaptation actions adopted by SMEs and the types of values that drive these efficacy believes and the types of processes shaping these values
- Adaptation planning – what are the benefits of short term versus long term planning related to climate risks within the SME sector
- Climate information - What type of climate information do SMEs find useful? How could they better engage with climate change information?
- Increased studies in developing world contexts to understand the key processes shaping adaptive capacity of SMEs

- Examining the interactions between large businesses and SMEs shape the adaptive capacity of SMEs to climate risks?
- Understanding how SMEs ate adapting to slow onset changes to climate such as changing seasons, changes to ENSO, sea level rise etc.,?

More studies that focus on different contexts are likely to reveal underlying patterns of common processes that can improve the design of adaptation programmes and help map out policy pathways that support SMEs under a changing climate.

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APPENDIX A: CLIMATE ADAPTATION INITIATIVES and PROGRAMS RELEVANT TO SMEs

Initiatives/Programs	Description
Business Entry Point Initiative - business.gov.au website (Department of Industry, Innovation, Science, Research and Tertiary Education)	Provides information, tools and access to databases to support business activities on a wide range of areas, including emergency management and recovery and environmental management. Although it provides information and tools which may be relevant to building business adaptation capacity, these are not disseminated under the banner of climate change adaptation, nor specific tools for this are provided.
AusIndustry (Department of Industry, Innovation, Science, Research and Tertiary Education)	Specialist program delivery division. Programs relevant to supporting SMEs adaptive capacity include: • Small Business Support Line (SBSL) (open) "provides small business owners with a single point of contact to access information and referral services to improve their business sustainability and help better manage their business - including business start up information, banking, finance, accounting and marketing, advertising, small business counselling and information technology." http://www.ausindustry.gov.au/SmallBusiness/SBSL/Pages/SmallBusinessSupportLine.aspx • Textile, Clothing and Footwear (TCF) Small Business Program (SBP) (open) "aims to transform the business enterprise culture of established TCF small businesses and boost their capacity to be innovative. A maximum of $50,000 is available for a particular project." http://www.ausindustry.gov.au/Manufacturing/TextilesClothingandFootwearTCF/TextilesClothingandFootwearTCFSmallBusinessProgram/Pages/TCFSmallBusinessProgram-FactSheet.aspx • Small Business Advisory Services (SBAS) "objective is to maximise the growth potential, prosperity and sustainability of small businesses through enhanced access to information and advice on issues important to sustaining and/or growing small business. This program aims to improve the business skills of small business operators and owners. Funded Service Providers to assist small business through additional support and advisory services in response to the global financial crisis.

Initiatives/Programs	Description
	Consists of 2 initiatives: • Business Enterprise Centres – Advisory Services funding (closed) 37 Business Enterprise Centres were funded $42m over 4 years to fund the delivery of low cost small business advisory services through nominated BECs throughout Australia. This initiative aims to improve the business skills of small business operators, intending operators and independent contractors. • Natural Disaster Assistance funding (closed) 25 advisory service providers have been granted $2.5 m to enable them to expand and strengthen their capacity specifically to provide additional low cost business advisory services to businesses that have been directly and/or indirectly affected by the natural disasters that have occurred in Australia since October 2010." http://www.ausindustry.gov.au/SmallBusiness/SmallBusinessAdvisoryServices/Pages/SmallBusinessAdvisoryServices%28SBAS%29.aspx • Clean Technology Innovation Program (funding will be awarded from July 2012. A call for applications will be launched mid 2012) "The Government has allocated $200 million over five years to the Clean Technology Innovation Program. The program will support the research, development and commercialisation of clean technology products, processes and services. It will fund the development of a range of clean technologies including low emission and other energy efficient technologies. The program targets: • Australian companies, including small business and individuals (committed to form a company if offered funding); and • Australian companies collaborating with research institutions or other companies (both domestic and/or international)." http://www.ausindustry.gov.au/CleanTech/Innovation/Pages/InnovationProgram.aspx • Climate Ready Program (closed) "Climate Ready supports small and medium-sized businesses. Companies can apply for funding for any or all aspects of the development of an innovative product, process or service including research and development, proof-of-concept, and early-stage commercialisation. Provides grants from $50,000 to $5 million on a matching funding basis to support projects that

Initiatives/Programs	Description
	address the effects of climate change." http://www.ausindustry.gov.au/InnovationandRandD/ClimateReadyProgram/Pages/ClimateReadyProgram.aspx • Re-tooling for Climate Change (closed) "program provided grants to small and medium sized Australian manufacturers to assist them reduce their environmental footprint, through projects that improve the energy and/or water efficiency of their production processes. The program provided grants of between $10,000 and $500,000, up to a maximum of half of the cost of each project." http://www.ausindustry.gov.au/InnovationandRandD/Re-toolingforClimateChange/Pages/Re-toolingforClimateChange.aspx • Green Building Fund (closed) "Grants of between $50,000 and $500,000 are available, for up to half of the cost of retro-fitting and/or retro-commissioning a commercial office building, hotel or shopping centre to become more energy efficient and so reduce greenhouse gas emissions." http://www.ausindustry.gov.au/InnovationandRandD/GreenBuildingFund/Pages/GreenBuildingFund.aspx • Commercialising Emerging Technologies (COMET) (closed) "merit-based assistance program which provided tailored support to early-growth stage companies, spin-off companies and individuals, to help them commercialise their innovations." http://www.ausindustry.gov.au/InnovationandRandD/CommercialisingEmergingTechnologiesCOMET/Pages/CommercialisingEmergingTechnologies%28COMET%29.aspx
Enterprise Connect (Department of Industry, Innovation, Science, Research and Tertiary Education)	"connects business to the knowledge, tools and expertise necessary to improve productivity, increase competitiveness and fully capitalise on the growth potential of businesses. Services are delivered through a network of state-based Manufacturing Centres and five specialist Innovation Centres strategically positioned around the country. Centres are staffed by teams of highly skilled and experienced Business Advisers who deliver a customised Business Review at no cost. From there, eligible businesses may be able to access a range of additional services provided by Enterprise Connect." In addition, "from time to time, Enterprise Connect may consider awarding discretionary grants to fund specific projects which are considered worthy of support." http://www.enterpriseconnect.gov.au/about/Pages/default.aspx
Commercialisation Australia	''Merit based, competitive assistance program delivered by the Australian Government that provides an integrated, hands-on approach to help take products, processes and services to

Initiatives/Programs	Description
(Department of Industry, Innovation, Science, Research and Tertiary Education)	market. It offers a range of tailored assistance measures for specialist advice and services, proof of concept and early stage commercialisation activities.” http://www.commercialisationaustralia.gov.au/AboutUs/Pages/default.aspx
Climate Change Action Fund	“The NSW Government's $700 million Climate Change Fund was established in July 2007 to help business, households, schools, communities and government save water, energy and greenhouse gas emissions.” http://www.environment.nsw.gov.au/grants/ccfund.htm
Energy Efficiency for Small Business Program	“Available to businesses that use up to approximately $20,000 in electricity a year or have up to about 10 fulltime employees. The program offers: • a subsidised energy assessment and tailored energy action plan • 50% off installation costs up to $5,000 (for businesses using $5,000-$20,000 a year in electricity) and up to $2,000 (for businesses using less than $5,000 a year in electricity) • coordination assistance by an assessor to install energy saving improvements, at no cost to the business (up to four hours).” (http://www.environment.nsw.gov.au/sustainbus/smallbusenergy.htm)
Sustainability Advantage Program	“Helps business organisations to: • Manage environmental risk and ensure compliance • Use resources more efficiently • Integrate environmental strategies with business planning • Measure their carbon footprint and manage their emissions • Enhance customer, supplier and community relationships, and • Engage and train staff to become an employer of choice.” Brings together groups of businesses into clusters that share regional, industry or supply chain interests. Cluster meetings held 3-4 times a year provide an opportunity to draw on the ideas and experiences of like minded organisations.” (http://www.environment.nsw.gov.au/sustainbus/sustainabilityadvantage.htm)
Zurich Insurance programme for training insurance brokers to help	Zurich Insurance has been nominated by NCCARF as a champion for its programme for training insurance brokers to help SMEs adapt to climate change. The NCCARF Adaptation Champions program highlights the

Initiatives/Programs	Description
SMEs adapt	actions and achievements of individuals, groups, communities and organisations that are demonstrating leadership and innovation in adapting to, and preparing for, the impacts of climate change. (http://climatetasmania.com.au/2011/04/08/climate-adaptation-champions)
ClimateSmart Adaptation Plan 2007-12	• Queensland's *ClimateSmart Adaptation Plan 2007-12*, taking into account the latest national and international science and policy. An Issues Paper—Review of the Queensland Government climate change strategy was released in September 2008 for public consultation. Over 70 submissions were received from the community and stakeholders on the major issues facing Queensland's sectors. All public comments received have helped to shape measures under the revised strategy. • "Climate Change: Adaptation for Queensland Issues Paper" – consultation period closed. Feedback will help inform the development of the final strategy, which is due to be released in 2012. • Under *ClimateSmart 2050* - Establishment of the $50 million Smart Energy Savings Program to assist Queensland small-to-medium businesses improve energy efficiency in buildings and industrial processes. http://www.climatechange.qld.gov.au/whatsbeingdone/queensland/strategies.html
Tourism and climate change support	• http://www.tourism.wa.gov.au/Policies_Plans_Strategies/Climate_Change/Pages/Climate_Change_Tools_and_Resources.aspx (WA) • http://www.tq.com.au/resource-centre/new-sustainability-and-climate-change/whats-the-fuss-about-climate-change/whats-the-fuss-about-climate-change_home.cfm (QLD) • http://www.tourismtasmania.com.au/industry/climate_change (Tasmania)

APPENDIX B: ONLINE SURVEY QUESTIONS

The first part of this survey is designed to gain relevant background information about the business that you represent.

Q1 What is your role in the business (you can choose more than one category):

Owner	Manager	OH&S coordinator	Environmental officer	Business strategist	other (please specify)

Q2 Location of business (you can choose more than one category):

NSW	WA	QLD	SA	TAS	NT	VIC	ACT

Q3 How many people are employed in the business: Total: Permanent/Fulltime:

Q4 How long has the business been operating?

<1years	1-5 years	5-10 years	11-25 years	26-50 years	>50 years

Q5 Ownership model:

Sole trader	Family business	Board of owners	part of a franchise	Enterprise group

other (please specify)

Q6: In which sector(s) does your business fall into?

Accommodation and Food Services	Manufacturing
Administrative and Support Services	Mining
Agriculture, Forestry and Fishing	Other Services
Arts and Recreation Services	Professional, Scientific & Technical Services
Construction	Public Administration and Safety
Education and Training	Rental, Hiring and Real Estate Services
Electricity, Gas, Water and Waste Services	Retail Trade
Financial and Insurance Services	Transport, Postal and Warehousing
Health Care and Social Assistance	Wholesale Trade
Information Media &Telecommunications	

Q7 What products and/or services does the business provide?

Q8 What is the business' average annual turnover?

$0 - $50 000	$50 000 - $200 000	$200 000 - $750 000	$ 750 000 - $ 2 Mil	$ 2 Mil - $ 5 Mil	> $ 5 Mil

Q9 What is the typical planning horizon of the business when planning for new ventures or other changes?

<2years	2-5 years	5-10 years	10-20 years	>20 years	No formal planning	I don't know

One of the key purposes of this survey is to gain an understanding of how SMEs have coped in the past when confronted by damage, disruptions and/or operational challenges due to extreme weather events.

Q10 Please rank up to three extreme weather related events that may have adversely affected the business in the past 5-10 years (1 being worst from your business point of view)

Flooding	Drought	Bush fires	Heat waves	Coastal Storm surges	Tornados	hails storms	dust storms	Tropical cyclone	None

If none or other(s) (please specify)

Q11 How was the business affected by the worst event in Q10? (you can choose more than one category)

Not affected	Direct damage to property	Production process/Service disruptions	Staff working conditions adversely affected	Supply chain disruptions
Staff affected by transport disruptions	customers affected by transport disruptions	changes in consumer behavior	product distribution disruptions	increased cost of insurance
Increased cost of input resources	changes in government regulations	I don't know		other (please specify)

Q12 How did the business overcome the obstacles/damage caused by the worst extreme weather event?

Q13 What has been done or changed by the business to avoid this damage/disruption in the future? (i.e. on going long term actions)

Q14 How would you rate the threat of weather related impacts to the viability of the business in relation to other risk considerations?

Not at all important	Less important	Equally important	More important	I don't know

Q15 Do you plan for risks due to extreme weather related events alongside planning for other business related risks?

Yes	No	Sometimes	I don't know

Q16 How do you think the worst weather related event your business experienced will change in the future (you can choose more than one category)?

Become more frequent	less frequent	more intense	less intense	no change	I don't know

Scientific climate projections based on historical data suggest that changes in the long term trends for average temperatures, rainfall and sea levels are likely in most parts of the world.

Q17 To what extent do you believe that changing climate trends represent a real problem for Australia?

not at all	somewhat	very much	completely	I don't know

Q18 How important is responding to changing climate trends for the business?

Not at all important	Somewhat important	Very important	Extremely important	I don't know

Q19 Has the business done anything to respond to future changes in the climatic trends?

Yes	partially	no	I don't know

Q20 If you answered "Yes" or "Partially" to Q19, then please list what some of the strategies are:

Q21 What key barriers does your business face when preparing/planning for future extreme events and/or changes in climate trends? (you can choose more than one category)

Lack of knowledge about climate change to make informed strategic decisions	Lack of staff expertise in this area	Lack of up to date information (such as extreme weather forecasts) to make informed operational decisions	Lack of finance	Competing priorities	No obstacles	I don't know

other (please specify)

Q22 What type of support is needed for the business to overcome these obstacles, if any?

Q23 Provide the nature of any support you have received after an extreme weather event and state by whom, if any? (eg. financial, emotional, etc)

Q24 What were some of the key external organisations/networks who were effective in helping your business plan for and/or cope with extreme weather events, if any?

Q25 What opportunities or benefits do you see for your business as a result of future climate trends and extreme events, if any?

If you have any other comments related to the topics and questions covered in this survey or about the research in general, please include here:

APPENDIX C: STAKEHOLDER INTERVIEW QUESTIONS

INTERVIEW WITH ORGANSIATIONS THAT WORK WITH SMEs"

SECTION A: General questions to set the context

Name:

Organisation :

Role:

Background

1) Can you please briefly describe your role in your organization *?*

2a) What are some of the key challenges or business risks the SME sector in (NSW, Perth or Australia) are facing now?

b) expected to face in the future?

3a) How is your work or that of your organisation's linked to supporting SMEs? (Please describe these programmes , how long are the programmes, tools and outputs of programmes)

b) What are the key SME sectors that you provide support to?

4) Have any of these SME sectors you provide support to been affected by extreme weather events(e.g., flood, bushfires, sea level rise, storm surges)? If so, what are the events, which SME sectors and how have they been affected?

Climate and weather related risks

5a) Has/does your organization provide support (e.g., tools or programmes) for SMEs to overcome these climate and weather related impacts, or plan to avoid them in the future (please explain)?

b) What have been some of the challenges in providing and delivering this support for SMEs?

c) What can be done to improve on the delivery and uptake?

d) Are you aware of other organizations directly or in-directly working in this space? Who and what do they provide?

6) In your experience, have some SME's learnt from the past impacts and made changes eg, the way they operate, source weather projections, technological changes, etc?

7a) Are you aware of any SMEs that have proactively implemented weather related risk reduction measures (or adaptation)?

b) Are you aware of any SMEs that would benefit from implementing a proactive weather related risk reduction (or adaptation) measure but has not?

8) What do you believe are the key barriers or challenges facing SMEs that prevent them from engaging in planning and/or implementation these types of proactive weather related risk reduction measures (adaptation)?

b) What can be done to overcome them?

Social Networks and Internal Capacity

9) How do you see the vulnerability of SMEs to climate risks and other shocks in comparison to larger businesses? Please explain.

10) Earlier (Q5d) you mentioned some key organizations or networks that support the needs of SMEs. Are there any support functions that are vital but missing from the landscape? If yes, who should lead the way.

11) In general, how does your organisation currently learn or gain information about the various needs and concerns of the SME sector?

12) What improvements or additional internal training, info or capacity building needs are required within your **own organisation** so that you can better support the needs of SMEs in adapting to climatic and weather related risks?

13) Some of the challenges confronting SMEs during extreme climatic events or changes in climatic trends include radical alterations to the business climate through loss of customers, declining demand for goods and services a business offers or loss associated with the disruption to local business context. No amount of loans or insurance can compensate for this. How could your organisation be able to deliver programmes to address some of these needs to build long-term resilience into SMEs (or target other actors who are interlinked to SMEs)?

Questions for Local Councils

14) Are you building the capacity of your local communities to adapt to climate change? If yes, how?

15) Are you building the capacity of your assets and services to the impacts of climate change? If yes, how?

16) If you have an adaptation plan, to what extent do your plans engage with and address the needs of the private sector, specifically SMEs?

[END] Any other comments you would like to add?

INTERVIEW WITH CASE STUDY SMEs

Name of business:

Location:

Position of Interviewee:

Background:

1) Have you undertaken the online survey? [f not, please encourage the interviewee to do so, preferably before interview.]

2a) Can you please describe the key services your business provides ?

b) In which sector(s) does the business fall into?

c) How many staff (full-time and part-time) you employ?

d) How long has the business been operating?

Planning:

3) You stated in the survey that you typically plan X years ahead. What does this planning entail? Do you consider weather related impacts?

OR

What is the typical planning horizon of the business when planning for new ventures or other changes?

<2years	2-5 years	5-10 years	10-20 years	>20 years	No formal planning	I don't know

What does this planning typically entail? Do you consider weather or climate change related impacts? Prompt these could include floods, heat waves, bushfire, sea level rise.

4) Can you please describe a past disruption or stress to your company's business continuity (e.g., the global financial crisis)? How did you respond? What key factors alleviated this stress? What were some key learnings from this experience?

Past Impacts:

5) In the survey you mentioned that the most frequent weather related impact you have experienced was X, and that it affected you adversely in the following way X. Can you elaborate on this please?

OR

Has your business been affected by adverse weather events (e.g., floods, bushfires), including Sea Level Rise or extreme high tides? If yes, then please explain how?

6) You mentioned in the survey that you overcame this event by X. Could you elaborate?

OR

How did the business overcome these obstacles/damage discussed above?

7) Did you receive any support from anyone, family or organization? If yes, in what form was this (financial, emotional, in-kind…) and how were these used specifically to deal with the impacts?

8) What, if anything, has been done or changed by the business to avoid this damage/disruption in the future?

Future events

Scientific climate projections based on historical data suggest that changes in the long term trends for average temperatures, rainfall and sea levels are likely in most parts of the world (e.g., the frequency of extreme climatic events such as floods are increasing).

9) Do you have a view point on this statement?

10a) What plans or actions, if any, has your business put in place to accommodate these future uncertainties [in weather]?

b) What convinced you to do this?

11) What challenges have hindered your business from preparing in some way for these future uncertainties in weather and climate impacts?

12) What new business opportunities if any, may arise for your company under these changed climatic conditions?

13) What type of support is needed for your business to overcome obstacles to preparing and planning for future changes to climate trends, if any? (e.g. planning for future water shortages, preparing for rising sea levels; changing building designs, preparing for extreme weather events, and changing plans for land use)?

14) In what sort of format do you prefer to get your information provided?

15a) Are you a member of any business association or networks? What are they?

b) How often does your organisation meet with these networks and what do you often discuss

c) Which government agencies is your organisation closely linked with and what do you gain from these linkages?

d) how connected is your organisation to your local community?

e) Do any of these linkages need strengthening in order to better support your needs?

16) From where to you gain information about climatic impacts?

17) How does the network or associations that you mentioned earlier, if any, assist you with understanding future weather and climate changes and developing appropriate responses eg. Planning, actions etc.?

18) What could be done at the following levels of government and by private organizations to ensure business continuity of SMEs under a changing climate?

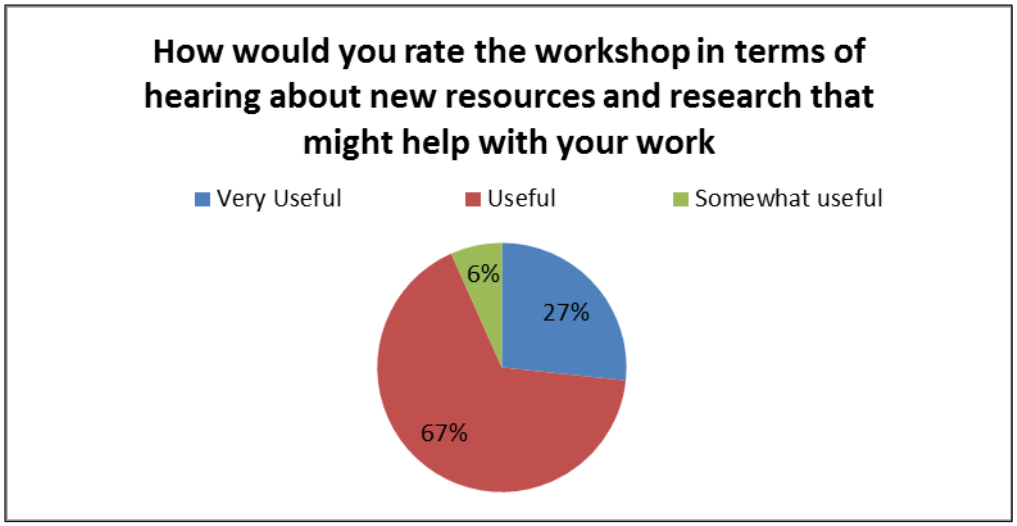
a) Local govt
b) State
c) Federal
d) Finance and Insurance providers

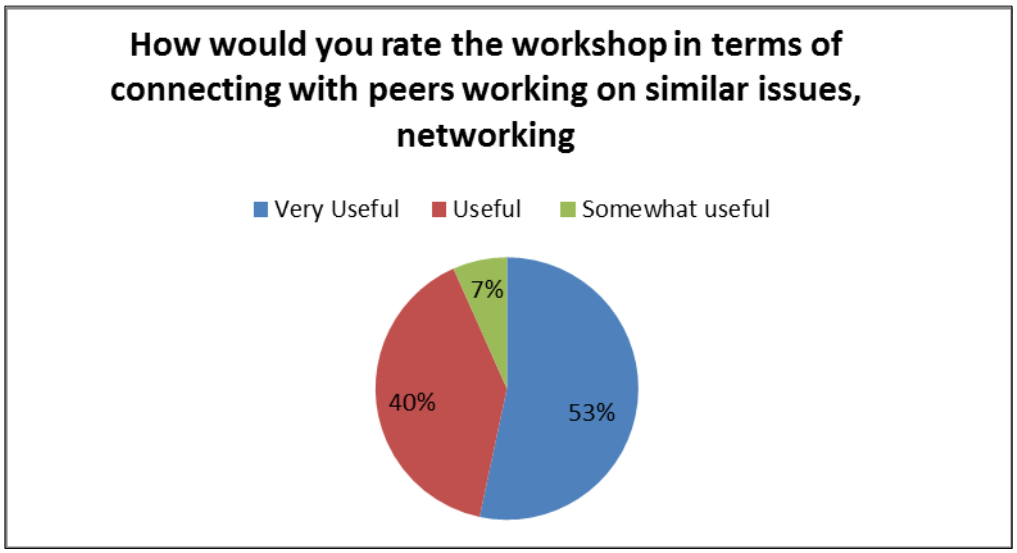
19) Some of the challenges confronting SMEs during extreme climatic events or changes in climatic trends include significant alterations to the business climate through loss of customers, declining demand for goods and services a business offers or loss associated with the disruption of local business ecologies. No amount of loans or insurance can compensate for this. What steps may your business take to build resilience to these changed circumstances?

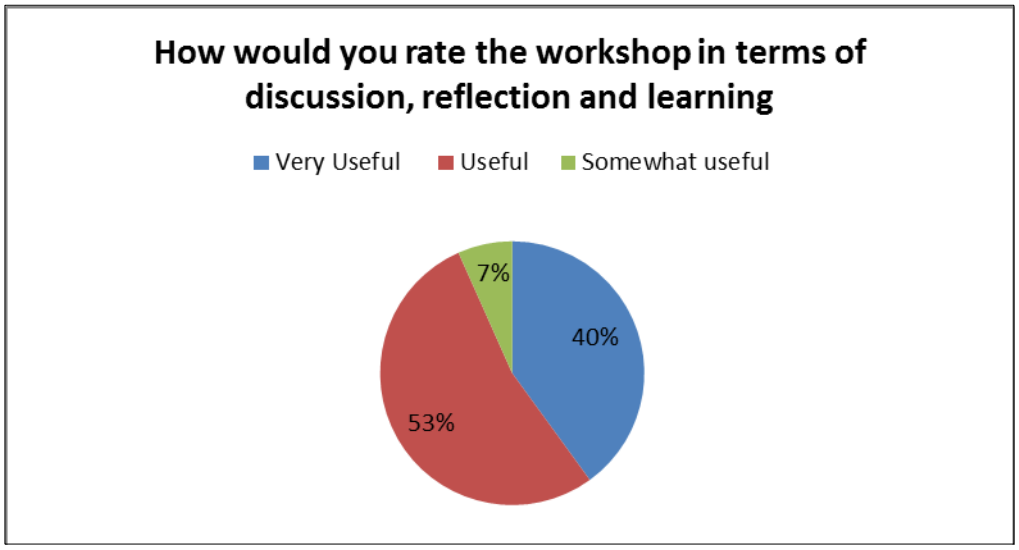
[END] Any other comments you would like to add?

APPENDIX D: PARTICIPANT FEEDBACK FROM WORKSHOP

Participants were given the opportunity to provide feedback on the workshop through an evaluation form. The figures below provide a summary of the evaluation results.







APPENDIX E: CASE STUDIES

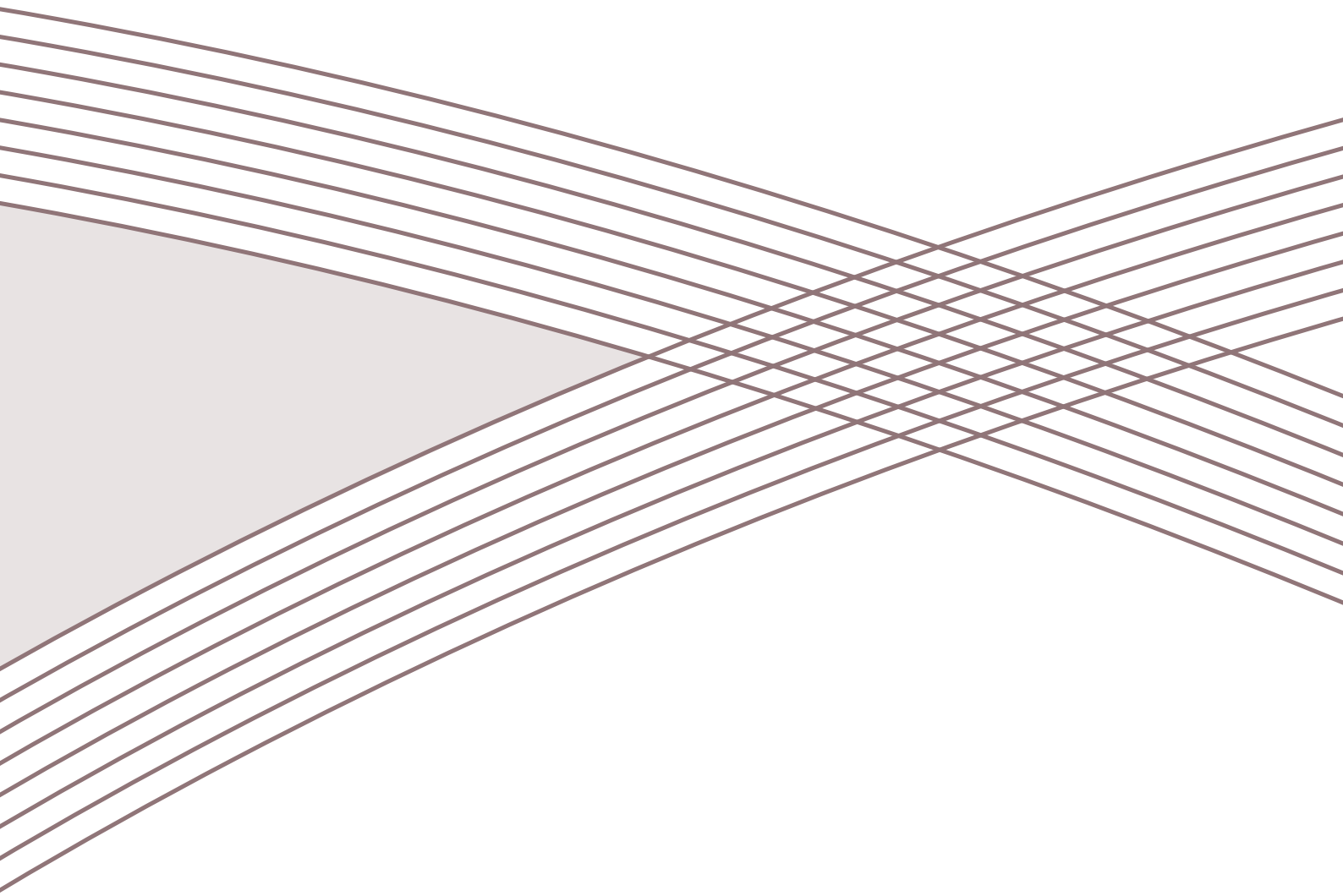
A. Impacts of slow onset changes to climate on small businesses in New South Wales

B. Small businesses and cyclones in north east Queensland

C. Small businesses and drought in south west Western Australia

D. Small businesses and bushfires in Victoria

E. Small business advisors and extreme weather events in Victoria



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