School of Management

Evaluating the Effect of a Pilot Drought Policy Measure on Farmer Practices and Behaviour

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Declaration

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgment has been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

The research presented and reported in this thesis was conducted in accordance with the National Health and Medical Research Council National Statement on Ethical Conduct in Human Research (2007) – updated March 2014. The proposed research study received human research ethics approval from the Curtin University Human Research Ethics Committee (EC00262), Approval Number # HR SOM-18-11 and HR SOM-3-2012.

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Abstract

This research examined the mid-term effect of the Farm Planning program on the capacity, behaviours and resilience of participating farm businesses. The Farm Planning program was a policy measure piloted by the Australian Government and Western Australian Government. The program was to help farm businesses develop strategic plans that support preparedness and self-management of future risks. As a pilot, it was important to understand the programs' actual effects and its' potential contribution to the objectives of the overarching National Drought Policy. The central research question was: to what extent does participation in the Farm Planning program influence farm businesses resilience?

The principles of theory-based evaluation guided the research. A mixed methods approach was used to determine the impact of the program on participant capacity and behaviours, and to investigate the potential impact of the program on farm business resilience. The factors influencing program effectiveness were also identified. Semi-structured interviews ($n = 8$) and structured surveys ($n = 141$) were undertaken with farm businesses 12-18 months after they had completed the program. Results were compared to data collected via structured questionnaires from non-participating farm businesses ($n = 171$) and secondary data collected from participating businesses prior to their participation in the program and on immediate completion of the program. The study was limited by various factors (such as the comparison of data collected through different methods). However, actions were taken to minimise the limitations of the research design.

The research revealed mixed results in terms of the mid-term effect of the program on participant attitudes and beliefs, but positive effects on participant understanding and skill levels. The program increased the number of farm businesses with strategic plans, and 92% of the businesses with a strategic plan were putting the plan into action. However, intentions to continue to use and implement strategic plans were uncertain, and several factors affecting plan development and implementation were identified. While the program facilitated strategic plans that included social, environmental and economic components, the resilience-building ability of the activities was questionable, and the economic components of the plans were clearly prioritised over the social and environmental. Consequently, the contribution of the program to farm business resilience was tenuous.

The results indicated a tension between the process used by the program to develop strategic plans (i.e. participant self-discovery of their risks and ways to address these for their particular circumstances) and the policy objectives. A shared understanding of the pressures for change may better support planning that aligns with policy objectives. Mechanisms to support ongoing planning and the implementation of strategic plans are required to address

the barriers impeding these activities, and to reinforce the capacity changes effected by the program. Future research is required to examine the longer-term use of strategic planning and plan implementation by Farm Planning program participants, and to evaluate their resilience.

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Glossary of key terms

This glossary provides definitions of the key terms used in this thesis. The definitions are for the purpose of this thesis only.

Attitudes: The way the research participants think or feel about specific concepts or topics.

Behaviours: The ways in which the research participants act/have acted, including the practices that they undertake. Two key areas of 'behaviour' are considered in this research: a) strategic planning behaviours/practices; and b) resilience-building behaviours/practices.

Capacity: Collectively, the skills, knowledge, awareness and perceptions of the research participants.

Implementation theory: 'The hypothesised links between a programs' activities and its anticipated outcomes' (Blamey and Mackenzie 2007, 444) — that is, the supposition that a program's anticipated outcomes will be achieved by delivering certain activities.

Program logic: A term used to describe a program's theory of change. Program logic models are used to graphically present a theory of change.

Program theory: 'The hypothesised causal links between mechanisms released by an intervention and their anticipated outcomes' (Blamey and Mackenzie 2007, 445) — that is, the cause-and-effect pathways resulting from a program's activities.

Programmed learning: A model of extension where 'specifically designed training programs/workshops [are delivered] to targeted groups … to increase understanding or skills in defined areas' (Coutts and Roberts 2003, 3).

Resilience: The ability to recover from an event, such as drought, through change and adaptation.

Short/mid/long-term: Short-term refers to the time immediately following the completion of the Farm Planning program; mid-term refers to one to two years after completing the Farm Planning program; long-term refers to five or more years after completing the Farm Planning program.

Strategic management: The use of strategic planning within a farm business, including implementation and review of the strategic plan.

Theory of change: The logical underpinnings of how a program will bring about change. It combines the implementation theory with the program theory.

Chapter 1. Introduction

1.1 Background to the research

Australia has one of the most variable rainfall climates in the world, with extreme temporal and spatial variation (Botterill 2006; Productivity Commission 2009; Wilhite 1986). Despite the trying conditions, agriculture is an important contributor to the Australian economy, and sectoral output continues to increase (Productivity Commission 2009). There is, however, a strong correlation between farm performance and the vulnerability of the farm to drought (Productivity Commission 2009). With drought a recurrent, natural feature of the Australian landscape (Botterill 2000; Huda and Evans 2009; Productivity Commission 2009; Wilhite 1986), the farming sector must be able to readily adjust to changing circumstances for it to remain successful (Wilhite 1986).

Drought policy, and associated support programs, have been formulated by Australian governments since the 1930s (Wilhite 1986). The National Drought Policy, adopted in 1992, guides the current governmental response to drought within Australia (Box 1.1). This policy recognises drought as a recurrent feature of the Australian climate and has a longer-term focus on 'creating an environment of self-reliance and preparedness' (Department of Agriculture, Fisheries and Forestry 2010, 1), particularly for Australia's agricultural sector. Previous policies treated all drought events as natural disasters, thereby evoking 'short-term, crisis-framed responses' (Kenny et al. 2008, 7) from governments (Botterill 2006; Laughlin and Clark 2000). Despite the focus on self-reliance and preparedness, much of the government work delivered under the National Drought Policy continued to focus on the short-term (Kenny et al. 2008; Productivity Commission 2009).

Box 1.1: Objectives of the National Drought Policy (National Drought Policy 1992, 1)

- Encourage primary producers and other sections of rural Australia to adopt self-reliant approaches to managing for climate variability.

- Facilitate the maintenance and protection of Australia's agricultural and environmental resource base during periods of climatic stress.

- Facilitate the early recovery of agricultural and rural industries, consistent with long-term sustainable levels.

A number of financial assistance schemes were introduced to provide assistance to farmers during exceptional circumstances — that is, when drought conditions were beyond what was considered part of normal risk management (Keogh, Granger and Middleton 2011). Under the Exceptional Circumstances (EC) system, the region had to be declared as an EC area before financial support could be accessed (Keogh, Granger and Middleton 2011). However, from the policy's inception there were only five years in which less than 10% of Australia's agricultural land was EC declared (Productivity Commission 2009), and this impacted on the governments' ability to deliver on the National Drought Policy objectives. According to Botterill (2000, 3), 'the exceptional circumstances provisions were triggered almost immediately and became the largest expenditure item in the Rural Adjustment Scheme 92 budget over the next four years ... From early 1993, the Minister was responding to a continuous stream of requests for exceptional circumstances declarations and there were ongoing debates about the definition of drought and at what point it became exceptional.'

With climate predictions pointing toward a drying climate and drought becoming a more common feature of the Australian landscape (see Hennessy et al. 2008), the Australian Governments' Primary Industries Ministerial Council agreed that current approaches to drought were no longer appropriate, and policy reform was required to take into account climate change. In 2008-2009, a comprehensive review of Australian drought policy was undertaken (see Hennessy et al. 2008; Kenny et al. 2008; Productivity Commission 2009). This review revealed the government response to drought as neither an appropriate nor an effective long-term approach in light of a changing climate (Kenny et al. 2008; Productivity Commission 2009).

The recommendations from the review highlighted, amongst other things, the need for ongoing farmer support in the form of advice and/or training to address farm sustainability that acknowledges a changing climate (Kenny et al. 2008; Productivity Commission 2009). The review also emphasised that any reform should acknowledge and address social aspects of farm resilience alongside the traditional focus on production, profitability and natural resource management (Kenny et al. 2008).

In response to the findings of the national review of drought policy, a suite of programs were developed 'to better help farmers, farm families and rural communities prepare for and self-manage drought and future challenges' (Department of Agriculture, Fisheries and Forestry 2010, 1) — and therefore better contribute toward the objectives of the National Drought Policy (Department of Agriculture, Fisheries and Forestry 2010; Kenny et al. 2008). Through an agreement between the Australian and Western Australian governments, the programs were piloted in part of Western Australia from 1 July 2010 until 30 June 2012 under the banner of 'The Pilot of Drought Reform Measures' (Department of Agriculture, Fisheries

and Forestry 2010) (Figure 1.1). The stated outcomes of the Pilot of Drought Reform Measures were as follows (Keogh, Granger and Middleton 2011, 11-12):

- Farmers and farm families can better adapt and adjust to the impacts of drought, increased climate variability and reduced water availability.
- A more effective social support system for farm families and communities.
- Farmers are encouraged to adopt self-reliant approaches to managing farm risks.
- Farmers are encouraged to more sustainably and efficiently use Australia's natural resource base and water resources.

The focus of this research is on one of the seven programs delivered under the Pilot of Drought Reform Measures — the Farm Planning program. The Farm Planning program provided training for farm businesses to develop or update a strategic plan for the business. The plans focused on priority activities to help the business better prepare for and self-manage future risks such as drought and a changing climate (Keogh, Granger and Middleton 2011) — in essence, to become more resilient. The program took a holistic view, with strategic plans focusing on managing the natural environment and production, balancing work-life commitments and managing financial resources (Keogh, Granger and Middleton 2011). The program was delivered as a series of workshops (Noonan et al. 2012).
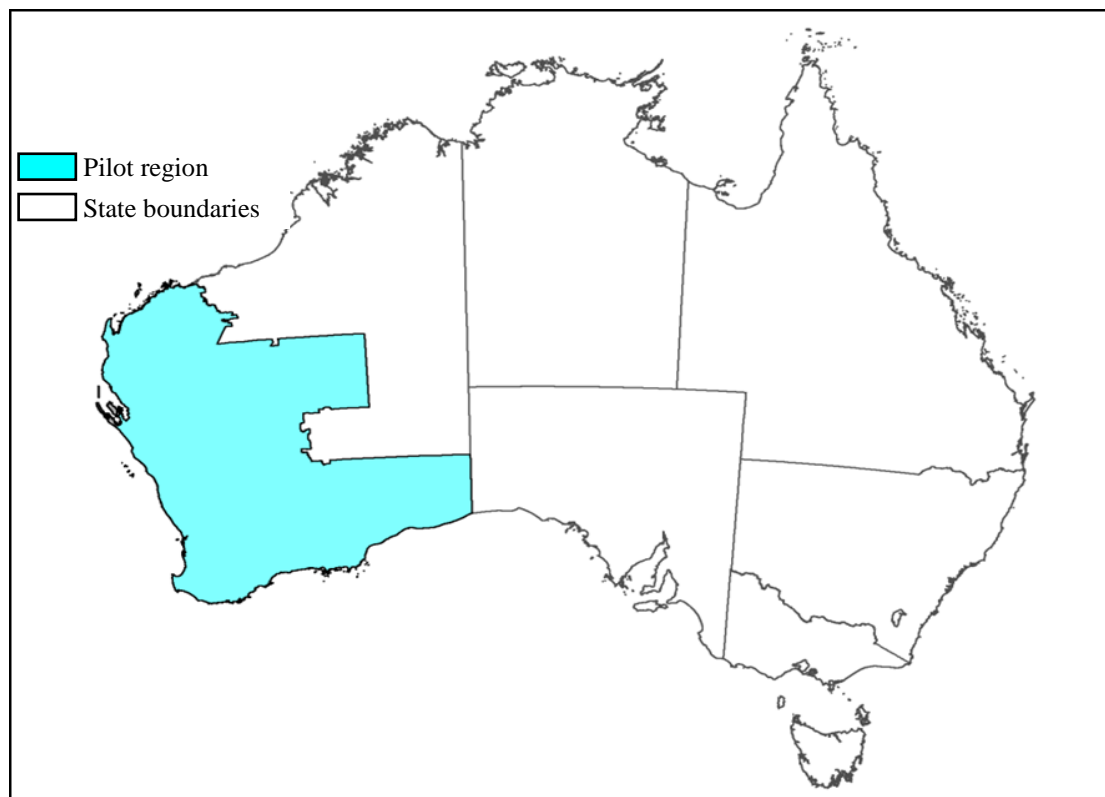
Figure 1.1: Area of Western Australia in which the Pilot of Drought Reform Measures was piloted

Source: Department of Agriculture

1.2   Research problem and objectives

The 2008-2009 review of the national drought policy prompted an important shift in government drought policy. It culminated in the Pilot of Drought Reform Measures and subsequent closure of the Exceptional Circumstances Interest Rate Subsidy scheme, which was a major financial assistance scheme for drought-stricken producers (SA Centre for Economic Studies 2008). The drought policy review identified the subsidy scheme as counterproductive to the policy objectives by 'making farm businesses less responsive to drought conditions' (Productivity Commission 2009, 153). It was anticipated that the new policy measures under the Pilot of Drought Reform Measures would improve the delivery of the policy objectives by focusing on helping farm businesses to become more resilient through better risk management and preparing for the challenges associated with drought (Keogh, Granger and Middleton 2011).

As a pilot program, it is important to understand the actual effects of the Farm Planning program and how these relate to the higher-order objectives of the National Drought Policy. Studies have been undertaken to identify the short-term impacts of the program (e.g. Keogh, Granger and Middleton 2011; Noonan et al. 2012; Storer et al. 2011). To date, no published study has looked beyond the immediate impact of the program to examine its potential to deliver the longer-term outcomes associated with 'resilience'. Accordingly, the central research question is: to what extent does participation in the Farm Planning program influence farm businesses resilience? Answering this question can provide information to assess the contribution of the policy measure to the objectives of the policy, and offer appropriate recommendations on how the policy measure may be improved to better meet the policy objectives.

As 'resilience' is a property that emerges over the long-term (Cabell and Oelofse 2012), the timing of this research requires a focus on the resilience-building actions and behaviours of the farm businesses that participated in the Farm Planning program. Accordingly, this research evaluates the mid-term effect of the Farm Planning program on the behaviours and practices of the participating farm businesses, and explores the association between capacity, behaviour and longer-term farm business resilience. There were four primary objectives:

1.   Determine the impact of the program on participant capacity.
2.   Determine the impact of the program on participant behaviours.
3.   Investigate the potential impact of the program on farm business resilience.
4.   Identify the factors influencing the effectiveness of the program.

1.3   Significance of the research

It is anticipated that this research will deliver recommendations to improve the effectiveness of the Farm Planning program and other similar initiatives. This is to be achieved by identifying and exploring the program outcomes, including their interactions and linkages, and the factors impacting upon these. The information derived from this research will help inform and improve program development and delivery into the future, and may enable the refinement of specific drought policy measures to better achieve the policy objectives.

The research also provides information on and analysis of farmer attitudes and behaviours. This can enhance the understanding of agricultural businesses and the values and needs that drive them, and will build on the work of others within the field. These valuable insights will help develop and/or refine agricultural projects working within water-limited environments to take into account the social, environmental and economic factors influencing farm businesses.

1.4   Thesis outline

This thesis is presented in nine chapters.

Chapter 2 provides an overview of the 'program evaluation' literature and discusses theory-based evaluation as a process to guide the development of an impact evaluation. The principles of theory-based evaluation are used to reconstruct the logic behind the Farm Planning program and a critical analysis of the program's theory of change is presented.

Chapter 3 investigates the assumptions underlying the Farm Planning program to test the program's theory of change against the literature. There are three sections to this chapter. The first section discusses resilience thinking and its application to farm businesses. It includes a critique of the empirical literature to determine the value of strategic planning within an agricultural context. The next section investigates the change process by highlighting some key change theories and models, followed by a discussion on current extension models and practice. The Programmed Learning model of extension is further explored within the context of farm business management training, followed by an examination of the factors influencing adoption and the role of incentives in bringing about changes in practice. The chapter concludes with an assessment of the literature against the Farm Planning program's theory of change in order to refine the theoretical and conceptual frameworks underpinning this research.

Chapter 4 describes and justifies the research methodology and design used to generate the data necessary to determine the impact of the Farm Planning program. The chapter begins with a description of the research paradigm and associated methodology, followed by a description of the research design and the key challenges.

In **Chapter 5** the demographic characteristics of the survey respondents are reported. The chapter also presents the findings relating to the reasons for participation/non-participation in the Farm Planning program, and an assessment of the characteristics influencing participation.

Chapter 6 focuses on the research results relating to the effect of the Farm Planning program on strategic planning. The chapter begins with an assessment of the influence of the program on participant attitudes and beliefs. Whether or not program participants will continue to use their strategic planning knowledge and skills into the future is analysed, including the identification of factors influencing strategic planning.

The results pertaining to the implementation of the strategic plans developed through the Farm Planning program are presented in **Chapter 7**, including the factors influencing implementation. The link between implementation and farm business resilience is also analysed, and the perceived resilience of program participants is assessed. Participant perspectives on the most significant change that resulted from their participation in the Farm Planning program are then described, with seven 'change' areas identified.

The results are discussed in **Chapter 8** with reference to the four primary objectives of the research — the impact of the Farm Planning program on participant capacity, behaviours and farm business resilience, and the factors influencing program effectiveness. The program's theory of change is reassessed in light of the research findings, and the link between the program outcomes and the objectives of the National Drought Policy is explored.

Chapter 9 summarises the major findings and conclusions of the research. The practical implications of the findings are discussed and recommendations are made that, when implemented, may improve the effectiveness of the Farm Planning program and other similar initiatives. In these discussions, the key limitations and learning experiences from the study are noted.

Chapter 2.   Logic of the Farm Planning program

2.1   Introduction

Uncovering the logic behind an intervention provides a practical guide for developing the evaluation purpose and questions, and identifying appropriate methods. By identifying the activities delivered through an intervention and the anticipated outcomes, cause-and-effect linkages can be hypothesised. This chapter documents the process used to uncover the logic underpinning the Farm Planning program, and details the resultant 'theory of change'.

The chapter begins with an overview of program evaluation, and then discusses theory-based evaluation as a process to guide the development of an impact evaluation. It is argued that theory-based evaluation provides a useful model to guide program evaluation. As such, the principles of theory-based evaluation were used to reconstruct the logic behind the Farm Planning program. The process used to reconstruct the program's logic is detailed, and a comprehensive description of the reconstructed logic (that is, the 'theory of change') is provided. The chapter concludes with a critical analysis of the program's theory of change. This analysis reveals key assumptions that may affect the success of the Farm Planning program.

2.2   Evaluating program impact

2.2.1   Program evaluation

There is no single recognised definition of program evaluation, with definitions typically reflecting the ideologies of the day (Dart 2005). However, as evaluation is essentially about judging merit (Weiss 1972), program evaluation is about judging the merit of a program. In this context, a program is 'any set of procedures, activities, resources, policies and/or strategies designed to achieve common goals or objectives' (Australasian Evaluation Society 2013, 3). Nevertheless, many evaluation theorists argue that evaluation encompasses more than making judgments (e.g. Dart 2005; Donaldson 2001; Owen and Rogers 1999). A common theme of the more sophisticated views concerns the use of the evaluation findings. Dart (2005, 628) offers a definition that typifies these views:

> 'Program evaluation concerns the systematic collection of information, in order to improve decision-making and enhance organisational learning, with the ultimate aim of bringing about programs that better meet the needs and lead to improved social, economic and environmental conditions.'

The beginnings of modern day program evaluation were evident during the Great Depression years in the United States, where rigorous process was applied to the administration of welfare (Kerr 2012). Since then, several theories driving evaluation practice have emerged to

keep pace with the requirements of an ever-changing socio-political environment (Sechrest and Figueredo 1993). These have evolved from an initial focus on assisting managerial decisions about program funding through to evaluation as a process to solve social problems (Scriven 2001); however, the earlier theories continue to be relevant today (Kerr 2012; Roberts and Coutts 2011). Whatever the theoretical stance, evaluation is recognised as a legitimate discipline that provides a significant contribution to programs, policies and services for the betterment of society (Donaldson 2001; Straton 2001).

2.2.2   Types of evaluation

Program evaluations can be categorised based on attributes such as purpose, method or audience (English, Cummings and Straton 2002). Owen and Rogers (1999) proposed five conceptual forms of evaluation based on purpose. Each form is generally applicable at a particular stage of a program, with a well-planned program involving comprehensive evaluation often including all five forms (Dart, Petheram and Straw 1998).

- *Proactive evaluation* takes place prior to the development of a program to identify the issues the program is to address.

- *Clarificative evaluation* clarifies the program design by assessing the theory or the logic of the program prior to its implementation — that is, assessing whether the planned activities are likely to result in the anticipated outcomes.

- *Interactive evaluation* takes place whist the program is being delivered to identify areas to improve its implementation.

- *Monitoring* is an ongoing process that collects data about the program to report to the program managers.

- *Impact evaluation* occurs at an 'end point' of a program to identify the program outcomes.

Overlaying these forms of evaluation are two distinct categorisations first proposed by Scriven in 1967 (cited in Weiss 1972) — formative and summative evaluation. Formative evaluation is generally undertaken during the development or early implementation of a program. It is used primarily as a management tool to identify improvements that can be incorporated into the delivery of the program. Summative evaluation is undertaken once the program is settled or at its conclusion, to identify the outcomes and effectiveness. Often, program evaluation will include both formative and summative approaches (Dart 2005). The form of evaluation most applicable to this research, which will be discussed further, is summative impact evaluation.

2.2.3 Impact evaluation

Traditionally, the evaluation of government programs focused on accountability for management and procedural matters, rather than the outcomes being delivered (Hurworth 2008; Mayne 2001). However, identifying and assessing program outcomes has become increasingly frequent with the growing emphasis on evidence-based practice and effective use of public funds (Blamey and Mackenzie 2007; Funnell 2005; Mayne 2001). As Owen and Rogers (1999, 263) state, 'Impact evaluation is predicated on the not-unreasonable assumption that citizens at large should know whether programs funded by government, or in which they have an interest, are making a difference.'

Identifying and assessing program outcomes may be categorised as an 'impact evaluation' (Owen and Rogers 1999). However, 'impact evaluation' has different meanings for different evaluation theorists and practitioners (White 2009). An important distinction relates to causality — that is, the extent to which a program causes or influences the anticipated and unanticipated outcomes (Mayne 2001; Pawson and Tilley 1997; Rockwell and Bennett 2004; White 2009). It is argued that true impact evaluation addresses causality. In contrast, an 'outcome evaluation' may identify the extent to which program outcomes were achieved without determining how the program was responsible (Scriven 1998).

In determining causality, it is necessary to identify the cause-and-effect linkages between the program activities and outcomes, and attempt to attribute these to the program (Mayne 2001; Rockwell and Bennett 2004). These 'causal pathways' may be simple (a single pathway), complicated (multiple and/or alternative pathways) or complex (recursive and/or emergent pathways) (Rogers 2008). Causality is at the heart of determining whether or not a program can be shown to have made a difference (Mayne 2001). Figure 2.1 provides a simplified diagram highlighting the differences between simple, complicated and complex causal pathways.

2.2.4 Theory-based evaluation

The cause-and-effect pathways, from program activities to outcomes and impact, illustrate the theories underpinning a program and are central to theory-based evaluation (Blamey and Mackenzie 2007; Coryn et al. 2011; Hurworth 2008; Leeuw 2012; Rogers 2008). Leeuw (2012) identifies a conceptual and an empirical component — 'conceptually, theory-based evaluations explicate a program theory or model. Empirically, theory-based evaluations seek to investigate how programs cause intended or observed outcomes' (Leeuw 2012, 350). That is, the evaluation identifies the theory and uses it as a conceptual framework to guide the evaluative investigations (Blamey and Mackenzie 2007; Donaldson 2007; Funnell 1997; Patton 2001; Rogers 2008). As such, theory-based evaluation includes two of Owen and Rogers' (1999) five forms of evaluation — clarificative evaluation and impact evaluation.
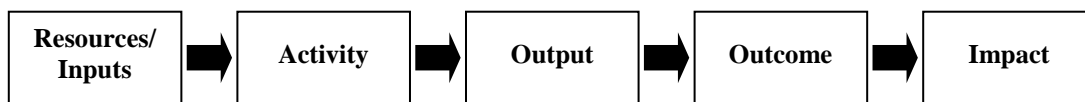
Simple causal pathway
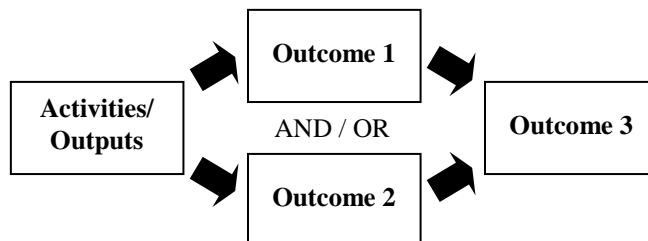
Complicated causal pathway
Multiple pathways - both outcome 1 and outcome 2 must be achieved to deliver outcome 3
Alternative pathways – outcome 3 may be delivered by achieving outcome 1 or outcome 2
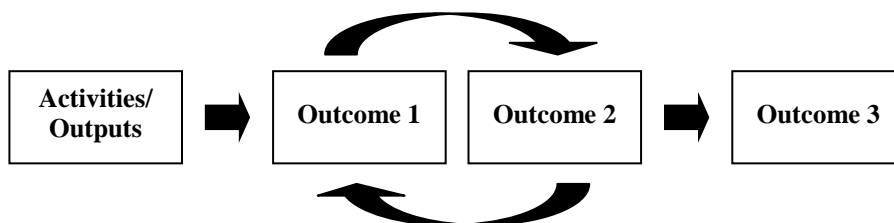
Complex causal pathway
Recursive pathways – 'initial success creates conditions for further success' (Rogers 2008, 38)
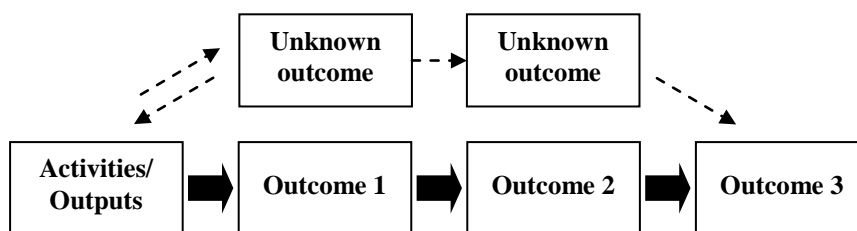
Complex causal pathway
Emergent pathways – 'specific outcomes, and the means to achieve them, emerge during implementation of the program' (Rogers 2008, 39)

Figure 2.1: Simple, complicated and complex causal pathways

Source: Adapted from Rogers (2008)

Two discrete theories guiding theory-based program evaluation are evident — 'implementation theory' and 'program theory' (Weiss 1997). Although diverse and interchangeable terminology plagues the evaluation literature (as illustrated by Blamey and Mackenzie 2007; Coryn et al. 2011; Dart 2000; Donaldson and Lipsey 2006; Rogers 2008), for the purpose of this thesis:

- implementation theory refers to 'the hypothesised links between a programs' activities and its anticipated outcomes' (Blamey and Mackenzie 2007, 444) — that is, the supposition that the anticipated outcomes will be achieved by delivering certain activities; and
- program theory 'refers to the hypothesised causal links between mechanisms released by an intervention and their anticipated outcomes' (Blamey and Mackenzie 2007, 445) — that is, the cause-and-effect pathways resulting from the program activities.

Combining the implementation and program theories gives the program's 'theory of change' (Weiss 1997). It must be noted that these 'theories' are essentially the beliefs and assumptions that underpin the activities being undertaken through the program, and may or may not be based on 'real' theory (Weiss 1997). As Weiss (1997, 503) states, 'Programs are usually designed on the basis of experience, practice knowledge and intuition.'

Support of theory-based evaluation has grown over recent decades (Donaldson 2007). There are several suggestions for this such as the increasing need to identify whether or not programs are making a difference (that is, whether the change is attributable to the program); and the practical value of developing a theory to guide the evaluation purpose, questions and methods (Owen and Rogers 1999; Roorda and Nunns 2009). Additionally, theory-based evaluation is underpinned by a belief in the 'cumulative approach to knowledge generation' (Blamey and Mackenzie 2007, 447). Determining *how* a program works (or does not work) to deliver the outcomes, as opposed to *if* a program works, separates theory-based evaluation from other evaluation types (Coryn et al. 2011). By uncovering the 'how', knowledge is built about 'what works for whom in what circumstances' (Tilley 2000, 4). However, this is also a key argument against theory-based evaluation — specifically, that it is not the role of evaluators to identify *how* a program works, only *if* a program works (Scriven 1998).

Context is key to understanding how programs result in outcomes. Programs do not operate in stable environments with identical people — events, trends, processes and a myriad of other factors outside the program's control can influence program outcomes (Blamey and Mackenzie 2007). Consequently, it is necessary to identify the context in which programs operate to enable an understanding of the circumstances that help or hinder program impact, and therefore causality (Blamey and Mackenzie 2007; Tilley 2000). However, this is not a

simple process (Cummings 2006; Mayne 2001; Pawson and Tilley 1997). Context may involve complex political, social, organisational and/or individual factors (Blamey and Mackenzie 2007; Mayne 2001; Renger et al. 2011), making it difficult to be confident that all the factors at play have been identified (House 2001). Despite these challenges, it is critical for evaluation to attempt to address causality against the complex backdrop in which programs operate, as this is the crux of whether or not a program can be shown to have made a difference (Funnell 2005; Mayne 2001).

2.3   The theory behind the Farm Planning program

2.3.1   Process to reconstruct the theory of change

Uncovering the theories behind a program are an essential first step in theory-based program evaluation as they provide the framework on which to base the key questions to be answered (Funnell 1997; Roorda and Nunns 2009). At the time of this research, an explicit theory of change had not been developed for the Farm Planning program (J. Noonan pers. comm. 2011). Consequently, the process to reconstruct the program's theory of change was exploratory, involving analysis of program documents, stakeholder discussions and observations of the program in operation to answer three key questions:

1. What were the documented intended outcomes of the program, pilot and overarching National Drought Policy? That is, what was the program theory?

2. What activities were delivered through the Farm Planning program to achieve the outcomes? That is, what was the implementation theory?

3. How did the program expect to contribute to the outcomes? That is, what was the theory of change?

This process, although not strictly adhered to, follows the policy-scientific approach (see Leeuw 2003). In this approach, careful reading and analysis of documents is used to identify statements relevant to a program's theory of change, and is strengthened by information obtained from interviewing relevant stakeholders (Leeuw 2003). Observing the program in action enabled a greater understanding of the actions taken to deliver the program outcomes. The analysis of program documents, stakeholder discussions and observations of the program in operation are valued approaches to reconstructing a program's theory of change (e.g. Hurworth 2008; Leeuw 2003; Lipsey and Pollard 1989; Owen 2004; Patton 2008; Weiss 1997), particularly in the absence of a well-defined theory (Leeuw 2003). There are, however, limitations to the approach. These are described below.

In reconstructing the program theory, document analysis uncovered a total of 63 statements relating to the intended outcomes of the Farm Planning program. As there were inconsistencies in the terminology, with the terms 'objectives', 'aims', and 'outcomes' used,

it was necessary to rephrase some of the statements into outcomes. Additionally, there was considerable repetition. The list of statements was therefore rationalised by grouping similar statements together. Appendix 1 lists the statements as recorded in the program documentation, and the rephrased outcome statements. The implementation theory, that is the supposition that the anticipated outcomes will be achieved by delivering certain activities, was reconstructed using program documents, stakeholder discussions and observations of the program in action.

The program and implementation theories were integrated to give the Farm Planning program's theory of change. This was depicted in a program logic model (see Rogers 2008) that was discussed and confirmed with the program manager. The theory of change was critically analysed to uncover the key assumptions made by the program developers that may have affected the success of the program in delivering the anticipated program outcomes.

There are limitations to the process used. Firstly, *undocumented* implicit theories were not actively sought to reconstruct the program theory. 'Implicit theories' refers to the 'causes implicitly assumed to produce intended changes' (Jacobs et al. 2012, 355). The process used to build the program theory remained true to the Farm Planning program by using only the *documented* statements, including explicit and implicit theories. This reduced the risk of inserting personal or political agendas and biases into the resultant theories underlying the Farm Planning program (see English and Kaleveld 2003; Leeuw 2003).

Additionally, rephrasing the documented statements into outcomes was not an infallible process, being based on personal interpretation (see Jacobs et al. 2012; Leeuw 2003). From an 'action-oriented evaluation' perspective — that is, evaluation to meet the information needs of the program developers/managers (Mayne and Hudson 1992 cited in English, Cummings and Straton 2002) — developing a theory of change in conjunction with program stakeholders is fundamental as it encourages future use of the evaluation findings (Patton 2008). For this research, key stakeholders were only engaged to confirm the reconstructed theory of change. The main reason being that this work was considered 'research-oriented evaluation' and, as such, aimed to gather and analyse information to enhance knowledge about the Farm Planning program as an intervention, which may then be applied to other similar forms of intervention (see Patton 2008). The approach taken is not contrary to some methodological positions espoused in the literature, whereby the focus is on identifying the cause-and-effect pathways as opposed to stakeholder consensus and understanding of the theory (e.g. Blamey and Mackenzie 2007; Pawson and Tilley 1997). However, in doing so, the utility of the evaluation results may be compromised if stakeholders disagree with the premise (i.e. theory of change) underlying this research (English and Kaleveld 2003; Jacobs et al. 2012).

2.3.2 Farm Planning program theory

The Farm Planning program was one part of a suite of drought policy measures that were developed to better deliver the objectives of the National Drought Policy. The new measures were designed to move away from the 'short-term, crisis-framed response' (Kenny et al. 2008, 7) of previous drought-related programs to focus on the long-term policy objectives (Noonan et al. 2012). The specific objectives of the program were to (COAG 2010, C-3):

- Enhance farmers' skills in business, natural resource management and personal planning with a particular focus on managing drought and climate variability; and

- Increase the number of farm enterprises with comprehensive strategic business plans.

The structural hierarchy for the Farm Planning program is presented in Figure 2.2, and may be seen to represent an 'outcome hierarchy' — that is, the outcomes of the Pilot of Drought Reform Measures contribute to the delivery of the National Drought Policy objectives, the outcomes of the Farm Planning program contribute to the delivery of the Pilot outcomes and so on. When reading Figure 2.2, the following points should be noted:

- Interventions other than the Pilot may also contribute to the delivery of the objectives of the National Drought Policy. Similarly, it was anticipated that the other six pilot programs would contribute to the delivery of the outcomes of the Pilot.

- Many activities were undertaken to deliver the aims of the Modules. Three are included in Figure 2.2 to illustrate the structural hierarchy.

- The 'other' interventions may include various programs, projects and/or activities not necessarily designed to deliver drought-related outcomes but, nevertheless, contributing to these.
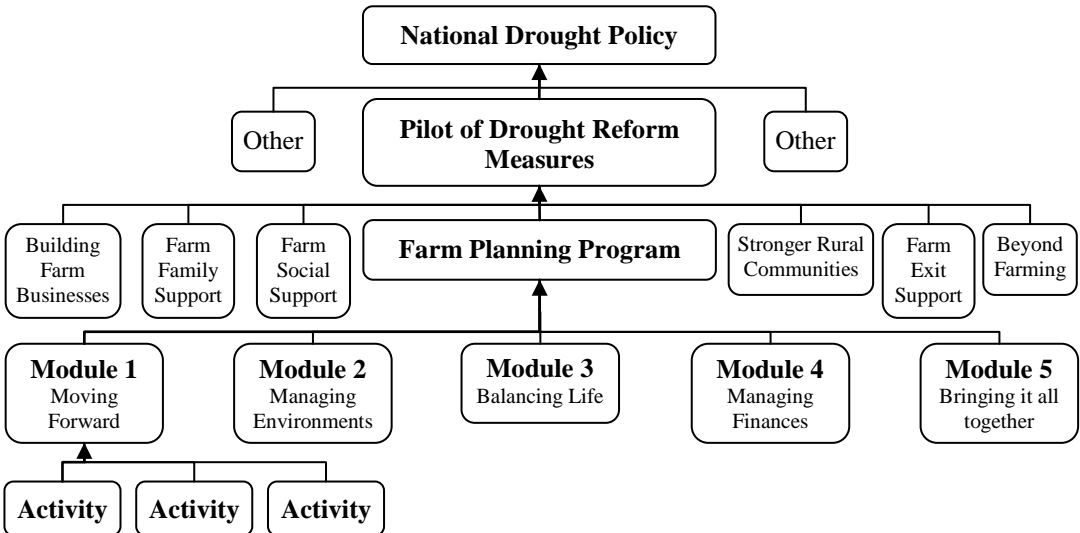
Figure 2.2: Structural hierarchy of the Farm Planning program

Source: Developed for this study

The intended outcomes of the Farm Planning program were identified from program documents (see Appendix 1). These outcomes were rationalised, and are presented in Table 2.1. The outcomes were grouped into five categories:

1. Changes in the capacity (understanding, attitudes, awareness and skills) of the program participants
2. Changes in the participants' behaviours/practices with regard to strategic planning
3. Changes in the participants' behaviours/practices with regard to the areas of focus for the program (managing the natural environment and production, balancing work-life commitments and managing financial resources)
4. Changes in social, environmental and economic conditions at an individual farm business level; and
5. Broad-scale changes in social, environment and economic conditions.

These groupings align with the upper levels of the hierarchy of outcomes proposed by Bennett (1975) that has been used extensively to guide evaluations of Australian agricultural extension programs (Dart 2000). 'Bennett's Hierarchy', as it is known, depicts a simplified chain of seven events assumed to represent most extension programs (Bennett 1975; Rockwell and Bennett 2004). The premise underlying the upper levels of Bennett's Hierarchy is: participation in a program results in changes in participant knowledge, attitudes, awareness and skills; participants apply their new knowledge (etc.) and thereby change their behaviours and/or practices; this changed behaviour/practice contributes toward changes in the social, economic and environmental conditions. It must be highlighted that many of these outcomes go beyond the specific objectives of the Farm Planning program, which were to increase planning skills and the number of farm businesses with a written strategic plan.

There is a temporal aspect to these outcomes (see Table 2.1). There was an implicit expectation that some outcomes would be achieved immediately (such as changes in capacity), whilst others would manifest over the longer term (e.g. broad-scale social, economic and environmental changes). This is a feature of many interventions that address social, economic and/or environmental changes, where outcomes cannot manifest until months, years or even decades after the program has been implemented (Dart 2005).

Table 2.1:   Stated outcomes of the Farm Planning program

Category	Outcome statement
Changes in capacity	Participants have increased capacity to better prepare for and self-manage farm risks
	Participants have improved ability to: manage farm risks; adapt to changes in the farm's environment; adapt to climate variability; manage finances
	Participants have a better understanding of: the farms financial situation and finance-related activities; personal interactions in the farm business; the future roles of family members in the business
	Participants have increased awareness of: where/how time and energy is spent; change and its impact on the business; personal interactions
	Participants have improved skills to: undertake planning; manage change
	Participants place more value on strategic planning
Changes in strategic planning behaviours	More farm businesses have comprehensive written strategic plans
	Strategic plans/ activities are implemented
Behaviour/practice change	Farm businesses implement improved management of farm risks
	Improved financial management by farm businesses
	Farm businesses prepare to respond to and manage future challenges
	Farm businesses sustainably manage and use the natural resources
	Farm businesses undertake succession planning
	Farm businesses adapt to changes
	Farm businesses adopt self-reliant approaches to managing farm risks
	Members of the farm business stay fit and healthy, and manage stress
Farm business social, environmental, economic changes	Improved farm viability
	Improved family and personal side of life
	Increased personal resilience
	Increased resilience of the business
	More effectively functioning farm family business
Broad-scale social, environmental, economic changes	Early recovery [from drought] of agricultural and rural industries
	Agricultural and environmental resource base is maintained and protected during periods of climatic stress

Source: Adapted from various program documents (see Appendix 1)

2.3.3   Farm Planning implementation theory

In order to deliver the intended outcomes, the Farm Planning program took a holistic view to help farm businesses develop strategic plans that addressed three key areas — managing the natural environment and production, balancing work-life commitments and managing financial resources (Keogh, Granger and Middleton 2011). Through the process, participants identified priority activities to help the business be more self-reliant and prepared to face a

changing climate (Noonan et al. 2012). The following sections identify the key components of the Farm Planning program.

Target audience

The program was available to farm businesses within the pilot region (Figure 1.1). The only condition on participation was that at least one member of the farm business had to contribute at least 50% of his or her labour to the business and derive at least 50% of his or her income from the business (Department of Agriculture, Fisheries and Forestry 2010). All members of the farm business were actively encouraged to participate.

Incentives

Eligible participants of the Farm Planning program could apply for grants of up to $60 000 to help implement one or more of the strategies/actions developed in their strategic plan. These grants were available via the Building Farm Businesses program (another of the pilot policy measures), and were provided through two streams — Business Adaptation Grants of up to $40 000 for activities to help the business prepare for drought, reduced water sources and/or increased climate variability; and Landcare Adaptation Grants of up to $20 000 to implement natural resource management activities (Department of Agriculture, Fisheries and Forestry 2010).

To be eligible for the grant, businesses had to have completed the Farm Planning program, had their plan assessed by an independent advisory panel and have off-farm assets no more than $750 000 in net value (Keogh, Granger and Middleton 2011).

Additionally, farm businesses were able to access up to $1000 to cover the costs of attending the program, such as fuel, accommodation and child care.

Workshops

The Farm Planning program was delivered to farm businesses as a series of five modular workshops (Box 2.1). Each workshop was delivered in a group setting by a multidisciplinary team of facilitators supported by technical experts[1] (Noonan et al. 2012). There was an average of 12 farm businesses in attendance at a ratio of one facilitator for every two-to-three businesses (J. Noonan, pers. comm. 2011). An optional one-on-one session was available to businesses on completion of the five modules to help participants finalise their strategic plans.

The workshops used an action learning approach that adhered to adult learning principles (Noonan et al. 2012). A variety of learning techniques were incorporated into the delivery, such as facilitated discussion, group learning, formal presentations, one-on-one support and

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[1] A technical expert refers to a person with comprehensive knowledge within a particular area – for example, climate change.

hands-on development (pers. obs.). The workshop content and delivery was tailored to meet the needs of the participants, and providing a non-judgemental environment was a key principle to support delivery (Noonan et al. 2012). Additionally, farm businesses were deliberately placed into specific groups to maximise the group-learning environment (e.g. similar business types and locations were grouped together), and facilitator teams were assigned to groups that would benefit most from their particular skills and knowledge (Noonan et al. 2012).

The process enabled participants to 'self-discover potential solutions' to their challenges, and these solutions formed the basis of a strategic plan for the farm business (Storer et al. 2011, 4).

Box 2.1: Five modules of the Farm Planning program

Module 1.   Moving Forward – introduced the program and strategic planning. Participants developed an overall vision for their business and began to identify ways to move forward.

Module 2.   Managing Environments – participants were given an introduction to climate change, and discussed potential on-farm practices to address climate variability and resource condition.

Module 3.   Balancing Life – addressed the need for a balance between work and life. The module addressed issues such as succession planning and physical and mental health and well-being.

Module 4.   Managing Finances – simple financial worksheets were discussed to help participants develop a robust financial plan for the business.

Module 5.   Bringing it All Together – reviewed the work undertaken and topics discussed in the previous workshops. Participants had the opportunity to complete their strategic plans and prepare for its implementation.

Optional   One-on-One Session – additional session to help participants finalise their strategic plans.

Information sourced from Farm Planning program workshop module booklets.

Independent advisory panel

On completion of the program, participants were able to access an independent advisory panel. The panel was established to assess each strategic plan developed via the program in terms of whether implementation would actually result in a more viable farm business (Keogh, Granger and Middleton 2011).

Program management

The program was administered across two organisations — the Department of Agriculture and Food Western Australia (DAFWA) and Curtin University's Farm Business Resilience (FBR) Program. DAFWA coordinated participant enrolments and the mandatory reporting to the Australian Government, whilst the FBR Program oversaw the development, delivery, evaluation and coordination of the Farm Planning workshops. Program management activities that were undertaken included, but were not limited to (J. Noonan pers. comm. 2011):

- Recruiting, assessing, establishing and coordinating facilitator teams, including their ongoing learning and development in relation to facilitating the Farm Planning workshops
- Comprehensive monitoring and evaluation activities
- Pre-testing and refining the workshop process, content and materials
- Promotional activities to encourage participation; and
- Logistical activities required to establish workshop groups, dates, venues etc.

Contextual factors

Several contextual factors were identified by the program team that could potentially affect the ability to successfully implement the program activities and, therefore, deliver outcomes (Noonan et al. 2012). These included: factors that may affect program development and implementation (e.g. imposed timeframes); factors that may affect participation (e.g. distance to travel to the workshop); factors that may affect participant learning (such as diversity within the group); and factors that may affect strategic planning and plan implementation (e.g. the ever-changing nature of agriculture) (Table 2.2). In designing the program, the influence of these factors was considered, and principles and processes put in place to minimise their impact (Noonan et al. 2012) (Table 2.2).

Table 2.2: **Potential contextual factors affecting delivery of the Farm Planning program and the strategies used to minimise the impact**

Factor	Strategy
Lack of trust in 'experts'	Group-specific case studies and other data to give credibility Continuity of facilitators with specific groups Respect for participants existing knowledge, desire to learn and sense of worth
Personal circumstances of participants	A learning environment that focused on trust and gave participants confidence to speak about their issues Continuity of facilitators with specific groups assisting in building and maintaining this trust Group-specific case studies and other data
Inherent complexities (e.g. diversity within the participants, dynamic nature of groups; agriculture as a complex adaptive system)	Flexible, adaptive management and participatory learning techniques Matching groups with facilitators Deliberate placement of businesses within groups Multidisciplinary facilitation teams with diverse skill sets Ratio of 1 facilitator for every 3 farm businesses Use of the Click with Colours system to identify psychological typologies within groups/facilitators Use of theory (adult learning principles, Bennett's Hierarchy, Maslow's hierarchy of needs, Glasser's personal choice theory, complex adaptive systems)
Short timeframes for program development and delivery	Implementation of several 'teams' to manage different aspects of the program
Non-implementation of plans	A workshop process that will build commitment to and adoption of the strategic plan – action-oriented facilitation; facilitators experienced in delivering training to farmers
Dry/drought seasonal condition	Sequencing of modules, and content within modules Inclusion of a 'human resource management' facilitator with counselling or psychology background/skills in facilitator teams
Distance travelled by participants affecting e.g. alertness	Simple triage process to minimise participant travel

Source: Adapted from Noonan et al. 2012

2.3.4 Theory of change

The two previous sections identified the outcomes of the Farm Planning program (program theory) and the activities undertaken in order to achieve these outcomes (implementation theory). In this section, these theories are combined to provide the Farm Planning program's theory of change — that is, the hypothesised causes-and-effects to explain how the program was expected to deliver the intended outcomes (Dart 2000; Weiss 1997).

Figure 2.3 depicts the resultant theory of change for the Farm Planning program in the form of a program logic model (see Rogers 2008). The basic theory behind the Farm Planning program supposes that:

- If people attend the program they will have increased capacity — that is, they will have a better understanding, increased skills and ability, increased awareness and changed attitudes.
- These capacity changes will enable participants to develop strategic plans for their farm businesses that align with the objectives of the National Drought Policy.
- Once program participants have developed their strategic plans, they will put their plans into practice — for example, adopt self-reliant practices.
- Implementing the activities identified in the strategic plans will result in improvements to social, economic and environmental conditions at the farm business level, and build resilience within the farm business.
- Implementing strategic plan activities by many farm businesses will result in broader social, economic and environmental outcomes.

The program had direct influence on the participants only to the point where farm businesses have comprehensive written strategic plans. However, it must be noted that eligible farm businesses were able to apply for grants of up to $60 000 through the Building Farm Businesses program to help them implement activities from their strategic plans. Nevertheless, implementing the strategic plans was predominately a decision that had to be made by the program participants.

Assumptions

The reconstructed theory of change makes two key assumptions. In this author's opinion, the fundamental supposition was that strategic planning will bring about change. The entire premise of the Farm Planning program is based on the assumption that strategic planning will result in actions and behaviour changes by the program participants. Furthermore, it was assumed that the changes, as documented in the strategic plans, would align with the objectives of the program, pilot and National Drought Policy, and build resilient farm businesses.

With the exception of the Building Farm Businesses grants, the program had no control over the participants' decisions whether or not to implement their strategic plans, or the extent of this implementation. Farm businesses operate in complex environments, having to respond to myriad of internal and external social, environmental and economic pressures. The influence of these pressures on decision-making is profound (Darnhofer, Fairweather and Moller 2010).
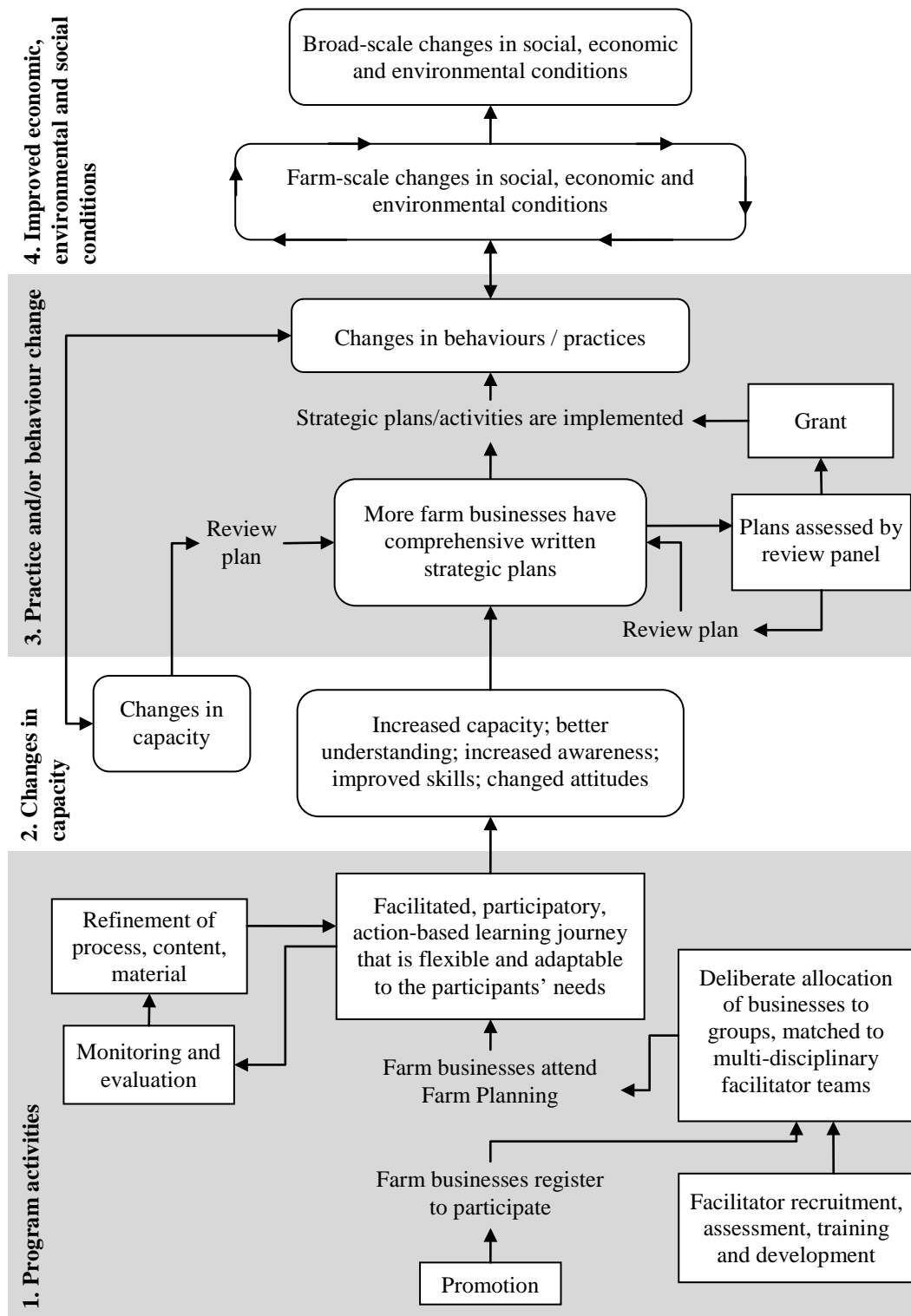
Figure 2.3: Logic model for the Farm Planning program

Actions undertaken by the program are represented by rectangles; anticipated program outcomes are represented by rounded rectangles; actions undertaken by program participants are not contained in boxes.

The anticipated changes in capacity, behaviours/practices and social/economic/environmental conditions are listed in Table 2.1.

To address these issues, the Farm Planning program made use of current extension and learning theories (Noonan et al. 2012). A holistic approach addressing social, economic and environmental aspects of the farm business was adopted to facilitate improvements in the financial, production, natural resource management and work-life balance aspects of the farm business. This culminated in the delivery of a facilitated, participatory, action-based learning journey[2] that was flexible and adaptable to the participants needs (Noonan et al. 2012). Such an approach was assumed to maximise the chances of participants implementing their strategic plans and, therefore, realising the anticipated longer-term outcomes of the Farm Planning program (J Noonan, pers. com. 2011) — the second key assumption.

These assumptions are further explored in Chapter 3 in order to assess the plausibility of the conjectured links between the program activities and outcomes.

2.4   Summary

Evaluating the effects of government programs is becoming increasingly important as the emphasis on evidence-based practice and effective use of public funds grows (Blamey and Mackenzie 2007; Funnell 2005; Mayne 2001). Theory-based evaluation provides a useful model to help identify and assess program outcomes. This model unites a program's 'implementation theory' with its 'program theory' to uncover the overall 'theory of change'.

Using the process of theory-based evaluation, the Farm Planning program's theory of change was reconstructed. This provided a picture of the linkages between the program activities and anticipated outcomes, and a conceptual framework on which this research was based. In brief, the basic theory behind the Farm Planning program supposes that program attendance will increase the capacity of the participants and, therefore, enable them to develop strategic plans that align with the objectives of the National Drought Policy. These strategic plans will be implemented, which will result in improved social, economic and environmental conditions at the farm business level and, eventually, at a broader sectoral level.

Critique of the Farm Planning program's theory of change identified several assumptions that may affect the program's success (in terms of it achieving the anticipated outcomes). It was suggested that the assumption that strategic planning will bring about change was critical, as it underpins the entire premise of the program. The program made use of current theory and built upon the work of others to develop and deliver a program that would maximise the chances of realising the anticipated outcomes (Noonan et al. 2012). Nevertheless, the plausibility of the cause-and-effect linkages identified in the theory of change requires further examination.

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[2] Participants worked to identify the issues and actions to solve issues or problems. The facilitators 'assist[ed] in managing the process of learning rather than the content' (Noonan et al. 2012, 35).

Chapter 3. Literature review

3.1 Introduction

In the previous chapter two key assumptions underlying the reconstructed theory of change for the Farm Planning program were identified. To recap, these assumptions were:

- Strategic planning will bring about change leading to resilient farm businesses; and
- The program design will maximise the chances of realising the anticipated longer-term outcomes.

This chapter investigates these assumptions in order to assess the plausibility of the conjectured links between the program activities and outcomes. It is not the intention to provide an in-depth history on the various concepts and theories but rather to test the theoretical framework (i.e. the theory of change) against the literature.

There are three sections in this chapter. The first section (Section 3.2) addresses the first assumption. Resilience thinking and its application to the farm business is discussed, and principles for increasing the resilience of farm businesses are detailed. It is suggested that broad indicators, surrogates or rules of thumb are the most appropriate way to assess resilience. The empirical literature is then critiqued to determine the effect of strategic planning on business performance, and the value of strategic planning within an agricultural context is discussed. It is argued that there is little empirical evidence to support the premise that planning improves business performance; however, the strong influence of the family within the farm business context may mean that strategic planning activities fulfil other important and valued purposes.

The next section (Section 3.3) addresses the assumption that the program design will maximise the chances of realising the anticipated longer-term outcomes. It begins with an overview of the change process by highlighting some key change theories and models. This is followed by a discussion on current agricultural extension models and practice. It is proposed that modern-day extension activities seek to build farmer capacity by applying participatory processes underpinned by adult learning principles and the individual differences perspective. The Programmed Learning model of extension is further explored within the context of farm business management training, including the influences on participation. This is followed by an examination of the factors influencing adoption and the role of incentives in bringing about changes in practice. The chapter concludes with an assessment of the literature against the Farm Planning program theory of change in order to refine the frameworks underpinning this research.

3.2 Strategic planning to support resilience

This section of the chapter addresses the assumption that strategic planning will bring about change leading to resilient farm businesses. The section is divided into four subsections — resilience thinking and its application to the farm business; the influence of strategic planning on business performance; strategic planning in agriculture; and a final subsection that summarises strategic planning as an activity to support farm business resilience.

3.2.1 Farm business resilience

In order to test the assumption that strategic planning will bring about change leading to resilient farm businesses, it is necessary to identify what a resilient farm business is. Business resilience may be argued to be the ultimate goal of strategy development and implementation by farm businesses. Certainly, 'resilience' has become an increasingly common term in the language of Australian public policy to describe the ideal for economic, social and environmental systems (Cork 2010; Reid and Botterill 2013), including agriculture (e.g. COAG 2010; PIMC 2011). However, what this ideal actually is can be ambiguous without a clear definition (Reid and Botterill 2013). The *Oxford Dictionary* (online) defines resilience as '1 The capacity to recover quickly from difficulties; toughness. 2 The ability of a substance or object to spring back into shape; elasticity'. As Reid and Botterill (2013, 2) point out, 'On the basis of this definition, a policy goal of "improving resilience" could reasonably be interpreted to mean either recovery from an event or returning to a prior state of affairs — or both. While the latter implies returning to a previous state, the former allows for change and adaptation'.

Increasing farm resilience was a stated objective of the Pilot of Drought Reform Measures (COAG 2010). The numerous references to 'adaptation' in documents relating to the Farm Planning program (e.g. COAG 2010; Keogh, Granger and Middleton 2011; Noonan et al. 2012) point toward the term representing recovery through change and adaptation. As such, it is this definition of the term that is applied to this thesis.

Resilience thinking recognises the integration of social, economic and environmental aspects of a system (Berkes 2007; Darnhofer, Fairweather and Moller 2010), and is commonly applied to systems that are characterised by large numbers of interacting and unpredictable networks and relationships, often referred to as 'complex adaptive systems' (see Dooley 1997; Eoyang and Berkas 1999; Holland 1992; McElroy 2000). The majority of resilience studies have focused on key large-scale environmental assets (e.g. Gunderson et al. 2002, Hicks et al. 2009, Walker and Abel 2002 cited in Darnhofer 2010). However, resilience thinking can be applied at micro, meso and macro scales (Rose 2007; The Resilience

Alliance 2007), including at the 'micro' farm business scale (Darnhofer, Fairweather and Moller 2010; Milestad and Darnhofer 2003; Schiere, Darnhofer and Duru 2012).

The appropriateness of resilience thinking within the farm business context is underpinned by the significant need for farming systems, and individual farms, to 'adapt to ongoing change and cope with unpredictability' (Milestad and Darnhofer 2003, 82). Farm businesses operate in the face of uncertainty, having to constantly respond and adapt to emergent issues such as seasonal variability, market signals, pest and disease outbreaks and environmental extremes, whilst also coping with other stressors such as social isolation (Greenhill et al. 2009). The social, environmental and economic interactions are critical within the agricultural system, and the significant influence of the farmer's decisions on the ecology/biodiversity, the driving force of economics and the centrality of farming to the persistence of rural communities make agricultural systems arguably one of the most complex and variable (Darnhofer, Fairweather and Moller 2010).

Resilience, as a concept, involves two events — i) exposure to adversity; and ii) positive adaptation (Luthar and Cicchetti 2000 in Greenhill et al. 2009). Consequently, resilience is an emergent property (Cabell and Oelofse 2012). At the farm level, the purpose of the positive adaptation(s) is to preserve the functions of the farm as a system rather than maintaining the individual production activities (Darnhofer 2010).

Three strategies for increasing the resilience of socio-ecological systems were proposed by Gunderson (2000) and Carpenter et al. (2001):

- Increase the amount of change a system can withstand without compromising the stability of its current structures and functions (i.e. the buffer capacity)
- Improve the ability to self-organise and network — that is, the degree to which the components of the system are able to interact and self-organise within a management regime, as opposed to being 'forced by the management regime' (Carpenter et al. 2001, 777); and
- Ensure appropriate capacity for learning and adaptation — that is, the ability to monitor and evaluate the outcomes from decisions, and to use this information to modify behaviours.

Folke, Colding and Berkes (2003) built on this work to identify four groups of interacting factors that may help build the resilience of socio-ecological systems: i) learning to live with change and uncertainty; ii) nurturing diversity for reorganisation and renewal; iii) combining different types of knowledge and learning; and iv) creating opportunity for self-organisation. Although the strategies and groups of factors listed above were developed based on studies

of large-scale environmental assets, it has been shown that the same principles can be applied at the farm scale (e.g. Darnhofer 2010).

- *Learning to live with change and uncertainty*: Agricultural systems are so complex that it is not possible to fully understand the system or to be certain of the changes that will occur over time (Berkes 2007). As such, it is important to remember past events, 'expect the unexpected' and be able to learn from adverse situations (Berkes 2007; Folkes, Colding and Berkes 2003). From a family farm business perspective, Darnhofer (2010, 216) relates this to 'the perception and world view of the members of the farm family, and ensuring a degree of flexibility and adaptiveness.'

- *Nurturing diversity for reorganisation and renewal*: Diversity provides increased options for coping with adversities (Berkes 2007; Folkes, Colding and Berkes 2003). Social, environmental and economic diversity can be attained at the farm level; however, it can be a challenge owing to the dynamic environment and the capacity and goals of the farm family (Darnhofer 2010).

- *Combining different types of knowledge and learning*: The complexities of systems are such that analysing problems at a single scale (e.g. global, regional or local) provides a limited picture (Berkes 2007). According to Berkes (2007), developing collaboration and communication increases the capacity to learn and fosters the blending of knowledge — for example, knowledge about the different scales; traditional and scientific knowledge; and knowledge of function and structure (Berkes 2007; Folkes, Colding and Berkes 2003). At the farm level, Darnhofer (2010, 218) equates this factor to the 'variety of information sources that farmers tap into and use to make decisions, … the variety of networks in which they are involved and … their ability to build on past experiences and traditions.'

- *Creating opportunity for self-organisation*: Since renewal and reorganisation are an inherent part of change (Holling 2001), maintaining the capacity to embrace this without relying on external intervention is important (Berkes 2007). In order to achieve this, partnerships and cross-scale linkages are required to foster self-organised processes and help identify new ways to respond (Darnhofer 2010). As noted by Milestad and Darnhofer (2003), these can also create flexibility. In agriculture, opportunities for self-organisation are built at the farm level and through the linkages between the farm and rural community (Darnhofer 2010).

There are strong connections between the four groups of factors. For example, 'nurturing diversity' (e.g. diverse information sources) can support 'combining different sources of knowledge' and 'self-organisation' (e.g. via cross-scale linkages). This further highlights the complex nature of socio-ecological systems. Whether at the macro-scale or micro-scale, the

system is a complex set of elements that are part of, and connected to, other systems that are simultaneously operating at different scales and hierarchies (Handmer and Dovers 1996). Each of the nested systems undergoes changes at different rates and intensities, and they invariably influence changes in each other (Darnhofer, Fairweather and Moller 2010). As Cabell and Oelofse (2012, 18) note, 'a system that is considered resilient today may not be considered so in 50 years, let alone next month, because the internal conditions or the larger system in which it is embedded can and will change'. At the farm business level, the resilience of a farm is built from the 'unique interaction between farmer, farm, and context. This implies that no two systems are alike and that what makes one resilient may not necessarily work for another' (Cabell and Oelofse 2012, 19).

The abstract and emergent nature of resilience makes it a difficult feature to measure (Darnhofer, Fairweather and Moller 2010). Despite these intricacies, attempts have been made to assess resilience using indicators (e.g. Cabell and Oelofse 2012), surrogates (e.g. Carpenter et al. 2001), rules of thumb (Darnhofer, Fairweather and Moller 2010), factors (Brewton et al. 2010) and mathematical models (e.g. Fletcher, Craig and Hilbert 2006). Studies focused on assessing resilience in agricultural systems have identified four areas of measurement — environmental, economic, social and personal. A fifth area, 'institutional' may also be considered (Hunt et al. 2011). Darnhofer, Fairweather and Moller (2010) highlight the impossible task of accounting for all of the factors influencing resilience over time. It is for this reason that indicators, surrogates or rules of thumb may be a more appropriate approach, as these provide an indication of resilience and can be applied across space and time (Cabell and Oelofse 2012; Darnhofer, Fairweather and Moller 2010).

3.2.2   The influence of strategic planning on business performance

Strategic planning is often seen as an important process to explicate the direction required by businesses to achieve long-term success (McElwee and Bosworth 2010; Stryker 2012). Consequently, there is a widespread belief that strategic business planning increases the likelihood of business success (Burke, Fraser and Green 2009; French, Kelly and Harrison 2004). Where studies have identified a positive link between planning and performance, improved performance is due to the measurable effects of planning on decision-making competencies and/or resources (Burke, Fraser and Green 2009).

A common outcome of strategic planning is decision-making that is more robust and efficient (Delmar and Shane 2003 cited in Burke, Fraser and Green 2009; Grant 2003; McElwee and Bosworth 2010). This occurs because decisions are underpinned by comprehensive and realistic strategy (Gruber 2007 cited in Burke, Fraser and Green 2009). It is important to note that the planning process is a key determinant of the quality of the

resultant strategy (Bracker et al. 1988 cited in French, Kelly and Harrison 2004; Lyles et al. 1993). It is argued that formal strategic planning processes are critical in facilitating an in-depth, holistic examination of the business and, therefore, enabling quality strategy to be developed (McElwee and Bosworth 2010; Mintzberg 1994). This 'quality strategy' has been shown to underpin decision-making and, in turn, improve business performance (e.g. Lyles et al. 1993; McElwee and Bosworth 2010). In terms of the positive effect of planning on business resources, it is the physical, written strategic plan that is important (Burke, Fraser and Green 2009). In this case, having a documented plan helps 'sell' or legitimise the business to financiers and the like, resulting in increased levels of available resources and an anticipated corresponding increase in business performance (Honig and Karlsson 2004).

On the other hand, studies have also been inconclusive or have shown a negative association between strategic planning and business performance (e.g. French, Kelly and Harrison 2004; Robinson, Logan and Salem 1986). This has been primarily attributed to the negative effects of planning on business management brought about because: i) planning may not be the most productive or efficient use of a manager's time (and therefore a costly exercise) (Bhide 2000 cited in Burke, Fraser and Green 2009); ii) an overreliance on strategic planning may result in planning being used in unsuitable situations, leading to decisions being based on poor information (Bhide 2000 cited in Burke, Fraser and Green 2009); and iii) writing a plan prolongs the process from thinking about an idea to putting it into action (Carter, Gartner and Reynolds 1996).

There are several factors complicating the interpretation of the empirical studies. The first of these is the differentiation between strategic (long-term) and operational (short-term) planning. It is suggested that the corruption of the term 'strategy' has resulted in 'disparate definitions or [studies] ignoring differences' (French, Kelly and Harrison 2004, 767). A distinction between the two terms is necessary because:

- Strategic planning can have different influences on business performance when compared to operational planning — for example, Shrader et al. (1989 cited in French, Kelly and Harrison 2004) identified improved performance in small businesses where strategic planning was occurring compared to where only operational planning occurred; and

- Strategic planning has different functions, in terms of decision-making, compared to operational planning — for example, Robinson, Logan and Salem (1986, 14) suggest that regular operational planning facilitates 'more timely and effective responses'.

The definition dilemma is also confounded by practical research issues. For example, businesses participating in research may not fully understand the differences between

strategic and operational planning, so believe they are undertaking strategic planning activities when, in fact, they are not (Kelmer and Noy 1990 cited in French, Kelly and Harrison 2004).

Another factor is the study of short- or long-term performance. According to French, Kelly and Harrison (2004, 768), 'While, theoretically, strategic planning may be considered to have a greater impact on medium- to long-term performance, there is little evidence of research that has sought to ascertain the cumulative impact'. Consequently, strategic planning may be undervalued owing to the prevalence of studies examining the short-term effects of planning on performance.

The characteristics of the business manager can also influence the likelihood of them undertaking strategic planning (Bhide 2000 cited in Burke, Fraser and Green 2009). For example, 'good' managers may be more likely to use strategic planning; however, as 'good' managers, their business may 'have better performance regardless of business plans' (Burke, Fraser and Green 2009, 4). This means that studies may be biased toward businesses that are inherently more likely to succeed. On the other hand, 'good' managers may be able to develop strategy without having to write it into a plan and, therefore, be excluded from such studies (Bhide 2000 cited in Burke, Fraser and Green 2009). Whatever the case, the influence of selection effects should be identified and not confused with the 'true' effects of planning on performance (Burke, Fraser and Green 2009).

Context also plays an important role in explaining the effects of strategic planning, whether positive or negative; however, this is often overlooked (Burke, Fraser and Green 2009). Of particular interest is:

- *The purpose for writing the plan*: For example, a plan that is written to provide evidence of a competent business in order to raise funds is likely to have a different effect on business performance compared to a plan that is written (and used) to guide strategic decision-making for long-term business success (Bhide 2000 cited in Burke, Fraser and Green 2009).
- *The external environment*: The effect of planning on business performance is argued by Bhide (2000 cited in Burke, Fraser and Green 2009) to be more positive in a stable or predictable environment. Nevertheless, others have argued that planning in uncertain situations helps businesses to recognise the level of uncertainty and therefore enables them to identify appropriate responses that may not have otherwise been considered (e.g. Matthews and Scott 1995; Zollo and Winter 2002 cited in Burke, Fraser and Green 2009).

- *Level of planning sophistication*: As previously mentioned, formal strategic planning processes have been shown to influence business performance owing to improved decision-making (Lyles et al. 1993). It is therefore necessary for studies to determine the quality of the planning process as this can have a bearing on the links between planning and performance (Robinson and Pearce 1983 cited in French, Kelly and Harrison 2004).

To summarise, there is considerable variation within the empirical literature as to the value of strategic planning in terms of business performance, with some studies showing positive effects, some showing negative effects and some showing negligible effects. However, the usefulness of these findings has also been questioned owing to the inconsistent application of terminology; few longitudinal studies; and little acknowledgement of the potential impacts of selection effects and contexts on findings.

3.2.3   Strategic planning in agriculture

Despite the paucity of data to support strategic planning as a factor that improves business performance, many businesses continue to develop written strategic plans (Grant 2003; Rigby 1999 cited in Nordqvist and Melin 2010). For several decades, strategic planning has been recognised as a key skill for the agricultural sector (see Boehlje, Akridge and Downey 1995; McElwee and Bosworth 2010; Hargreaves 1996 cited in Murray-Prior, Hart and Dymond 1999). For example, 'review the strategic direction of the business' and 'develop, implement and review a business plan' were identified as two of 10 core competencies of management skills required by farm businesses (Hargreaves 1996 cited in Murray-Prior, Hart and Dymond 1999, 4). It is the increasing complexity of the agricultural environment that has generated the growing emphasis on farm business management skills, including strategic planning (Boehlje, Akridge and Downey 1995; Lyles et al. 1993; Murray-Prior, Hart and Dymond 2000).

Although improved management skills may be required, some authors argue that formal strategic planning is not appropriate in complex and unpredictable environments (e.g. Cordeiro 2013; Grant 2003; Mintzberg 1994). There are two aspects to this. Firstly, how can planning take place if the future is unpredictable (Grant 2003; Mintzberg 1994)? The foundation for formal strategic planning is often some type of forecasting, but the turbulence of markets, prices, weather and so on make the future unknowable (Grant 2003; Mintzberg 1994). Secondly, although it may be relatively easy to identify strategic activities that can help achieve long-term goals, the unpredictable environment may make implementation difficult (Cordeiro 2013).

Nordqvist and Melin (2010, 17) suggest 'one reason for the extensive use of strategic planning can be that the strategic plans fulfil other important and valued purposes'. Of particular interest are the potential social effects of strategic planning. This interest stems from the fact that farm businesses within Australia are predominately family-owned and operated enterprises (Lynch, Llewellyn and Umberger 2012). The integration of family and business has a unique influence on strategic management (Miller and Le Breton-Miller 2005; Sharma, Chrisman and Chua 1997). According to Hall et al. (2006 cited in Nordqvist 2012, 25), 'In family firms the interaction between family members plays an influential role in strategy formation and the dynamics in which strategies emerge are deeply rooted in family values, emotions and the socio-psychological dimension of ownership'. Furthermore, in the case of farming, the potential for positive familial/social outcomes can be key drivers of strategic decisions, as opposed to maximising profit (Hansson et al. 2012).

Nordqvist and Melin (2010) identified three dimensions of the practice of strategic planning in family businesses: planning modes — the strategic planning process used; planning motives — the reasons why the business undertakes strategic planning; and planning arenas — where and when strategic planning activities take place, and who participates. There are several 'types' in each dimension (Table 3.1). The types utilised by the business depend on the family context, with the family context underpinned by the values, priorities and interests of the family (Nordqvist and Melin 2010). Although the family context is a critical factor influencing the types of planning modes, motives and arenas applied by family businesses, there are some features that are common across family businesses:

- Informal planning tends to be the main vehicle for developing strategy (Nordqvist and Melin 2010). This flexibility supports relatively frequent strategic discussions within the business (Craig, Dibrell and Garrett 2014) and, consequently, builds shared direction and values (Habbershon and Astrachan 1997 cited in Craig, Dibrell and Garrett 2014). Furthermore, flexible planning systems may be more conducive to the complex and dynamic environments in which farm business operate.

- Non-family business members are important contributors to the strategic planning process (Nordqvist and Melin 2010).

- Family businesses plan for longer time horizons to take into consideration future generations (Nordqvist and Melin 2010).

- Family businesses adapt external strategic planning processes to suit their situation, including incorporating their own values and interests into the process (Craig, Dibrell and Garrett 2014; Nordqvist and Melin 2010).

Table 3.1: Dimensions of the practice of strategic planning in family businesses

Dimension		
Planning modes	**Planning motives**	**Planning arenas**
Educational – to teach how to strategically plan	Decision-making	Board meetings
	Gathering information	Manager meetings
Visionary – to formulate vision	Shared understanding	Strategy planning workshops
Multi-level – develop a hierarchy of plans	Shared language	Family council meetings
	Support family control	
Value-control – values of the family shape the framework for planning	Sharing information with non-managers	Informal meetings within the business context
Flexible – informal/ emergent aspects are emphasised	Gain legitimacy	Informal meetings within the family context
Parallel – strategic and ownership planning in parallel		

Source: Adapted from Nordqvist and Melin (2010)

Family businesses are often referred to as 'special cases' owing to their unique characteristics (Miller and Le Breton-Miller 2005; Sharma, Chrisman and Chua 1997). These unique characteristics, attributable to the family values, priorities and interests that underpin the planning, are apparent through the planning modes, motives and arenas used by family businesses (Nordqvist and Melin 2010). Consequently, 'family' is a key part of strategy development for family farms and, therefore, fundamentally linked to business performance.

3.2.4   Strategic planning and farm business resilience: some conclusions

The purpose of this section was to test, against the literature, the assumption that strategic planning will bring about change leading to resilient farm businesses. Resilience is becoming an important objective of Australian agriculture, reflected in the language of public policy. In this sense, a resilient agricultural sector is seen as one that allows for change and adaptation in order to maintain the economic, social and environmental integrity of the system. Strategic planning has been encouraged as an important activity to help the agricultural sector navigate through the inherent complexities. On this point, the literature review highlighted that:

- Evidence of a link between strategic planning and business performance is inconclusive

- The appropriateness of formal planning processes in unpredictable environments is not certain; and

- Frequent, informal planning may be better suited to unpredictable environments.

The literature did not invalidate the assumption of a link between strategic planning and business performance (which supports resilience); however, the empirical studies only identified positive associations between *formal* strategic planning and performance. In family businesses, the strong interactions between 'family' and 'business' facilitate flexible (as opposed to formal) planning systems, which may be more conducive to the complex environments in which farm businesses operate. If formal planning is not appropriate for family businesses operating in unpredictable environments, such as farm businesses, then a link between planning and business resilience is tenuous. Nevertheless, the assumption that strategic planning will bring about change leading to resilient farm businesses remains a plausible aspect of the logic of the Farm Planning program.

The literature review also identified three important practical considerations for this research: i) contextual factors, such as the purpose of the strategic plan, external environment and the planning processed used, affect the quality of the strategic plan (with quality plans resulting in improved business performance), and family values, priorities and interests will influence the planning context; ii) a clear definition of strategic planning is essential; and iii) resilience is an emergent property, and it is difficult, if not impossible, to conclusively identify all the factors contributing to resilience.

3.3 The influence of agricultural extension through formal training

This section of the chapter addresses the assumption that the design of the Farm Planning program will maximise the chances of realising the program's anticipated longer-term outcomes (i.e. farm business resilience). The section is divided into five subsections — the change process and agricultural extension; extension in practice; farm business management training; factors influencing adoption; and a final subsection that summarises the influence of agricultural training.

3.3.1 The change process and agricultural extension

Farm businesses face many challenges in the attempt to navigate the complexities inherent in agricultural environments. Strategies to build resilience, although synergistic, compete for resources with each other and with other unexpected opportunities that the farmer may want to take advantage of (Darnhofer, Fairweather and Moller 2010). The competing goals of 'managing for performance and growth' and 'managing for adaptation' require a careful balance (Cary et al. 2001; Milestad et al. 2012; Pannell et al. 2006; Schiere, Darnhofer and Duru 2012). Consequently, the decisions made by the business are fundamental — and these decisions are 'usually not so much based on rational choice, scientific information and

objective assessment of facts, than on information filtered through selective perception and their mental models' (Darnhofer, Fairweather and Moller 2010, 194). Understanding the process of change can provide a strong foundation on which to develop agricultural extension programs with change-related outcomes.

In its modern context, agricultural extension seeks to 'enlarge and improve the abilities of farm people to adopt more appropriate and often new practices, and adjust to changing conditions and societal needs' (Jones and Garforth 1997, n.p.). In other words, extension activities, such as technology transfer, education and training, attitude change, human resource development and dissemination and collection of information' (Marsh and Pannell 1998, 2), facilitate change by building capacity to support sound decision-making (Coutts and Roberts 2003).

There are many 'change' theories and frameworks relevant to modern extension projects (see Darnton 2008; Fenton, MacGregor and Cary 2000). As mentioned in Chapter 2, 'Bennett's Hierarchy' (Bennett 1975) proposes a theory of change that has been used extensively within Australian agricultural extension. Of particular interest to this study is the premise within Bennett's Hierarchy that suitable knowledge, aspirations, skills and attitudes (i.e. capacity) are required for behaviour and/or practice change to occur. The Theory of Planned Behaviour (TPB — Ajzen 1988 cited in Ajzen 1991) supports the assumption of a link between capacity and practice/behaviour change (Conte, Baudains and Lyons 2010). However, rather than knowledge, attitudes, skills and aspirations, the TPB model refers to 'attitude toward the behaviour', 'subjective norm' and 'perceived behavioural control' (Ajzen 1991, 182). These three constructs are assumed to influence intentions to perform the behaviour (Ajzen 1991). Collectively, these provide greater insights to the types of 'capacity' that can influence behaviour/practice change (Conte, Baudains and Lyons 2010).

- Attitude toward the behaviour – this factor is similar to that presented in Bennett's Hierarchy, except the TPB bounds the attitudes of focus to those relating to the specific behaviour and subjective norm (Conte, Baudains and Lyons 2010).
- Subjective norm – 'the perceived social pressure to perform or not to perform the behaviour' (Ajzen 1991, 188).
- Perceived behavioural control – the perceived ease of performing the behaviour, including perceptions of self-efficacy (i.e. that they have the skills to undertake the behaviour) and controllability (i.e. that they can control the situation) (Ajzen 1991). This moves beyond the generic 'knowledge' and 'skills' identified in Bennett's Hierarchy.

The TPB introduces two important concepts — perceptions and intentions. Inherent in the TPB's 'intentions' is motivation, with motivational factors indicating 'how hard people are willing to try, … how much of an effort they are planning to exert…' (Ajzen 1991, 181). The premise is: the stronger the intention, the more likely it is that the behaviour will be performed. Recognition of perceptions as influences of behaviour change has important implications for interventions with behaviour change-related outcomes, as it is not only a matter of addressing tangible barriers to behaviour change (such as lack of finances) but also peoples' perceptions (Darnton 2008). In addition to the perceived behavioural control, the TPB acknowledges the presence of factors influencing *actual* control over the behaviour (e.g. requisite opportunities and resources such as time and money). As such, the TPB postulates behaviour change as dependent on 'the extent that a person has the required opportunities and resources, and intends to perform the behaviour' (Ajzen 1991, 182).

Another change model that has also been used as a framework to guide agricultural extension projects in Australia (e.g. Crisp 1998; Duxbury 2007) is presented by Mortiss and Chamala (1990). The model suggests that change will only occur if four factors are present: a pressure for change; a clear shared vision; capacity for change; and actionable first steps (Mortiss and Chamala 1990). There are strong similarities between Mortiss and Chamala's (1990) model and the enduring model for achieving organisational change developed by Kotter (1995), although Kotter's model has additional steps that are of particular relevance to organisations (e.g. the formation of a guiding coalition, communicating the vision, continuous improvement and institutionalising the change; Figure 3.1).There are also nuanced differences — for example, Kotter (1995) stresses that his model must be strictly sequenced without overlap of the steps, whereas Mortiss and Chamala (1990) suggest the factors must be simultaneously in place. Nevertheless, both models provide a useful tool for planning for change to avoid symptoms such as resistance to the change, frustration, anxiety and scepticism (Duxbury 2003, 2007).

The focus of agricultural extension on facilitating change through capacity building (Coutts and Roberts 2003) aligns with the change theories/models described above. There are four key ways in which extension projects facilitate the change process (Coutts et al. 2005):

- Group facilitation-empowerment – participants are assisted to build their own capacity to plan and make decisions, such as empowering them to be able to identify and pursue their own learning requirements for their own situations.
- Programmed learning – delivers 'specifically designed training programs/workshops to targeted groups … to increase understanding or skills in defined areas' (Coutts and Roberts 2003, 3).

Pressure for change	1. Establish a sense of urgency
	+
+	2. Form a powerful guiding coalition
	+
	3. Create a vision
Clear shared vision	+
	4. Communicate the vision
+	+
Capacity for change	5. Empower others to act on the vision
+	+
Actionable first steps	6. Plan for and create short-term wins
=	+
Successful change	7. Consolidate improvements and produce still more change
	+
	8. Institutionalise new approaches
	=
	Successful change
Mortiss and Chamala (1990)	Kotter (1995)
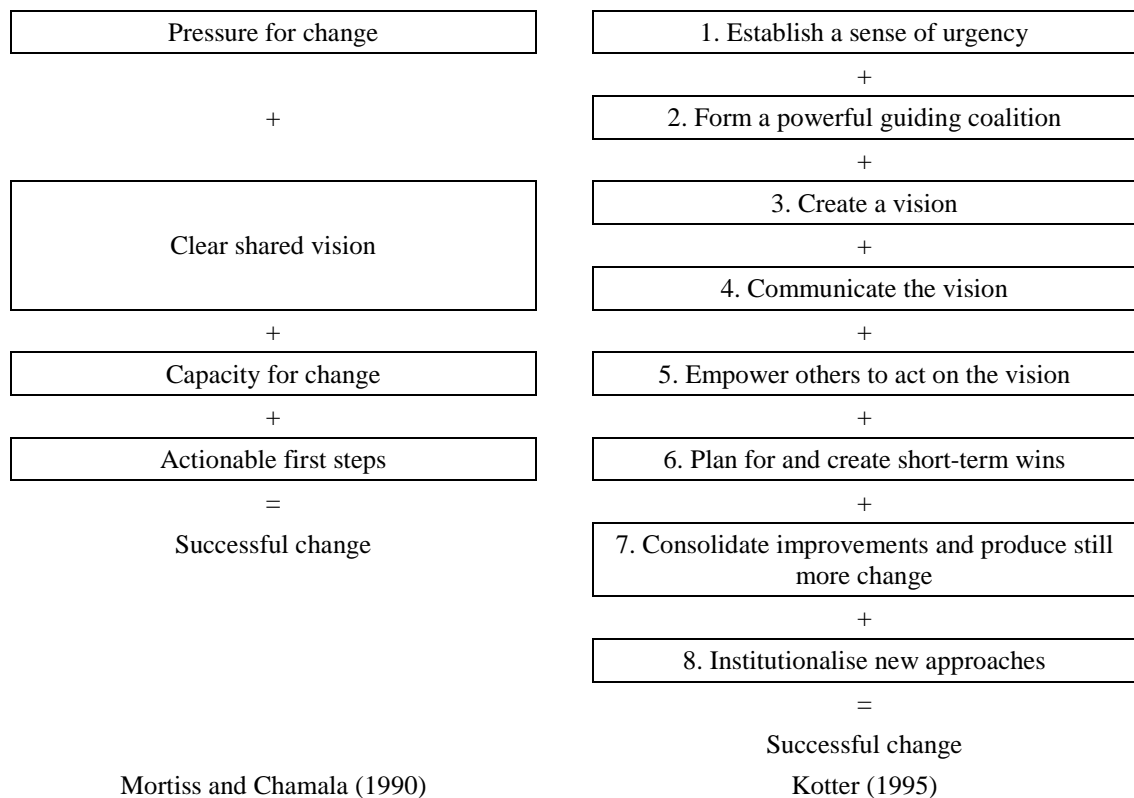
Figure 3.1: Comparison of Mortiss and Chamala's (1990) change model and Kotter's (1995) model of planned change

- Technology development – enables the development of specific technologies, management practices or decision support systems through collaborative arrangements.

- Information access – ensures information is available and can be accessed from any place at any time.

Coutts et al. (2005) conclude that modern Australian extension and education projects will generally fit one of these four models. Furthermore, there are strong interactions between the models that provide important gains in terms of capacity building (Coutts et al. 2005). A fifth model, the 'personalised consultant model', was also acknowledged as important for embedding learnings into practice. This model captures the one-on-one components of extension activities (Coutts and Roberts 2003; Coutts et al. 2005). The next section discusses agricultural extension in practice.

3.3.2   Extension practice

Agricultural extension in Australia has evolved from the early 'top-down' linear models, which were focussed on increasing productivity and economic returns, to more holistic approaches that consider environmental, social and economic factors (Hunt et al. 2012; Marsh and Pannell 2000a) and focus on building capacity (Coutts and Roberts 2003). In

practice, extension process moved from the traditional transfer of technology (whereby information on new technologies arising from research was disseminated directly to producers), to more participatory processes involving various stakeholders (Hunt et al. 2012). This shift was facilitated by the emerging focus on agricultural sustainability and resilience, recognition of the growing complexities of agricultural systems, and the view that agriculture is 'farming, and farming is people' rather than it being a 'technical issue' (Vanclay 2004, 213).

Based on a review of the literature, Black (2000) identified the following benefits of participatory approaches, which are believed to facilitate increased capacity:

- Provides opportunities for farmer involvement in directing the information that they require and how it is delivered (Marsh and Pannell 2000a, b), rather than government (for example) setting the agenda.

- Recognises and uses local knowledge and experiences (Cornwall et al. 1993 cited in Black 2000).

- Encourages local innovation and adaptation (Pretty and Chambers 1993 cited in Black 2000).

- Helps cross-boundary issues (e.g. landscape-scale, socio-ecological) to be understood and addressed (Frost 1998, Woods et al. 1993 cited in Black 2000).

- Enables interaction with 'experts' and peers (Kilpatrick 2000).

- Encourages ownership of the problem and solution (Marsh and Pannell 2000a, b).

- Often uses group processes, 'which have various advantages such as: the pooling of skills, knowledge, experience and other resources; drawing on a wider spectrum of ideas and thus reaching better solutions than individuals; integrating information from various sources, including knowledge from outside the group; economies of scale; risk sharing, and thus the development of potentially more adventurous solutions to problems' (Black 2000, 495).

The use of participatory processes is not without difficulties (Black 2000; Marsh and Pannell 2000a, b). For example, relying on local knowledge may mean that important issues go unrecognised (Vanclay and Lawrence 1995 cited in Black 2000); the diversity of individuals within communities can result in differing priorities (Cornwall et al. 1993 cited in Black 2000); and the 'representativeness' of group members is queried (Marsh and Pannell 2000a, b).

Issues can also arise owing to the way participatory approaches are conducted (see Black 2000). Adult learning principles and techniques have been encouraged to better support effective capacity building. These principles and techniques assume that adults learn better

through 'student-directed learning' (andragogy) rather than 'teacher-directed learning' (pedagogy). Andragogy is based on six core, but flexible, principles: 'adults need to know why they need to learn something [the need to know]; adults maintain the concept of responsibility for their own decisions, their own lives [self-concept]; adults enter the learning activity with a greater volume and more varied experiences than do children [the role of the learner's experiences]; adults have a readiness to learn those things that they need to know in order to cope effectively with real-life situations [readiness to learn]; adults are life-centred in their orientation to learning [orientation to learning]; and, adults are more responsive to internal motivators than external motivators [motivation]' (Knowles, Holton and Swanson 1998, 72). It is suggested that these principles 'provide a sound foundation for planning adult learning experiences' (Knowles, Holton and Swanson 1998, 181).

Furthermore, the 'individual differences' perspective has been recognised as an important part of agricultural group-based activities (e.g. Kilpatrick, Fulton and Geard 2002). This perspective recommends that learning activities are adapted to accommodate the differences in the individuals within the group (Knowles, Holton and Swanson 1998). Jonassen and Grabowski (1993 cited in Knowles, Holton and Swanson 1998) identified three broad categories of differences within individuals — cognitive (cognitive abilities, cognitive controls, cognitive styles, learning styles), personality (attentional and engagement styles, expectancy and incentive styles) and prior knowledge. Understanding and recognising these differences within groups should shape the learning activity to improve learning outcomes (Kilpatrick, Fulton and Geard 2002). Knowles, Holton and Swanson (1998) suggest using the six core principles of adult learning as the basis for planning any learning activity; analyses should then be undertaken to understand the individual differences, as well as the characteristics of the subject matter and situation for the learning activity; and, thirdly, the goals and purposes of the learning activity 'provide a frame that puts shape to the learning experience' (Knowles, Holton and Swanson 1998, 183). Application of this thinking process will highlight the adult learning principles that require greater emphasis and, therefore, can enhance the learning experience.

3.3.3   Farm business management training

Training for farmers and agricultural industries has been a fundamental agricultural policy measure for many years (McColl et al. 1997, Senate Rural and Regional Affairs and Transport Reference Committee 1994 cited in Botterill 2000). However, from the 1990s, increasing the management skills of primary producers has become a primary focus of government built on the belief that '...sound financial and management skills are the key to a robust, competitive, profitable and flexible farm sector' (Senate Rural and Regional Affairs and Transport Reference Committee 1994 cited in Botterill 2000, 7). This view was echoed

by the Action Group on Farm Business Management Training, who 'perceived a deficiency in business management skills of many farmers was placing their long-term viability in danger', and that 'properly focussed and delivered management training was felt to be one of the key components for efficient and competitive Australian rural industries in the next century' (Murray-Prior, Hart and Dymond 1999, 1).

Farm business management training, such as the Farm Planning program, can be assigned to the programmed learning model of extension (see Coutts et al. 2005). The programmed learning model encompasses formal and informal group learning activities (e.g. seminars, workshops and courses) with a clear curriculum and specific learning objectives (Coutts et al. 2005). Such learning activities are presumed to be applicable to different people in different areas, to have the benefits of the participatory approach and to employ adult learning philosophies (Coutts et al. 2005). The model is a particularly attractive option for effective and efficient government investment as it targets groups rather than individuals, can be widely applied and can be designed to align with policy objectives (Boon 2009).

Learning is a fundamental part of the change process (Darnton 2008; Kilpatrick and Millar 2006; Llewellyn 2006; Macadam et al. 2004). Coutts et al. (2005) identify four key areas in which programmed learning contributes: it builds knowledge and skills; supports personal development; creates 'learning communities'; and changes perceptions. Furthermore, participation in training has been shown to increase the likelihood of changes in practices (e.g. Holmes 2003; Kilpatrick 2000). There are, however, two important limitations (in addition to those identified above concerning participatory approaches in general). Firstly, learning will only occur in those groups involved in the training (Coutts et al. 2005; Marsh and Pannell 2000a). Secondly, there is the risk of a top-down approach being applied (Coutts et al. 2005) — that is, the training may not be informed by the producer needs. Having said that, farmer training activities are generally informed by needs analyses, including producer needs relating to the training process and content (Coutts et al. 2005).

Since learning will only occur in those groups involved in the training (Coutts et al. 2005; Marsh and Pannell 2000a), it is important to understand the factors influencing participation. In terms of farm management training, the key factors are (Murray-Prior, Hart and Dymond 2000):

- Perceived relevance of the training – of particular importance are the farmers' perceptions of what the training addresses, its specific content, the benefits and practical application. Additionally, farmer perceptions of his or her skill level also influence the perceived relevance (i.e. if they believe they already have the skills, the training will be perceived as less relevant).

- Cost of the training – farmers will generally assess both the direct costs and opportunity costs against the *perceived* benefits of attending the training.

- Timing – farmers are more likely to attend (and prefer) short half-to-one-day courses (Kilpatrick 2000; Cameron 1995 cited in Murray-Prior, Hart and Dymond 1999); although, if they are required to travel long distances, then longer courses are accepted (C. Storer, pers. comm. 2016). Courses that are available during the 'quiet' periods of on-farm activity are also more likely to attract attendance.

- Attitudes to training/confidence as a learner – past experiences with learning and training and/or the length of time since last participating in a learning activity can impact farmer confidence as a 'learner' and/or their attitudes toward training, and therefore influence participation (Kilpatrick 2000).

- Awareness of the training being available – participation cannot happen if the farmer is not aware that the training is taking place; however, it is also acknowledged that awareness levels may be due to filtering out information that is perceived as irrelevant.

- Location – the distance required to travel can influence the likelihood of participation in training activities.

Kilpatrick, Fulton and Geard (2002) identified some criteria for 'best practice' agricultural training based on the outcomes of a stakeholder workshop and current literature: understand the client needs and motivations to participate; clearly define the objectives, and measure and follow-up on outcomes; use resources efficiently to ensure good value training for participants; and recognise current skills and clear, accessible pathways to learning activities. These criteria are useful in overcoming the barriers to participation and are well-aligned with adult learning principles and the individual differences perspective. A fifth criterion — having mechanisms for ensuring appropriate delivery — addresses potential issues regarding the skills of the trainer that can affect the quality of the training (Kilpatrick, Fulton and Geard 2002). Another area that also requires attention is the participants' *perceptions* of the credibility of the information and the trainer, as this can also influence the impact of the training on the participants (Botterill 2000; Pannell et al. 2006; Pannell 2010). The following section will further explore the factors that can influence the effectiveness of training as measured by the adoption of behaviours and practices.

3.3.4   Factors influencing adoption

Although the direct impact of training is on participant capacity, there is an expectation that participation will lead to the adoption of certain behaviours and/or practices that, in turn, will deliver positive outcomes for the farm business (Kilpatrick 2000). Indeed, the Farm Planning program anticipated that behaviour and/or practice changes would occur in program participants as a result of their participation in the program. The assumed link between

capacity and adoption is supported by theoretical models such as Bennett's Hierarchy and the Theory of Planned Behaviour; however, empirical studies provide mixed results (Holmes 2003; Kilpatrick 2000; Lyle and Ostendorf 2005; Pannell et al. 2006).

In a comprehensive review of the literature relating to the adoption of agricultural conservation practices, Pannell et al. (2006) identified the core influencer of adoption as the farmers' perceptions on whether the practice will allow them to better achieve their goals. Furthermore, these perceptions were shown to be subjective and dependent on three broad sets of issues — learning and experience; the social characteristics and circumstances of the farmer; and the characteristics of the practice itself (Pannell et al. 2006). In essence, farmers are individuals — social, cultural and personal influences affect adoption decisions, and these influences are different for different farmers (Pannell et al. 2006; Pannell 2010). In contrast, Lyle and Ostendorf (2005) claim the social characteristics of individual farmers to be less important, and that the major factors influencing adoption are farm income, education and future farm planning.

Widespread adoption of natural resource management is further complicated as the characteristics of these conservation practices often inhibit their adoption (Pannell et al. 2006). In particular, many of these practices do not provide farmers with a level of 'relative advantage' (the degree to which the practice provides an advantage over the old way) or 'trialability' (the ease of which a farmer can move from trialling the practice to adoption) (Llewellyn 2006; Pannell et al. 2006). For example, these types of practices can be expensive to implement, may not provide immediate financial returns, can be complex, may only be effective if adopted on a large scale, have wider community benefits as opposed to on-farm benefits and may not produce observable results (Marsh 2010; Pannell et al. 2006; Seymour and Ridley 2005).

Similar issues occur when targeting changes in behaviours and/or practices in order to reduce future risks, such as those relating to climate (Pannell 2010). The credibility, reliability and legitimacy of climate change information is often questionable, and the high uncertainty about the future climate is guaranteed (Hennessy et al. 2008). This, combined with the characteristics of climate change (slow, subtle relative to climate variability, diverse spatial impacts) will make it difficult for farmers to be enthusiastic about making changes to reduce future risks (Pannell 2010). Furthermore, appropriate management strategies or practices to address climate change issues may not be available and, if they are, will be difficult for farmers to evaluate (Pannell 2010).

Institutional contexts, specifically incentives, have also been identified as a key influence on adoption, as they can affect the relative advantage of an innovation or practice (Marsh 2010).

Incentives are 'the oldest policy idea of all' (Pawson 2002, 342). The premise is that 'the incentive offers deprived subjects the wherewithal to partake in some activity beyond their normal means or outside their normal sphere of interest, which then prompts continued activity and thus long-term benefit to themselves or their community' (Pawson 2002, 349-350). In relation to agricultural adoption, Marsh (2010, 6) notes 'The incentive should be sufficient to encourage the landholder to trial the innovation and result in the landholder becoming convinced of the innovations' higher relative advantage. If the innovation does not actually have a higher relative advantage without the incentive, it is likely to be disadopted when the incentive is removed.'

Incentives, as a mechanism for encouraging the adoption of different practices, need to be understood within the context of the broader adoption literature (Garbach, Lubell and DeClerck 2012). For example, external factors, such as poor seasonal conditions, strongly influence the ability of farmers to implement on-ground actions even if the money to do so is available (Bowyer and Heath 2009). Another important factor is the availability of technical support to assist with implementation of the on-ground works, or to provide technical advice on the management aspects (Garbach, Lubell and DeClerck 2012). Studies have shown that where practices have not been successful, farmers can dismiss the practice without full knowledge of what went wrong and possible ways to achieve better results (e.g. Bowyer and Heath 2009; Heath, Bowyer and Lacey 2006; Heath, Slaven and Bowyer 2010).

Given the context of the Farm Planning program — that is, it's positioning within the Pilot of Drought Reform Measures with an overarching objective of resilient agriculture — it is appropriate to note the words of Rölings and van der Fliert (1994, 96-97):

> 'Sustainable [or resilient] agriculture is not an "innovation" that farmers "adopt". Changing to more sustainable practices is more like a paradigm shift, involving a learning path leading to new perspectives on risk avoidance, new professionalism, a greater reliance on one's own expertise and observation, the use of new indicators and new instruments to make things visible, and usually a greater dependence on collective decision making in cooperation with other stakeholders in the same ecosystem.'

3.3.5   Agricultural extension and training: a summary

The purpose of this section was to test, against the literature, the assumption that the design of the Farm Planning program will maximise the chances of realising the anticipated longer-term outcomes. It was theorised that knowledge, attitudes, skills and perceptions influence intentions/motivation to perform a behaviour. The strength of the intention/motivation, coupled with the availability of opportunities and resources, then influence behaviour change. Alongside these theories are the change models, whereby a pressure for change; a clear shared vision; capacity for change; and actionable first steps are believed to be

necessary for change to occur. The design of the Farm Planning program, as described in Chapter 2, is broadly aligned to these theories/models; however, it did not include a specific focus on participant perceptions. Program activities targeting changes in participant attitudes, skills and knowledge will also influence participant perceptions (Ajzen 1991), but the importance of perceptions, as highlighted in the literature, warrants this aspect to be an explicit aspect of the program's theory of change.

The program made use of adult learning principles and participatory approaches, which the literature revealed to be key to delivering successful training. Furthermore, it can be argued that the program included components of other models of extension and, therefore, enhanced capacity building (Coutts et al. 2005). As described in Chapter 2, program participants were assisted to self-discover potential solutions to their challenges (group facilitation-empowerment); decision support systems were developed (technology development); and participants were able to access one-on-one support (personalised consultant).

An important limitation of group-based training is that the learning is limited to those that actually participate. Practical considerations (i.e. timing and location) can influence participation; however, sociological aspects such as perceptions, confidence-levels and attitudes are also critical. As identified in Chapter 2, the program attempted to understand the factors influencing participation and to put in place processes to overcome the barriers. The literature review also identified several important factors that can influence the adoption of practices, including financial incentives. As previously noted, incentives were an important part of the Farm Planning program as program participants were able to access grants of up to $60 000 to put their strategic plans into action. Understanding the factors influencing adoption, within the context of the Farm Planning program, may help explain the relationship between capacity-intention-practice/behaviour change.

Overall, it appeared that the Farm Planning program design would maximise the chances of realising the anticipated longer-term outcomes — the program aligned with the change theories, used best-practice extension and training and put in place actions to address potential factors influencing participation and adoption.

3.4   Implications for the study

This chapter investigated the literature to enable the plausibility of the conjectured links between the program activities and outcomes to be assessed. Although the broad linkages (e.g. from capacity to practice/behaviour to resilience) appear reasonable, the specific link between strategic planning and change remains ambiguous. Consequently, it is important for this research to investigate:

- the extent to which the strategic plans developed through the program are being implemented; and

- the contribution of the actions identified in the strategic plans to farm resilience.

As resilience is an emergent property and dependent on a multitude of factors, it will be difficult to conclusively link the actions to resilience. As an alternative, participant perceptions of the contribution of the actions identified in their strategic plans to the resilience of their farm business may be of value — particularly if coupled with a comparison of the perceived resilience of program participants and non-participants. Such a comparison should utilise broad resilience indicators, surrogates or rules of thumb that encompass social, economic, environmental and personal resilience factors.

The literature also highlighted that the quality of strategic plans, which is a determinant of strategic planning impact, is influenced by several contextual factors — the purpose for which the plan was written, the external environment and the planning process/model used. It is therefore necessary that these aspects are identified to help explain the effects of the planning. However, the values, priorities and interests of the farm family will also affect the context for strategic planning. This suggests the potential for disparities between the planning objectives of the farm businesses and the Farm Planning program's views of the planning objectives for the farm business (i.e. the alignment between policy objectives and the farm business strategic plans). Examining the extent to which the anticipated program outcomes were achieved can enable judgements to be made regarding the alignment between policy objectives (since the program outcomes support the policy objectives) and the family farm objectives. Such an examination will also provide the necessary information to judge program success, with 'success' based on achieving the anticipated outcomes of the program. Comparisons with non-participants can further validate program success.

The implementation theory of the Farm Planning program was described in Chapter 2. This appears to be consistent with the 'best practice' for training design and implementation — for example, making use of participatory techniques and adult learning philosophies. Furthermore, it aligns well with the change models to potentially deliver a pressure for change; a clear shared vision; capacity for change; and actionable first steps. As previously mentioned, the broad linkages (e.g. from capacity to practice/behaviour to resilience) appear reasonable, based on the literature. However, the Theory of Planned Behaviour (TPB) suggests some alternatives to the original theory of change proposed in Chapter 2:

- 'Intention', which incorporates 'motivation', as an additional level between 'changes in capacity' and 'practice and/or behaviour change'

- 'Perceptions of the subjective norm' as an additional capacity factor influencing 'intention'; and

- Perceptions of knowledge and skill levels as factors influencing 'intention'.

The literature also identifies several factors that may affect participation levels. Understanding the reasons for non-participation in the program may help target areas that can be modified to better attract future participation. Similarly, an understanding of the factors influencing adoption may help explain the relationship between capacity, intentions, practices and behaviours. It must be highlighted that practices and behaviours relevant to this study were a) strategic planning practices/behaviours; and b) resilience-building practices/ behaviours.

Based on the above, a revised program logic model is presented in Figure 3.2. Although this is simpler than that presented in Chapter 2, the detail found in the earlier version continues to be relevant. With the addition of learnings from the literature, the basic theory behind the Farm Planning program anticipated that:

- If people attend the program they will have increased capacity — that is, they will have a better understanding, increased skills and ability, increased awareness and changed attitudes, which will influence perceptions of behavioural control and social norms.

- These capacity changes will strengthen participant intentions to undertake strategic planning, with the Farm Planning program providing appropriate opportunity and resources to do this. Consequently, participants will develop strategic plans for their farm businesses that align with the objectives of the National Drought Policy. The literature revealed that the family context will have a strong influence on plan development, highlighting potential tension between the policy objectives and the goals/strategies identified in the strategic plans.

- Once program participants have developed their strategic plans, they will put their plans into practice — for example, adopt self-reliant practices. Similarly, this behaviour will rely on the capacity changes to influence intentions. The Building Farm Business grants were identified as a resource that could strengthen the intention to implement the strategic plan.

- Implementing the activities identified in the strategic plans will result in improvements to social, economic and environmental conditions (i.e. resilience) at the farm business level.

- Implementing strategic plan activities by many farm businesses will result in broader social, economic and environmental outcomes.

As suggested in the change models presented by Mortiss and Chamala (1990) and Kotter (1995), change will only occur if there is a pressure for change. In the case of the Farm Planning program, the underpinning pressure for change was advocated as the risk of increased drought, climate variability and reduced water availability (Keogh, Granger and Middleton 2011).

From this analysis, the objectives of the research were identified — to determine the impact of the program on participant capacity; determine the impact of the program on participant behaviours; investigate the potential impact of the program on farm business resilience; and identify the factors influencing the effectiveness of the program. A conceptual framework for this research is presented in Figure 3.3. This is very similar to the logic model for the Farm Planning program, as the theory of change provided the framework on which to base the key questions to be answered through this research (as discussed in Chapter 2).
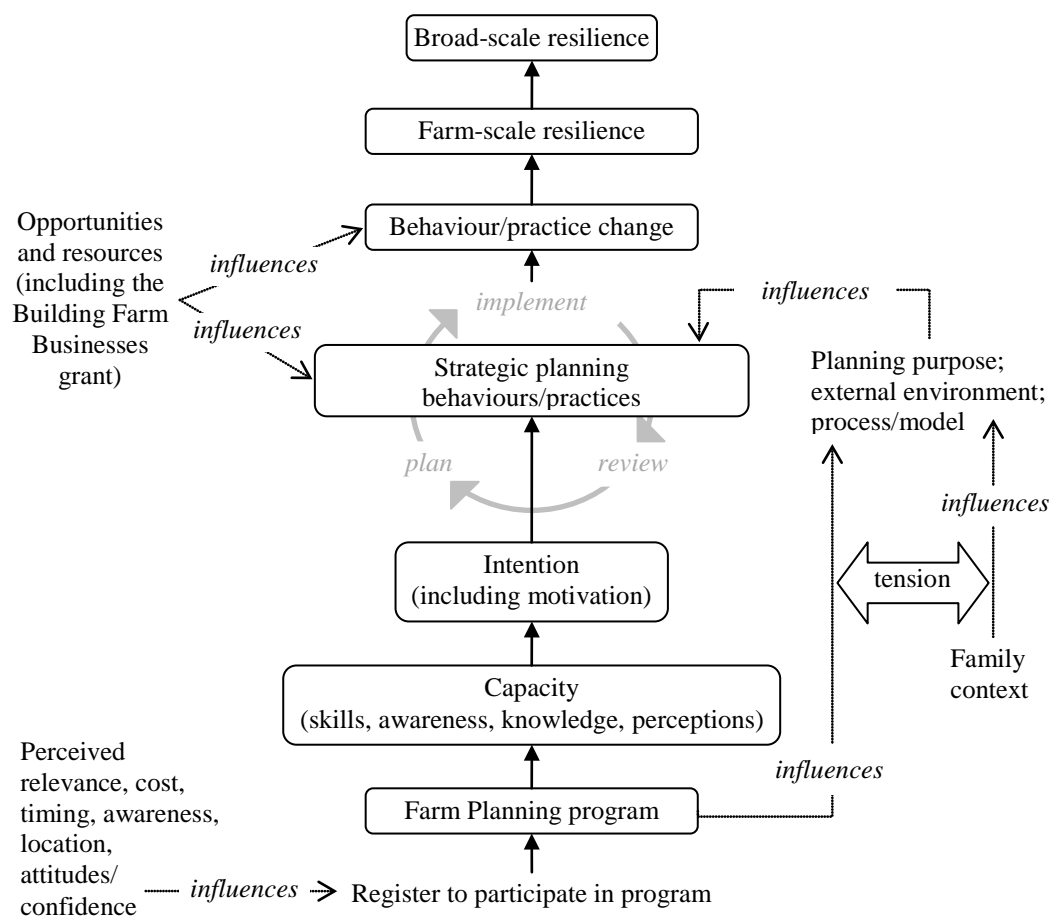
Figure 3.2:   Revised logic model for the Farm Planning program
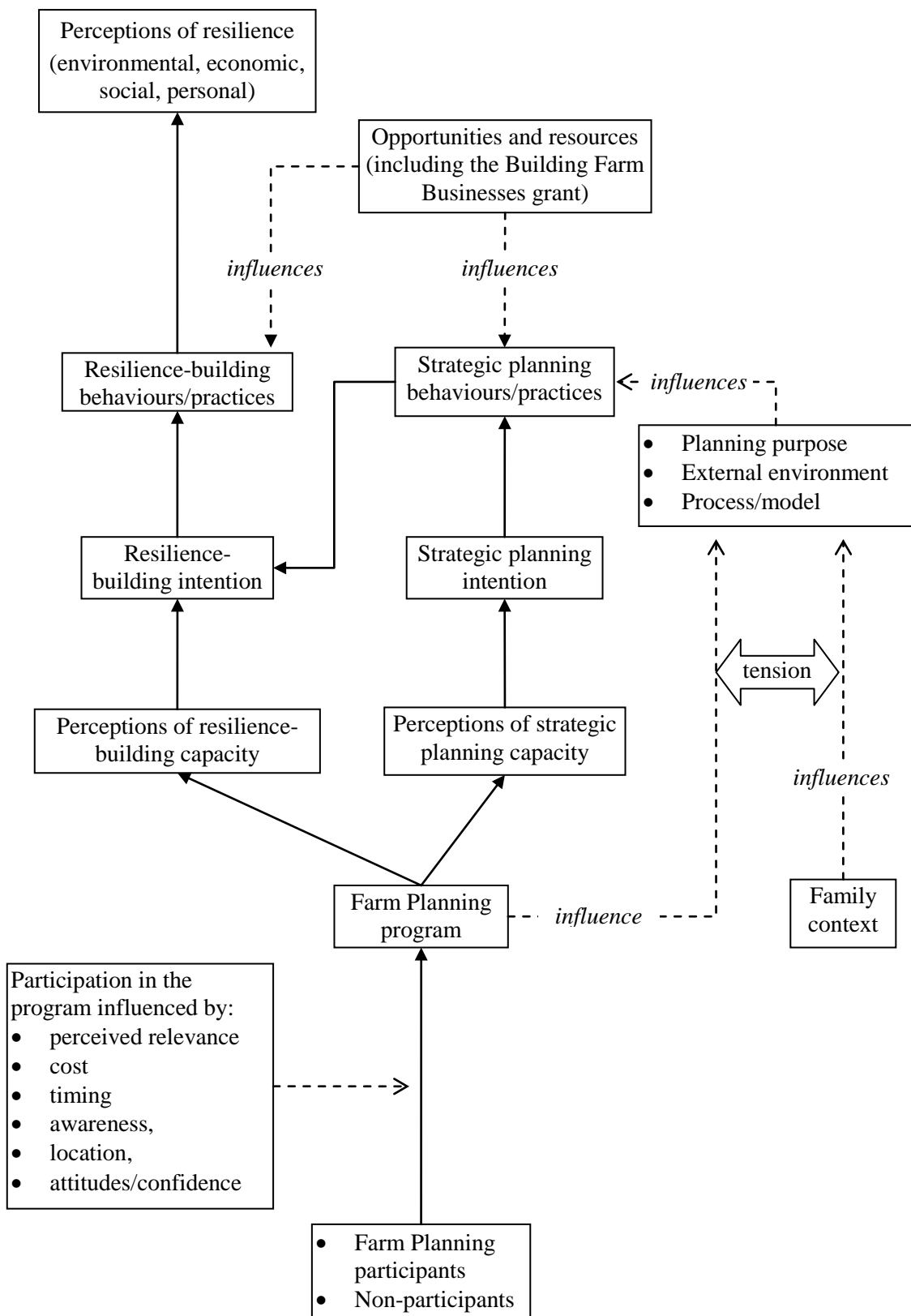
Figure 3.3: Conceptual framework for this research

Chapter 4.   Research methods

4.1   Introduction

This chapter describes and justifies the research methodology and design used to generate the data necessary to determine the impact of the Farm Planning program. The chapter begins with a description of the research paradigm and associated methodology, followed by a discussion on the research design. The study took a pragmatic approach, which lead to a mixed methods convergent parallel design being applied. The purpose of the design was to enable a qualitative, in-depth exploration of the influence of the program and the factors affecting program effectiveness whilst also supporting the collection of quantitative data to assess the validity of the pre-constructed theory of change for the Farm Planning program. It is argued that a mixed methods approach will provide a more comprehensive picture of the program outcomes and, therefore, a better understanding of the impact of the program and the factors influencing program effectiveness. The qualitative component of the research is described in Section 4.3 (semi-structured interviews), followed by a description of the quantitative component (structured surveys; Section 4.4). The secondary data used in the research is detailed in Section 4.5, and the limitations of the study are identified in Section 4.6. The chapter concludes with a summary of the approach taken for this research and the key challenges.

4.2   Research methodology and design

In assessing the general philosophical (ontological and epistemological) ideas underpinning this research, the principles of 'pragmatism' aligned well with the research objectives. With its focus on what works best for the research problem, 'pragmatism is a well-developed and attractive philosophy for integrating perspectives and approaches' (Johnson, Onwuegbuzie and Turner 2007, 125). Traditionally, the philosophies underpinning research were either positivist/postpositivist or constructivist (also known as interpretivist) (Teddlie and Tashakkorie 2009). Positivism applies the principles seen in the natural sciences, such as deduction, objectivity, reduction, empirical observation and measurement, and theory verification, to the social sciences (Creswell 2003; Johnson and Onwuegbuzie 2004; Saunders, Lewis and Thornhill 2007). Research within this paradigm is associated with quantitative data collection and analysis. On the other hand, constructivism acknowledges multiple realities — that is, every persons 'reality' is different as it is based on individual experiences and interactions (Creswell et al. 2003, Guba and Lincoln 1994). The constructivist perspective highlights exploration, understanding, multiple participant meanings, social and historical contexts, and theory generation (Creswell 2003). Research within this paradigm is associated with qualitative data collection and analysis. Pragmatism

attempts to 'fit together the insights provided by qualitative [i.e. constructivism] and quantitative [i.e. positivism] research into a workable solution' (Johnson and Onwuegbuzie 2004, 16).

Pragmatism, as a paradigm, acknowledges a middle ground between positivism and constructivism (Johnson and Onwuegbuzie 2004; Teddlie and Tashakorrie 2009). Some scholars believe this to be problematic, if not impossible, because of the contradictory philosophical assumptions underpinning the positivist and constructivist paradigms (the 'incompatibility thesis' – see Guba and Lincoln 1994). However, the success of practical research that uses pragmatic approaches has contributed to the relatively widespread rejection of this thesis (Teddlie and Tashakkorie 2009). Johnson and Onwuegbuzie (2004, 15) argue that 'Differences in epistemological beliefs… should not prevent a qualitative researcher from utilising data collection methods more typically associated with quantitative research, and vice versa'. Of particular importance to the pragmatist is the 'what works' approach — for example, selecting research methods that will best answer the research questions (Creswell and Plano Clark 2011; Johnson and Onwuegbuzie 2004).

Within the 'pragmatism' paradigm, the methodological approach deemed most appropriate for this research was that of mixed methods research. 'Mixed methods' refers to the use of different approaches within a single piece of research to yield both quantitative and qualitative data (Creswell et al. 2003; Fielzer 2009; Johnson and Onwuegbuzie 2004). According to Johnson and Onwuegbuzie (2004, 14-15), 'The goal of mixed methods research is not to replace [quantitative or qualitative] approaches but rather to draw from the strengths and minimise the weaknesses of both'. A defining characteristic of the methodology is the integration of the qualitative and quantitative findings (Johnson and Onwuegbuzie 2004). Mixed methods research can yield a mixture of complementary data that can strengthen the findings — for example, qualitative perspectives can be used to provide a deeper level of meaning to quantitative data. As discussed in Chapter 3, perceptions are important influencers on the anticipated outcomes of the Farm Planning program. As perceptions are subjective, a qualitative approach would be appropriate for this aspect of the research. On the other hand, quantitative data provide strong evidence that can be used to validate (or not) the pre-constructed theory of change for the Farm Planning program, and may have greater credibility with government agencies whom have been involved in funding and delivering the program (see Johnson and Onwuegbuzie 2004). Using a mixed methods approach will provide a more comprehensive picture of the outcomes and, therefore, a better understanding of the impact of the program and the factors influencing program effectiveness.

In further support of the methodology, as highlighted in Chapter 2 the Farm Planning program encouraged participants to develop strategic plans to guide them toward achieving a long-term vision unique to their farm business (Noonan et al. 2012), rather than farm plans specifically aligned to the objectives of the National Drought Policy. This implies that the program was not designed to limit the participants to the program's anticipated mid- to longer-term outcomes. Consequently, the design of this research should not be limited to quantifying these pre-constructed ideas but to also explore and understand other potential outcomes (see Funnell 2005).

Nevertheless, mixed methods research is not without weakness. There are two key areas (based on Johnson and Onwuegbuzie 2004): i) a greater level of time, capacity and resources is required for mixed methods research; and ii) clear guidelines are lacking, such as how to qualitatively analyse quantitative data and how to interpret conflicting results. It is also important to recognise the strengths and weaknesses of the qualitative and quantitative components, in order to 'decid[e] on the combination of complementary strengths and non-overlapping weaknesses that is appropriate for the particular study' (Johnson and Onwuegbuzie 2004, 19). These are further discussed within the context of the limitations of this research in Section 4.6.

In order to address the research objectives, a mixed methods convergent parallel design (Creswell and Plano Clark 2011) was used. In this design the qualitative and quantitative stages are undertaken concurrently. For this study, the mixing of the methods occurred within the data collection stage (i.e. a within-stage mixed-model design whereby qualitative and quantitative data were collected via a single instrument – see Johnson and Onwuegbuzie 2004) and during the overall interpretation of the results (Creswell and Plano Clark 2011; Teddlie and Tashakkori 2009) (Figure 4.1). The purpose of the convergent parallel design is 'to obtain different but complementary data on the same topic' (Morse 1991, 122), and was used in this research to support a greater level of understanding of the impacts of the Farm Planning program rather than to corroborate the findings[3] (Gray 2014). This is in-line with the 'completeness' (Bryman 2006), 'complementarity' (Greene, Caracelli and Graham 1989) and 'significance enhancement' (Collins, Onwuegbuzie and Sutton 2006 cited in Johnson, Onwuegbuzie and Turner 2007) typologies for why mixed methods are used.

The research design was quasi-experimental, involving comparisons between participants in the Farm Planning program ('participants') with people that were eligible to participate in the program but chose not to (control group — referred to as 'non-participants'). The design is considered 'quasi experimental' as people were not randomly assigned to a group

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[3] For example, using the quantitative findings to corroborate the qualitative findings, or vice versa.

(McDavid and Hawthorn 2006) but were self-selecting. The comparison to non-participants enables the counterfactual to be explored — that is, what would have happened without the program — and, therefore, differences between the two groups to be attributed to the program (Cummings 2006). This improves the external validity of the results (Cummings 2006; McDavid and Hawthorn 2006), assuming the influence of external factors would be reflected in the data collected from both participants and non-participants. Longitudinal data were also used to identify changes in participant attitudes over time. This involved measuring selected variables prior to participation in the workshop (*time 1*), on immediate completion of the workshop (*time 2*), and 12-18 months after completing the workshop (*time 3*). The research design is schematically represented in Figure 4.1.

Data collection/data type

| Time 1 — QUANT (participants) |
| Time 2 — QUANT (participants) → Analysis |
| Time 3 — QUANT (participants and non-participants) |
| QUAL (participants and non-participants) → Analysis |
| QUAL (participants) → Analysis |

Analysis → Relate or Compare (QUAL v QUANT; participant v non-participant; time) → Interpret
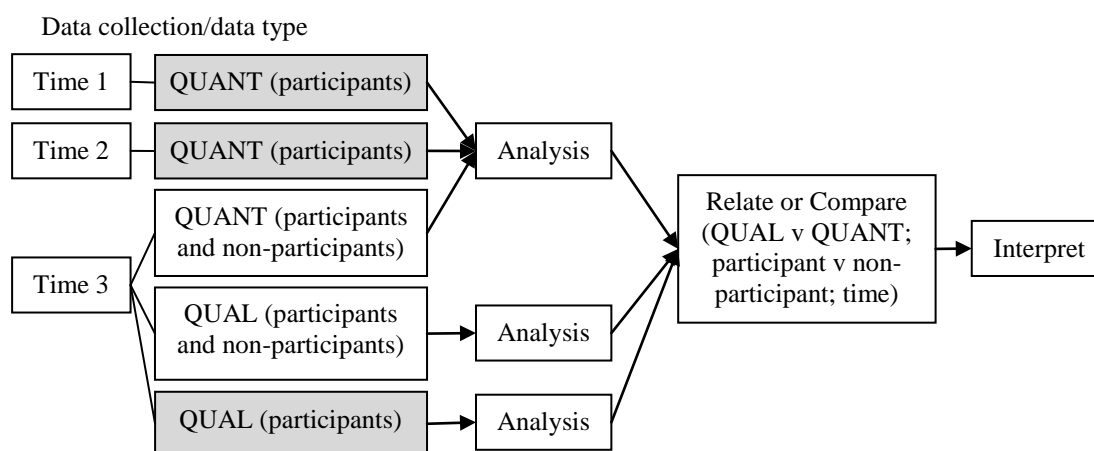
Figure 4.1: Schematic diagram of the research design

Source: Adapted from Creswell and Plano Clark 2011.
Shaded boxes represent secondary data.

4.3   Semi-structured interviews

The purpose of the semi-structured interviews was to produce meaningful, qualitative insights into the influence of the Farm Planning program and the factors affecting program effectiveness. This section of the chapter is divided into subsections detailing the population of interest, the data collection method and design, and the preparation and analysis of the data generated through the semi-structured interviews.

4.3.1   Population of interest

There were two criteria relating to the population of interest to the semi-structured interviews:

1.   Must have completed the Farm Planning program at least 12 months prior to the data collection; and

2.   The farm business must be located within the agricultural regions of Western Australia (as defined by the Department of Agriculture and Food Western Australia; see Figure 4.2). The pilot region for the Farm Planning program encompassed the agricultural regions of Western Australia.

The semi-structured interviewing was limited to the agricultural regions to minimise the distance required to travel. It should be noted that the agricultural regions covered approximately 90% of the farm businesses that met the first criterion. In terms of the first criterion, 12 months was considered adequate time to enable businesses that participated in the program to begin implementing their strategic plans and to reflect on the lessons learnt through their participation in the program. Practical time limitations meant interviews were not conducted with farm businesses that did not participate in the program.
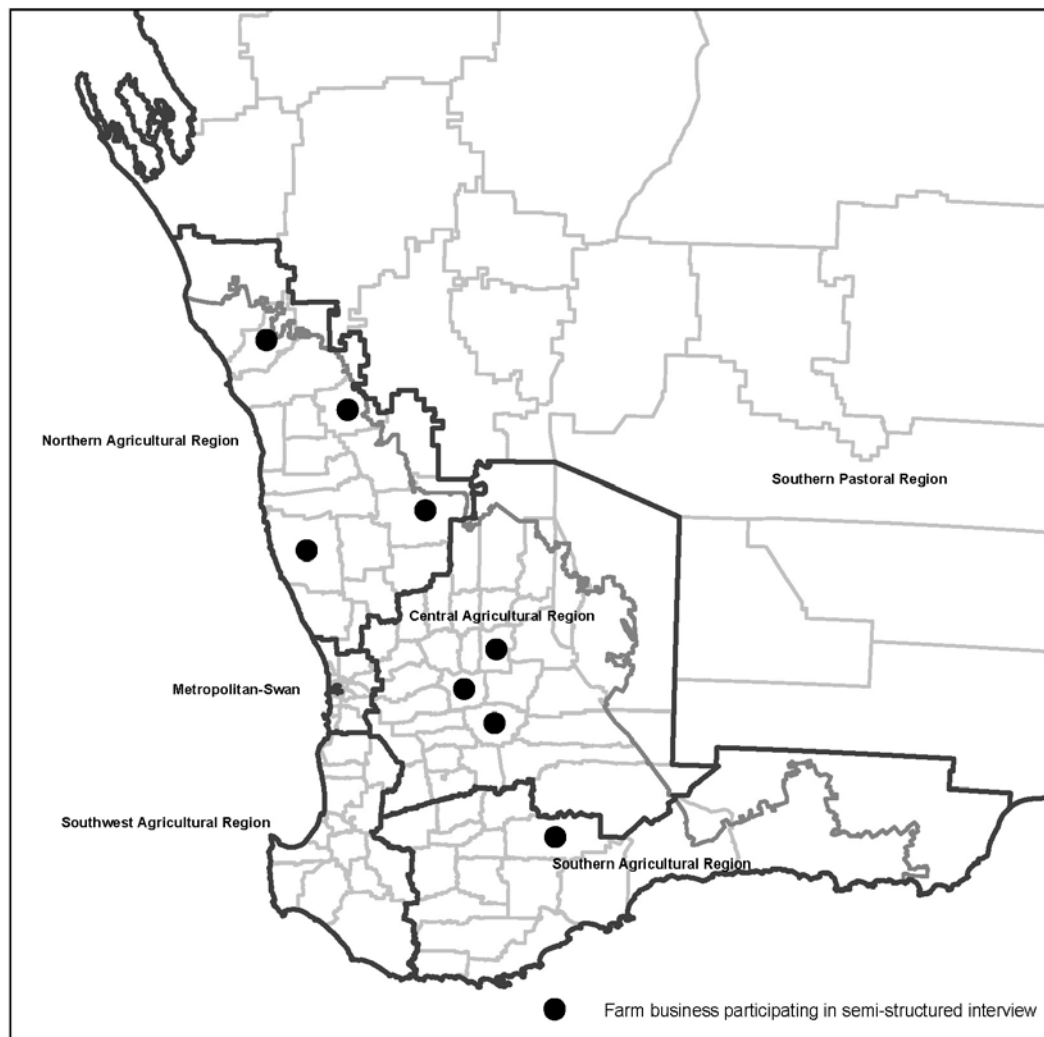
Figure 4.2: Location of the semi-structured interview participants within the agricultural regions of Western Australia

4.3.2 Data collection

In-depth semi-structured interviews were undertaken with 11 participants in the Farm Planning program (eight farm businesses) between 18 April and 4 May 2012, with each interview lasting between 40 and 90 minutes. For the semi-structured interviews, the same questions were asked of all interviewees; however, the process was flexible enough to enable issues to be probed (Gardner 1976). The method supports the collection of 'rich' data — data that pay 'careful attention to detail, context, and nuance' (Patton 2001, 227). For the purpose of this research, the interview method allowed deeper insight to the interviewees' unique situations and the other factors influencing their views and actions.

Purposeful random sampling (Patton 2001) of the database of farm businesses that participated in the program was used to select interviewees from the agricultural regions. As the name suggests, purposeful random sampling refers to sampling that is both purposeful and random (Patton 2001). In the case of this research, the sampling was 'purposeful' as it deliberately required a geographical spread of interviewees. This was important as the program was delivered to farm businesses at different locations by different facilitators, and anecdotal evidence indicated differences in facilitator styles and experience influenced participant satisfaction with the program (J Noonan, pers. comm. 2011). Furthermore, other geographical factors, such as seasonal conditions, were identified as potential influences on participant responses (Keogh, Granger and Middleton 2011; Noonan et al. 2012). The sampling was 'random' as interviewees were randomly selected from the group of participating farm businesses within each pre-determined geographical area. Figure 4.2 identifies the geographic locations of the eight participating farm businesses. There were no farm businesses located in the south-west agricultural region that met the criteria for the population of interest (see Figure 4.2).

The interviews were arranged by telephone, with the participant being advised of the interview purpose, broad content and confidentiality requirements. This information was reiterated in person, prior to the interview commencing, and a written Information Sheet that outlined the purpose of the research, their role, consent to participate, confidentiality and where to seek further information was provided (Appendix 2). All interviews were conducted at a place and time that suited the interviewee, and all were digitally recorded with the permission of the interviewee.

4.3.3 Semi-structured interview design

An interview guide was developed that listed the questions to be explored (Appendix 2). This ensured the same questions were asked of all interviewees. The guide contained open-ended questions and prompts that were consistent with the program logic framework (see Chapters 2 and 3); however, it was also designed to enable any unanticipated effects of the

program and factors influencing program effectiveness to be identified and explored. The guide was piloted with one program participant after being reviewed by Farm Planning program leaders, and no adjustments were required.

There were three key areas of the qualitative questioning:

- The extent to which the strategic plans developed through the program were being used;
- Intentions (for behaviour/practice change); and
- The influence of the program on participant capacity.

The influencing factors were explored across all three areas.

Consistent with the mixed methods parallel design, a quantitative component was included as part of the semi-structured interviews. A structured questionnaire (Appendix 2) was verbally administered on full completion of the qualitative data collection. The purpose of the questionnaire was to collect quantitative data on participant attitudes and demographic characteristics. This questionnaire is further described in Section 4.4.3, as the same questions were administered via the structured surveys (see Section 4.4).

4.3.4 Data preparation and analysis

All interviews were transcribed and sent to the interviewees to check if the transcription accurately reflected the discussion. No alterations were requested. The data were read and re-read, and entered into the computer program NVivo 8 (QSR International 2009). The data were then coded into predetermined and emergent themes. The predetermined themes were based on the program logic developed in Chapters 2 and 3. Cross-case analysis (Patton 2001) was undertaken, with individual interviewees comprising a 'case'. This analysis identified the similarities and differences between the interviewees, and resulted in descriptive findings for each theme. As unanticipated outcomes of the program emerged, these were also added into the coding frame. Appendix 3 provides examples of the qualitative coding and themes to demonstrate rigour behind the qualitative data analysis.

Quantitative data were prepared and analysed as per Section 4.4.4 below.

4.4 Structured surveys

The main purpose of the structured surveys was to produce quantitative measures of the influence of the Farm Planning program and the factors affecting program effectiveness. This section of the chapter is divided into subsections detailing the populations of interest, the data collection methods and design, and the preparation and analyses of the data collected through the structured surveys.

4.4.1   Population of interest

The population of interest to the structured surveys were farm businesses that were eligible to participate in the Farm Planning program. As such, research participants had to meet the following criteria:

- Must be a member of a farm business operating within the geographical boundaries of the Farm Planning program (Figure 1.1); and
- At least one member of the farm business contributed at least 50% of his or her labour to the business and derived at least 50% of his or her income from the business.

From this population, two groups were of interest — those that had participated in the program ('participants'), and those that did not participate in the program ('non-participants'). Participants must have completed the Farm Planning program at least 12 months prior to the data collection; and non-participants must not have participated in the program.

4.4.2   Data collection

Participants

Questionnaires were administered face-to-face, by post or completed online by participants in the Farm Planning program. An online questionnaire was identified as the most suitable survey method as all program participants had previous exposure having had to complete online questionnaires, administered by the Department of Agriculture and Food Western Australia (DAFWA), as part of the enrolment and completion process for the Farm Planning program (Noonan et al. 2012). Furthermore, online questionnaires are a cost-effective mechanism when compared to the time and resources required to undertake other survey methods such as telephone or mail questionnaires (Reips 2002).

The online questionnaire took place between 12 December 2012 and 22 January 2013, with all farm businesses that had completed the program at least 12 months prior to the data collection invited to participate. Invitations to participate were sent to each of the 374 eligible farm businesses as recorded in the program database. If email details were not available, the invitation and a hardcopy of the questionnaire were sent by post. A total of 45 responses were received (26 online and 19 post), with the online survey being closed early because of a conflict with the timing of an online survey of program participants being conducted by DAFWA. This was despite prior discussions with DAFWA on the timing and survey methods being used in this research.

To bolster the number of responses and maximise the use of available data, responses to a survey of program participants collected by third-year agribusiness students (Curtin University) were used as part of this research. Although this survey was developed and

undertaken as part of a separate research project (see Storer 2012), many questions included in the online questionnaire deliberately matched those asked in the Curtin survey. Furthermore, this researcher was involved in the question design for the Curtin survey. The Curtin survey was administered in person to farm businesses, with the interviewer asking the questions and recording the answers on an interview schedule. The survey was administered in April 2012, with a total of 96 responses received. The face-to-face surveys utilised stratified sampling of the 374 farm businesses that had completed the program before 30 April 2011 (i.e. 12-18 months prior to the survey being administered). Farm businesses were categorised based on geographic location, and interviews were conducted with businesses from each location. This enabled responses across a wide geographical area (consistent with the boundaries of the Farm Planning program). However, the sampling at each location can be classified as 'convenience sampling' (Patton 2001), as the interviewer was likely to select farm businesses to interview that he or she were already familiar with (Storer 2012).

Figure 4.3 identifies the geographic locations of the Farm Planning program participants that took part in the structured surveys. As with the qualitative component of the research, a geographical spread of responses was important to overcome potential biases in the responses owing to factors such as seasonal conditions and workshop facilitation.

Non-participants

Questionnaires were administered face-to-face or by telephone to non-participants. Although time-intensive, these survey methods facilitate good response rates (e.g. Sinclair et al. 2012) and were believed to negate issues such as internet access and literacy levels. Farmers have been identified as one of the most surveyed populations (Barclay and Bartel 2011; Skills Tasmania 2006); as such it was important to use a survey method that was conducive to participation. Combining the data collected via the two data collection methods was assessed to be a valid option. It has been shown that only small differences in data quality exist between telephone and in-person surveys, and no differences exist in terms of response validity (de Leeuw 2005). Although issues may have arisen when comparing the participant responses with those from the non-participants, it was believed that the potential risks (e.g. measurement errors) would be outweighed by the benefits (e.g. improved response rate). The telephone surveys were conducted by two people, and took place October-December 2011. Face-to-face surveys were undertaken by 18 third-year agribusiness students (Curtin University) in April 2012. Each questionnaire, whether delivered by telephone or in person, took between 15 and 20 minutes to complete.
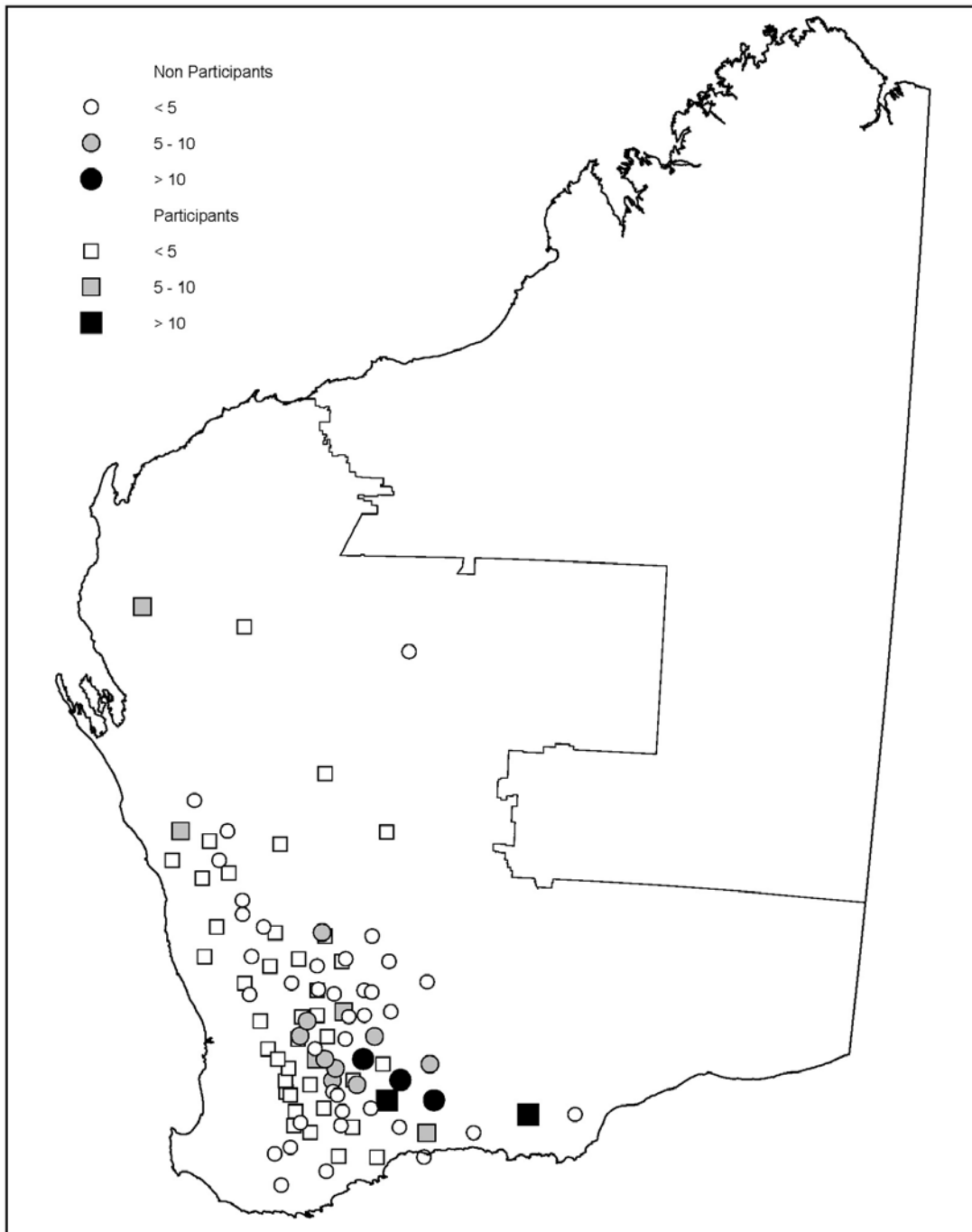
Figure 4.3: Location of the participant and non-participants respondents to the structured surveys within the pilot region for the Farm Planning program

Dots/squares represent the number of respondents in a given Local Government Area

The DAFWA Client Resources Intelligence System database, which includes information on Western Australian farm businesses, was used to identify farm businesses that aligned with the population of interest criteria. These were cross-referenced with the database of Farm Planning program participants, and program participants removed from the list. The remaining 'non-participant' farm businesses were divided into four groups based on geographic locations (north, east, south and west) to obtain a geographical spread of respondents. These four groups were randomly sampled, with a total of 83 responses received through the telephone surveys and 88 responses received via face-to-face surveys.

The geographical distribution of the non-participant respondents is shown in Figure 4.3. A geographical spread of responses was important to overcome potential biases. This improves the external validity of the results (Cummings 2006; McDavid and Hawthorn 2006), assuming the influence of external factors is reflected in the data collected from both participants and non-participants.

4.4.3   Questionnaire design

Consistent with the mixed methods parallel design, a combination of structured (i.e. quantitative) and unstructured (i.e. qualitative) questions were used in both the participant and non-participant questionnaires. The unstructured open-ended questions enabled the respondents to elaborate on their quantitative responses or provide detailed responses to particular questions. The structured (closed) questions included multiple choice, dichotomous and scaled designs (Malholtra et al. 2002). The questions, including those in the Curtin questionnaire, were informed by a combination of the program logic developed for this research and the literature review (see Chapter 2 and 3), past questionnaires used by DAFWA (see Section 4.5), and through discussions with project supervisors and the deliverers of the Farm Planning program. Deliverers of the Farm Planning program included staff from DAFWA's Rural Business Development Unit and Curtin University's Farm Business Resilience program. The participant questionnaire is included at Appendix 4, the non-participant questionnaire at Appendix 5 and the Curtin agribusiness student questionnaire (participant and non-participant) at Appendix 6. All questionnaires were piloted prior to distribution. Only minimal refinements were required.

There were four core sections of the questionnaires:

- *Attitudes and beliefs* (Appendix 4, questions 24-31, 64-66; Appendix 5, questions 21-35; Appendix 6, part c, questions 2-12, 17-19): Respondents were asked to rate their level of agreement with each statement in a series of statements. Ratings were made on a seven-point scale, with 1 being 'strongly disagree' and 7 being 'strongly agree'. This section of the questionnaires was designed to collect information on respondent

attitudes and beliefs in relation to i) climate change and seasonal variation; ii) the future of farming; iii) learning and training; iv) preparedness; and v) drivers of business performance.

- *Current practices* (Appendix 4, questions 4-7, 11, 35; Appendix 5, questions 9-11, 12-15; Appendix 6 questions 1, 16): There were three parts to this section of the survey — respondents were asked to provide information about their strategic planning practices and implementation, participation in learning and training activities and anticipated changes to their farm management practices. For the questions relating to strategic planning, learning and training, respondents were given a choice of responses. Where respondents did not have a strategic plan, an open-ended question was used to identify the reasons why they did not have a strategic plan. In terms of the anticipated changes to farm management practices, respondents were asked to rate their level of agreement with each of three statements on a seven-point scale, with 1 being 'strongly disagree' and 7 being 'strongly agree'.

- *Resilience* (Appendix 4, questions 23, 32-34, 36-63; Appendix 5, questions 16-21; Appendix 6, part c, questions 1, 13-15, 20-24, 26-47): Respondents were asked to rate their level of agreement with each statement in a series of statements relating to social resilience, personal resilience, environmental resilience and economic resilience. Ratings were made on a seven-point scale, with 1 being 'strongly disagree' and 7 being 'strongly agree'. This section of the questionnaire was designed to collect information on respondent perceptions about their levels of resilience.

- *Demographic characteristics* (Appendix 4, questions 68-76; Appendix 5, questions 36-44; Appendix 6, questions 55-62): The final section of the questionnaires was designed to provide demographic information on each respondent. This included information on age, gender, farm location and education level, as well as farm situational information such as future participation in the farm business, off-farm employment and income. This information was used to identify potential relationships between attitudes, practices and resilience and the characteristics of the respondents, and to determine whether the populations sampled were representative of the populations of interest.

In addition to the above, program participants were asked about:

- Their participation in the program (Appendix 4, questions 1-3; Appendix 5, questions 4-6) — where they attended, when they completed the program, and the number of members from the business that participated. These were presented as open questions, with the information identified as potential factors influencing program impact.

- The level of implementation of their strategic plan (Appendix 4, questions 8-10, 12-13; Appendix 6, questions 7-10) — including whether they had implemented any new practices (i.e. practices that they had not tried before) and if they had applied for the Building Farm Business funding. Respondents were asked to select a response, with the data used as evidence of program effectiveness. Open-ended questions were used to identify barriers preventing the respondents from putting their strategic plans into action, and reasons for applying (or not) for funding.

- Their perceptions of the impact of the program (Appendix 4, questions 14-22) — involved rating their level of agreement with each of eight statements on a seven-point scale, with 1 being 'strongly disagree' and 7 being 'strongly agree'. An open-ended question was also asked to identify what the respondent perceived to be the most significant change resulting from their participation in the program.

To further identify potential factors influencing program effectiveness, non-participants were questioned on the following in addition to the four core sections identified above:

- Knowledge of the Farm Planning program (Appendix 5, questions 1-4; Appendix 6, question 2) — if they had heard about the program (yes/no), and where they had heard about it (open-ended question).

- Future attendance (Appendix 5, questions 5-7; Appendix 6, questions 12-13) — their reasons for non-attendance (open-ended question) and likelihood of attending in the future (rating on a seven-point scale, with 1 being 'not at all likely' and 7 being 'very likely', followed by an open-ended question to identify reasons for their rating).

Scaled questions used a 7-point scale, with the end points labelled. A 7-point scale was chosen as it aligned with the scales used by the majority of secondary data sources, particularly the Curtin questionnaire. Such scales are commonly used when measuring subjective variables such as attitudes (Alwin 1997).

4.4.4   Data preparation and analysis

All data were entered into the SPSS statistical software package (IBM Corp. 2012). Structured questions were pre-coded, except continuous and string variables. Given the number of different questionnaires, questions were assigned to the identified sections (as per Section 4.4.3) to assist with the analyses. Prior to the analyses being undertaken, the data were screened to detect errors in data entry. Data transformations were necessary to enable comparisons to be made to the secondary data (Section 4.5), as some secondary data were collected using four- or five-point ordinal scales. Appendix 7 describes the transformations that were used. Analyses were conducted to summarise the data, identify significant differences between groups and over time, and to assess relationships between variables.

Descriptive statistics were used to explore, describe and summarise the data (Coakes and Ong 2011). This involved calculating the frequency and percentage distributions for each of the questions, as well as measures of central tendency and variability (where applicable).

The majority of the data were not normally distributed, and did not respond to transformation. Consequently, non-parametric tests were used in the analyses:

- Chi-square tests for association were used to test the statistical significance of observed associations between variables (Coakes and Ong 2011)

- Mann-Whitney U tests were used to determine if there were any significant differences in the mean ranks of the various statements between participants and non-participants (Coakes and Ong 2011)

- Kruskall-Wallis tests were used to identify statistically significant differences in the mean ranks of participant responses between the three points in time. Where significant differences occurred (i.e. $p < 0.05$), Dunn's post-hoc tests with a Bonferroni correction were used to locate the source of the differences (Lund Research 2013)

- Friedman tests were used to determine differences between participant responses to particular groups of statements (Coakes and Ong 2011); and

- Wilcoxon signed-rank tests were used to determine whether there were differences between paired data (Coakes and Ong 2011).

Exploratory factor analysis, using the principal component approach, was used to examine potential interdependent relationships (Lund Research 2013). The procedure was applied to two sets of variables — the 'attitude' and 'resilience' statements — to determine if some of the questions were answered in a similar manner and could be related constructs. Multiple regression analysis was used to ascertain the effects of demographic characteristics on the resultant factors; and logistic regression was used to identify the effects of participant attributes on selected variables.

Cross-case analysis (Patton 2001) was used to provide a coherent description of the qualitative data obtained for each open-ended question asked via the questionnaires.

4.5   Secondary data

There were six sources of secondary data that were used in this research (Table 4.1). Three of these surveyed Farm Planning program participants prior to their participation in the program; and two surveyed the participants immediately after they had completed the program. The 'grant completion report' survey was administered at least 12 months after the businesses had completed the program.

Table 4.1:   Secondary sources of data used in this research

Title	Survey instrument	Main type of data	Collected by	Population surveyed	Time collected	Number of responses
Entry questionnaire (Phase 1)	Online questionnaire	Quantitative	DAFWA	All program participants (2010/2011)	Prior to participation in the program (*time 1*)	355
Entry questionnaire (Phase 2)	Online questionnaire	Quantitative	DAFWA	All program participants (2011/2012)	Prior to participation in the program (*time 1*)	680
Start of Day 1	Written questionnaire	Quantitative	Curtin University[1]	All program participants (2010/2011)	Prior to participation in the program (*time 1*)	354
Exit questionnaire (Phase 1)	Online questionnaire	Quantitative	DAFWA	All program participants (2010/2011)	Within approximately 4 weeks of completing the program (*time 2*)	293
Exit questionnaire (Phase 2)	Online questionnaire	Quantitative	DAFWA	All program participants (2011/2012)	Within approximately 4 weeks of completing the program (*time 2*)	618
Grant completion report	Online questionnaire	Qualitative	DAFWA	All program participants that received a grant[2]	12-18 months after completing the program (*time 3*)	654[3]

[1] Curtin University's Farm Business Resilience program
[2] Grant received via the Building Farm Business program
[3] At 10 June 2013

A review of the survey instrument was carried out after the first year of the pilot (phase 1), which resulted in an updated questionnaire being administered during the second year (phase 2). Since the secondary data were collected from program participants before their participation in the program (*time 1*) and on immediate completion of the program (*time 2*), it allowed changes in the group to be tracked over time. The use of these longitudinal data supported the identification of cause-and-effect relationships (Anderson, Prause and Silver 2011; Hedeker and Gibbons 2006). Consequently, these secondary data were an important resource for assessing the impact of the Farm Planning program in a cost-effective manner. Furthermore, these data were critical to the contribution of this research to the existing body of knowledge on the process of change. Secondary qualitative and quantitative data from the 'grant completion report' survey that aligned with the framework used for this research were also used. It must be noted that only a selection of the data from the secondary sources was used in this research (Appendix 7). This was because these survey instruments were administered for a specific purpose and, therefore, included questions that were not relevant to this research.

Five of the six surveys were administered to all Farm Planning program participants. The sixth survey (grant completion report) was administered to all Farm Planning program participants that had received a Building Farm Businesses grant. The response rates were very good (70-100%). The good response rate is likely to have been influenced by the fact that all registered farm businesses were expected to complete the questionnaires. Completing the DAFWA online surveys (see Table 4.1) was a condition for attending the program or, in the case of the grant completion report, a requirement to receive the final grant payment (DAFWA 2014). The Curtin University 'start of day 1' survey was a written survey given to all program participants when they arrived at the first Farm Planning workshop module.

Questionnaire design was the main area of apprehension for using the secondary data, particularly the scales used and the wording of some of the questions within the DAFWA questionnaires. The phase one survey used a variety of four- and five-point scales with labels on each point. In some cases these labels differed for each question, even when a similar topic was being measured. In addition, some of the scales used were unbalanced and/or did not provide a neutral option despite using a 5-point scale (e.g. 'unnecessary', 'not much use', 'useful', 'very useful' and 'essential'). Another atypical use of scales was evident in the grant completion report survey. Here, respondents were asked to rate how effective activities were in regard to achieving certain outcomes. A scale was provided with the following, somewhat ambiguous, labels — 'we need to completely revise our plan', 'we will be changing most of our activities', 'we need to make some minor adjustments', 'need more time to determine effectiveness', 'we have selected the right activities', 'our activities are

effective', 'all our activities are very effective'. It appeared that these were categories for responses, rather than a scale. Furthermore, it was not clear how these categories were determined to be the most appropriate for this question.

In terms of the wording of the questions, leading questions and ambiguity were evident in some areas. For example, the grant completion report included the following: 'Please complete this sentence. Being self-reliant and managing farm business risk means that we… (e.g. will not have to rely on government support)'. Based on a review of the literature, Lietz (2010) proposes several recommendations for questionnaire design. These include using clear, specific and simple questions; the inclusion of a middle 'neutral' option on scaled questions; and scaled questions that are unipolar with labels anchoring each end. It is suggested that, if the recommendations are addressed, the validity, reliability and quality can be improved since 'even minor details in the formulation of questions and answers can have a major effect on the responses obtained and ultimately on the conclusions drawn from the research' (Lietz 2010, 250).

Despite concerns about the design of the questionnaires, the data were considered a worthwhile complement to the study. In particular, the longitudinal data were important to better understand the effect of the Farm Planning program over time and, thus, the process of change. Where the data may be compromised because of the issues mentioned above, this is made clear in the results and the ensuing discussion.

Similar to the preparation of the structured survey data described in Section 4.4.4, the secondary data were entered into the SPSS statistical software package (IBM Corp. 2012). Questions were pre-coded and assigned to the identified sections (as per Section 4.4.3). Redundant questions were omitted. Prior to the analyses being undertaken, the data were screened to detect errors in data entry. Data transformations were necessary to enable comparisons to be made, as some of the scales used to measure responses differed between the phase 1 and phase 2 questionnaires (Appendix 7 lists the secondary data and transformations). Analyses were conducted to summarise the data, identify significant differences over time, and to assess relationships between variables.

4.6   Limitations

There were several potential limitations to the research:

- *Multiple data collection methods*: The analyses required combining and comparing responses collected through multiple methods. It is likely that data quality will be affected because of non-response and measurement errors, and the change in method may confound the longitudinal analyses (de Leeuw 2005). To address these issues, the

wording of questions was kept as constant as possible to minimise measurement error and facilitate comparability.

- *Multiple survey collectors*: Using multiple people to collect survey data can result in 'variations in data created by differences among interviewers' (Patton 2001, 346). To minimise potential variations in the data collected via structured surveys, detailed interview schedules were used to guide the data collection process. These documented the exact wording to be used during each interview, including an introduction, all of the questions and the 'wrap-up'.

- *Sample size*: For the semi-structured interviews, surveying to saturation (i.e. until no new information is collected; e.g. Lincoln and Guba 1985), was not possible due to practical time considerations. Using in-depth semi-structured interviews facilitated the collection of rich data, and the purposeful random sampling technique ensured a geographical spread of responses. As Patton (2001, 245) notes, 'The validity, meaningfulness, and insights generated from qualitative inquiry have more to do with the information richness of the cases selected and the observational/analytical capabilities of the researcher than with sample size'.

- *Differences in sample sizes*: The secondary data collection targeted the whole of the populations of interest. In contrast, the majority of the primary data collection (participants) used stratified convenience sampling. This resulted in large differences in the number of responses received between *time 1*/*time 2* and *time 3*. Data analyses with assumptions relating to sample size will be affected. Results that should be treated with caution are clearly identified.

- *Qualitative data quality*: The researcher had some previous experience undertaking semi-structured interviews with farmers. To enhance the quality of the data, the interview guide included detailed prompts and probing questions that were developed with the guidance of supervisors with extensive experience.

- *Generalisabilty*: As with most qualitative research, the qualitative findings are not generalisable to the wider population of Farm Program participants. It was not the intention for the qualitative sample to be representative of the wider population, but rather to provide rich data to complement the quantitative component of the research.

- *Biases*: It is possible that the researcher's values and beliefs may have influenced the data and its interpretation. Strategies that were used to minimise bias and deliver credible findings included systematic data collection procedures, the use of multiple data sources and a mixed methods approach (Johnson and Onwuegbuzie 2004; Patton 2001). Sampling bias may have occurred in the non-participant survey because the sampling frame often referred to the older generation, even if the younger generation

were the main farm managers. Additionally, the Curtin University survey used convenience sampling. Although only a small number of responses were received, the online participant survey facilitated self-selection, which may bias these data toward certain demographic attributes (Sinclair et al. 2012).

4.7   Summary

This chapter has described and justified the research methodology and design. Pragmatism was identified as the philosophy underpinning this research, with its focus on what works best for the research problem. In line with this philosophy, the methodological approach taken was that of mixed methods research, specifically the mixed methods convergent parallel design where the qualitative and quantitative stages are undertaken concurrently.

In order to assess the impact of the Farm Planning program, program participants were surveyed primarily using structured and semi-structured interviews. These data were compared to secondary data collected prior to their participation in the program and on immediate completion. Additionally, participant responses were compared to those from people that were eligible to participate in the program but did not. In general, the qualitative data were used to enhance the information gathered from the quantitative surveys. This supported a greater level of understanding of the impacts of the Farm Planning program.

The key challenge was the need to stop the planned data collection targeting the program participants. The contingency put in place provided appropriate data; however, it also raised issues of data reliability and validity. Nevertheless, the research design took a pragmatic approach to ensure the research objectives were achieved in the best possible way.

Chapter 5. Demographics and program participation

5.1   Introduction

The objectives of this research were to examine the impacts of the Farm Planning program on participant capacity, behaviours and perceived resilience, and to identify the factors influencing the program's effectiveness. Demographic information was collected to determine differences between the samples, and between the samples and the wider populations; and to enable the potential influence of demographic characteristics on attitudes and perceptions to be assessed. This chapter also describes the ability of the program to attract participation, as this can directly affect program success.

The chapter begins by reporting the demographic characteristics of the survey respondents (Section 5.2). The demographic information collected through the *time 3* (t3) survey of Farm Planning program participants is compared to that of the population of Farm Planning program participants. The demographic responses are also compared to those from the t3 non-participant survey. The key demographic-related findings are then discussed, with the demographic variables that may affect the validity of the research findings identified along with the actions to address these issues. The next section (Section 5.3) describes the ability of the program to attract participation. It begins by examining the levels of farmer awareness of the Farm Planning program, and reasons for participation/non-participation. This is followed by an assessment of the characteristics influencing participation. The section concludes with a summary of the key findings.

A note on terminology

The term 'participant' or 'program participant' refers to survey respondents that had participated in the Farm Planning program; the term 'non-participant' refers to survey respondents that did not participate in the Farm Planning program. In some instances the term 'program participant' is also used to indicate Farm Planning program participants in general. Where this occurs, the meaning is clear.

5.2   Demographics of survey participants

5.2.1   Gender

The majority of Farm Planning program participants responding to the t3 survey were male (61%) (Table 5.1). This gender representation is comparable to the Farm Planning program population ($p = 0.674$). Furthermore, the gender representation at the program was similar to that of farmers within the pilot region (Table 5.1). There was a significant difference between the gender representation of the t3 participant survey respondents and the t3 non-

participant survey respondents ($p = 0.014$), with the non-participant survey being dominated by male respondents (Table 5.1).

Table 5.1: Gender of survey respondents compared to the pilot region and Australia (percentage)

	Participants			Non-participants	Pilot region farmers (phase 1)	Australian farmers
	Time 1	Time 2	Time 3	Time 3		
Gender	n=1035[a]	n=911[a]	n=138	n=171	n=9372[b]	n=51 109[b]
Male	59	65	61	77	59	56
Female	41	35	39	23	41	44

$\chi^2 = 0.79$, d.f. = 2, $p = 0.674$ (t1, t2, t3 [participants])
$\chi^2 = 5.98$, d.f. = 1, $p = 0.014$ (t3 participants and non-participants)
[a]Source: DAFWA 2012
[b]Source: ABARES, cited in Keogh, Granger, and Middleton 2011, 23

5.2.2   Age

More than half (62%) the t3 program participant respondents were aged between 35 and 54 years of age (Table 5.2). This age distribution is similar to that of the t1 and t2 participant respondents, with 58% and 61% of respondents, respectively, categorised into this age bracket (DAFWA 2012). A Kruskal-Wallis test supported these observations, showing no statistically significant difference in the age distribution across the three participant surveys ($p = 0.062$). In contrast, the majority of farmers located within the pilot region and Australia as a whole were at least 45 years old (Table 5.2). The over-65-years age group was under-represented in the t3 participant sample (3%), when compared to the pilot region (21%) and Australia as a whole (22%). This under-representation was also apparent in the age distribution of both the t1 and t2 survey respondents (Table 5.2). It was evident that some older farmers perceived the training to be of less relevance because of the stage they were at in their farming career (see Section 5.3). This might, to some extent, account for the small number of older farmers participating in the program. Conversely, the younger farmers may have perceived the training to be of great relevance, resulting in the overrepresentation of these age groups. The engagement of younger farmers in the Farm Planning program was noted as a positive outcome in a review of the pilot program — 'The panel was encouraged that younger farmers, at an early stage in their farming career, responded to the opportunity to engage in strategic farm business planning' (Keogh, Granger and Middleton 2011, 22).

The age distribution of the non-participant respondents aligned more closely with that of the pilot region and Australia, with the exception of the over-65 years age bracket (Table 5.2). A Kruskal-Wallis test identified a significant difference in the age distribution across the t1-t3

surveys, including non-participants ($p = 0.003$). Post hoc analysis (Dunne's procedure with a Bonferroni correction) revealed the source of this difference to be between the t2 survey respondents and non-participants ($p = 0.004$); however, the analysis did not identify differences in the age distributions between t1 or t3 participants and the non-participants ($p = 0.191$ and $p = 0.108$, respectively).

Table 5.2:   Age of survey respondents compared to the pilot region and Australia (percentage)

| Age | Participants | | | Non-participants | Pilot region farmers (phase 1) | Australian farmers |
	Time 1 $n=1035$[a]	Time 2 $n=911$[a]	Time 3 $n=138$	Time 3 $n=171$	$n=9375$[b]	$n=151\ 292$[b]
<24	1	1	2	6	5	5
25-34	14	17	16	10	12	9
35-44	28	30	27	19	16	14
45-54	30	31	35	29	22	24
55-64	19	17	17	25	24	26
65+	8	4	3	11	21	22

$p = 0.003$ (Kruskal-Wallis test between t1-t3, including non-participants)
[a]Source: DAFWA 2012
[b]Source: ABARES, cited in Keogh, Granger and Middleton 2011, 22

A Kruskal-Wallis test identified a significant difference in the age distribution of males across the t1-t3 participant surveys ($p = 0.029$) (Figure 5.1). Post hoc analysis (Dunn's procedure with a Bonferroni correction) revealed the source of this difference to be between the t1 and t2 respondents ($p = 0.023$). The non-participant survey captured a slightly greater percentage of older males (aged from 55 years) and younger males (24 years or younger) when compared to the three surveys of Farm Planning program participants (Figure 5.1); however, a Mann-Whitney U test did not identify any significant difference in the distribution of male ages between the t3 participants and non-participants ($p = 0.324$).

The age distribution of female respondents (Figure 5.2) is visually similar to that of the male survey respondents shown in Figure 5.1. When compared across the three surveys of Farm Planning program participants, the age distribution of female survey respondents was comparable, with no significant difference detected ($p = 0.702$). The non-participant survey captured a greater percentage of 55-64 year old females (26%) and fewer females aged below 44 years, particularly those in the 25-34 year age bracket (5%), when compared to the surveys of program participants (Figure 5.2). Accordingly, a Mann-Whitney U test revealed a significant difference in the age distribution of female t3 participants and non-participants ($p = 0.013$).
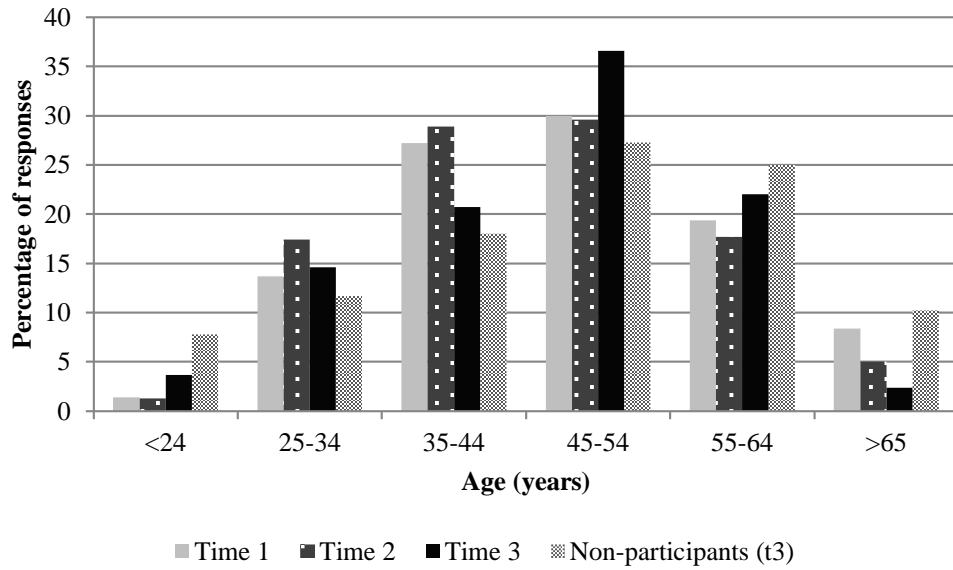
Figure 5.1: Age distribution of male survey respondents

$\chi^2 = 7.081$, d.f. $= 2$, $p = 0.029$ (Kruskal-Wallis test between participant surveys; $n = 1490$)
$U = 5660$, $z = 0.987$, $p = 0.324$ (Mann-Whitney U test between t3 participants and non-participants; $n = 210$)
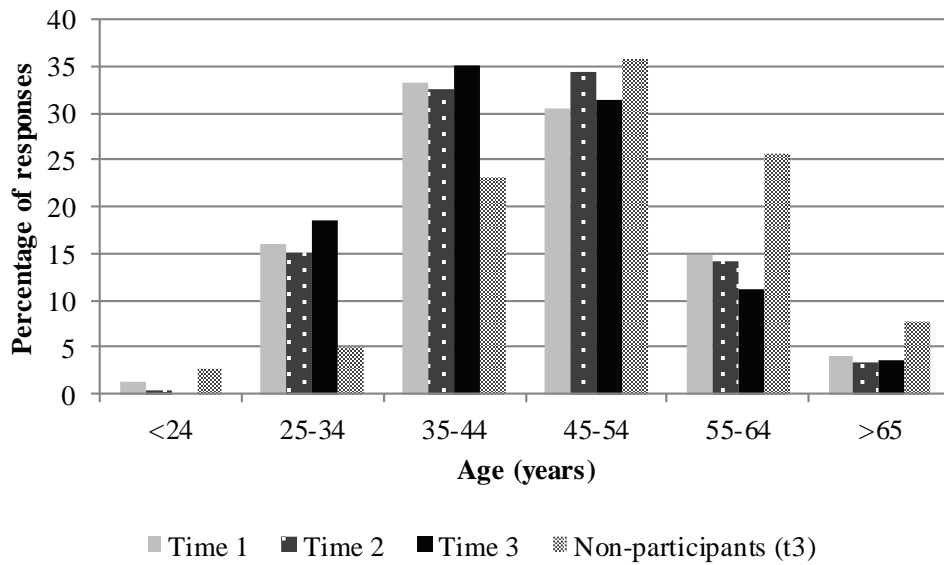
Figure 5.2: Age distribution of female survey respondents

$\chi^2 = 0.706$, d.f. $= 2$, $p = 0.702$ (Kruskal-Wallis test between participant surveys; $n = 600$)
$U = 1359$, $z = 2.477$, $p = 0.013$ (Mann-Whitney U test between t3 participants and non-participants; $n = 93$)

5.2.3 Education

The t3 participant survey captured a much greater percentage of Farm Planning program participants that had a university degree or post-graduate qualification (43%) than the t1 survey (21%) and non-participant survey (21%) (Table 5.3). A Kruskal-Wallis test identified statistically significant differences in the distributions of education levels across the surveys ($p = 0.00$). The difference between the t3 participant survey responses and the other two surveys was confirmed by post hoc analysis (Dunn's procedure with Bonferroni correction), where $p = 0.00$ for the pairwise comparison between t3 participant responses and both non-participants and t1 responses. There was no significant difference in the education levels of the t1 respondents and the non-participants ($p = 0.591$) (Table 5.3). It is likely that the over-representation of university graduates in the t3 participant survey was due to the convenience sampling strategy used by the Curtin University students that administered the survey.

Noonan et al. (2012, 48) recognised that Farm Planning program participants were 'generally better educated than the broader "agricultural" population'. Visual inspection of Table 5.3 supports this statement, where the education levels of the program participants are compared to Western Australian agriculture, forestry and fisheries workers. Here, only 8% of agriculture, forestry and fisheries workers held a university or post-graduate qualification (Department of Commerce 2012 cited in Storer 2012). It is interesting that the randomly sampled non-participants also appear to be better educated when compared to Western Australian agriculture, forestry and fisheries workers (Table 5.3). This may be due to the sample size not enabling a representative sample. Alternatively, the inclusion of forestry and fisheries workers into the Western Australian comparison may be too broad. In support of this, Australian Bureau of Statistics data show close to 40% of Australia's farmers with, at the least, a TAFE certificate or diploma (ABS 2013).

Table 5.3: Education level of survey respondents (percentage)

| Education level | Participants | | Non-participants | Western Australian agriculture, forestry, fisheries workers[b] |
	Time 1 $n=999$[a]	Time 3 $n=136$	Time 3 $n=170$	
Junior/senior school	60	35	64	70
TAFE certificate/diploma	22	21	15	22
University degree	14	36	16	7
Postgraduate qualification	4	7	5	1

$p = 0.000$ (Kruskal-Wallis test between t1 and t3 responses)
[a]Source: DAFWA 2012
[b]Source: Department of Commerce 2011, cited in Storer 2012
No 'education' data were available at t2

5.2.4 Participation in farming

Survey participants were asked about their past, current and future participation in farming. This was to enable an examination of the potential influence of these on program impact. Similar responses were received from the t3 survey respondents — 68% of program participants and 67% of non-participants believed they would be running their farm business in five years ($p = 0.737$, Mann-Whitney U test, $n = 307$); and 69% of program participants and 72% of non-participants did not have any off-farm employment ($p = 0.764$, Mann-Whitney U test, $n = 308$). The main reason for respondents anticipating that they would not be running their farm in five years was their retirement from working life (43% of responses).

The t3 program participant survey respondents had been farming, on average, for 24 years (range = 1-56 years, s.d. = 12.39, $n = 136$), whilst the non-participant survey respondents had been farming, on average, for 28 years (range = 1-58 years, s.d. = 14.36, $n = 170$). An independent samples t-test revealed a statistically significant difference in the mean length of time that the two groups had been farming ($p = 0.002$).

The t3 surveys sought to identify the approximate percentage of income that was derived from off-farm sources. Analysis of these data revealed a range from 0-100%. This indicates that the question may have been misinterpreted by some, as the survey was only open to farm businesses that included at least one member who contributes at least 50% of his or her labour to the business and derives at least 50% of his or her income from the business. Data screening confirmed the respondents that indicated very large percentages of off-farm income had met the population of interest criteria. As such, the information is presented (Figure 5.3), but should be treated with caution.

Although information on estimated annual gross income was collected via the online t3 participant survey and the telephone non-participant survey, the information was not collected through the Curtin University survey. This was because the students felt uncomfortable requesting financial information from farm businesses (C. Storer pers. com. 2011). Consequently, this information was not included in any analyses.
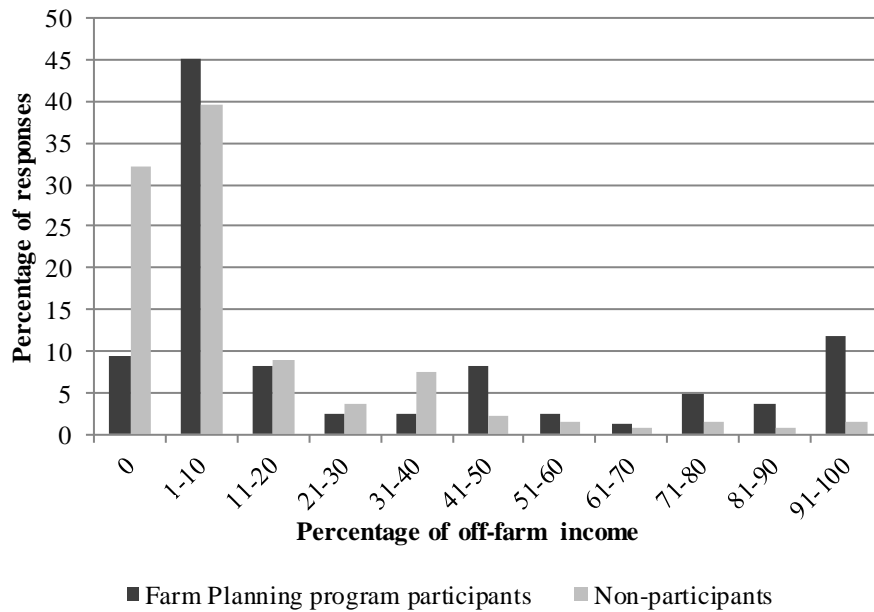
Figure 5.3: Percentage of off-farm income received by time 3 survey respondents

Participants: mean = 30.60, S.D. = 35.43, n = 84.
Non-participants: mean = 13.74, S.D. = 21.18, n = 134
t = 3.942, d.f. = 120, p = 0.000 (independent samples t-test)

5.2.5 Summary

In general, the characteristics of the t3 Farm Planning program participant survey respondents were similar to the population of Farm Planning program participants[4]. The age of the t3 program participant respondents aligned with the age distribution for the population of Farm Planning program participants. This indicates a valid sample of program participants were included in the t3 survey. This is further supported by the gender distribution of the t3 participant survey, which also aligned with that of the program population. On the other hand, the education level of the t3 program participant survey respondents were greater than that of the Farm Planning program population, with more t3 survey respondents possessing a university degree or post-graduate qualifications. It is possible that this imbalance will have an effect on some of the results. This will make it difficult to generalise findings across the population of Farm Planning program participants, despite age and gender characteristics being consistent. To address this issue, actions were taken during the data analyses to better understand the effect of education level on participant responses.

Other authors have noted that the population of Farm Planning program participants differed from the broader farming population (e.g. Keogh, Granger and Middleton 2011; Noonan et

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[4] The characteristics of the Farm Planning program population are based on the data collected in the t1 and t2 surveys. It was believed these were representative of the population of program participants, as all farm businesses that participated in the program were required to complete these surveys.

al. 2012). Specifically, Noonan et al. (2012, 48) stated that the program participants were 'younger; a higher percentage of females; and generally better educated'. This research supports the assertion that a younger group were involved in the program; however, the data do not support the claim that the program attracted a greater proportion of females or educated people. From this research, it appeared that the gender distribution of the Farm Planning program population was similar to that of the wider farming population — if not slightly skewed toward males. Strong data on education levels were unable to be sourced; however, it has been documented that the education levels of Australian farmers are increasing (e.g. ABS 2013). Furthermore, the increase in formal qualifications amongst farmers 'in proportional terms has outstripped that among other occupations' (ABS 2013, 1). The ABS (2013) information suggests almost 40% of Australian farmers have, at the least, a TAFE certificate or diploma, which is a similar proportion to that shown by the Farm Planning program population.

The representativeness of the non-participant survey respondents of the wider farming population is uncertain. A greater proportion of males were represented in the non-participant survey, and the older age group was underrepresented. On the other hand, the education level of this group appears in line with the ABS (2013) information, with 36% of non-participant respondents having formal qualifications. It must be stressed that it is not certain whether the proportion of TAFE- and university-level qualifications of non-participant respondents is similar to the wider farming population.

Similarities between the t3 participant and non-participant respondents, in terms of their level of off-farm income, future participation in farming and age distribution, suggest that these variables should not affect a comparison between these two samples. However, differences were evident in terms of gender, education and the length of time involved in farming. Consequently, these variables were assessed to identify potential effects when comparing participants and non-participants.

5.3 Participation in the program

5.3.1 Attracting participation

Of the 170 non-participants surveyed, 44% had not heard of the Farm Planning program. Of those that had heard of the program, passive information sources (newspapers and radio) were the most common ways in which they were made aware of the program, along with family/friends/neighbours (Table 5.4). In contrast, Farm Planning program participants were more likely to have heard about the program from active sources — family/friends/ neighbours, the Department of Agriculture and Food or consultants (Table 5.4).

Table 5.4: **Sources of information where program participants and non-participants heard about the Farm Planning program (percentage of responses)**

Source of information	Non-participants (t3) $n = 68$	Participants (t1) $n = 1385$
Family/ friends / neighbours	22	27
Department of Agriculture and Food	1	18
Consultant	3	14
Newspaper	24	11
Radio	22	7
Accountant	4	6
Other	13	5
Information session	6	4
Internet	0	4
Training provider	1	3
Television	3	1

At the time of the survey, 25% of the non-participant respondents wanted to participate in the Farm Planning program. Where responses were obtained from this group, the main reasons for not participating were the timing of the workshops and/or because they were unable to leave their farm in capable hands (Table 5.5). For those that did not want to participate, the main reason for not participating was because of the time and/or effort required (Table 5.5). More than half the non-participant respondents (55%) did not think they would attend the Farm Planning program in the future (Figure 5.4).

Qualitative data collected through the non-participant survey identified several factors influencing the likelihood of future participation in the Farm Planning program (Table 5.6). There were three factors that had both positive (i.e. increased likelihood of participation) and negative influences:

- *Grant*. The possibility of accessing the grant provided an incentive to participate in the program; however, where businesses were ineligible to access these funds, then participation in the program was less likely.

- *Level of understanding of the workshop topics and their relevance*. Those that already had an understanding (or perceived they had an understanding) were less likely to see the relevance to their business and less likely to participate, whilst those that believed they did not have a good understanding were more likely to participate in the future.

- *Feedback from others*. Positive feedback about the program encouraged participation, whilst negative feedback discouraged participation.

Table 5.5: **Reasons why non-participants did not participate in the Farm Planning program**

Reason for non-participation	Wanted to participate (n = 37)		Did not want to participate (n = 48)	
	Frequency	Percentage	Frequency	Percentage
Timing of the workshops	16	43.2	9	18.8
Ability to leave farm in capable hands	8	21.6	5	10.4
Distance to workshops	5	13.5	3	6.2
Knowledge of the workshop content	5	13.5	10	20.8
Eligibility for the Building Farm Businesses grant	4	10.8	5	10.4
Time and/or effort required	4	10.8	12	25.0
Don't participate in such activities			7	14.6
Don't want/need government assistance			7	14.6
Not a priority			3	6.2
About to retire			2	4.2
Didn't know enough about the program			2	4.2
Too late to enrol			2	4.2
Feedback from others			1	2.1
Not relevant			1	2.1

Responses are not mutually exclusive
Only a portion of the 170 non-participants provided reasons as to why they did not participate
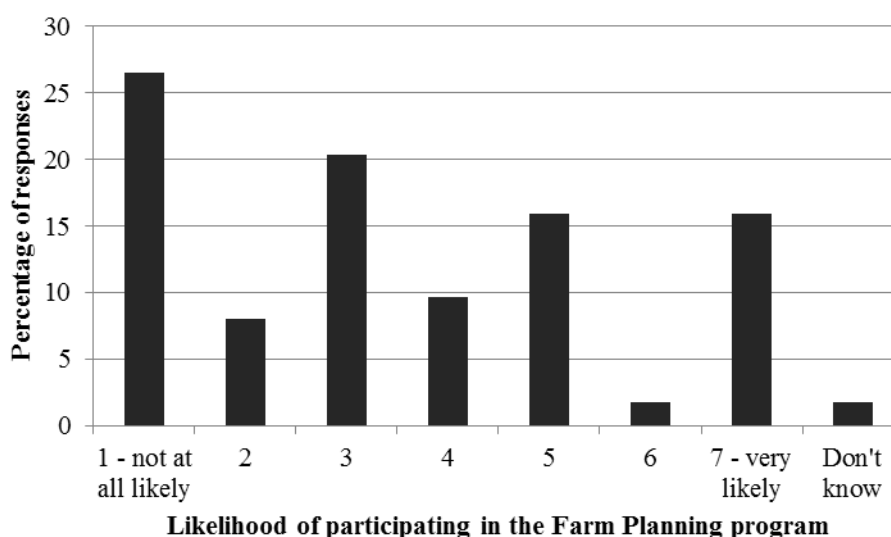
Figure 5.4: Likelihood of non-participants participating in the Farm Planning program

Mean = 3.64, S.D. = 2.70 ('don't know' responses omitted from calculation)
$n = 113$

Table 5.6: **Factors influencing the likelihood of non-participants participating in the Farm Planning program in the future**

Likelihood of participating	Factor	Frequency
Unlikely to participate	Not eligible for the grant	19
	Not relevant / don't need it	18
	Do not like workshops / 'experts'	9
	Program takes too long / too busy to participate	9
	Feedback from others	4
	Others will benefit more	4
	Distance required to travel	1
Unsure	Anticipate that other family members will attend	6
	Depends on timing/location	6
	Need to be able to justify the time	1
Likely to participate	Interested in learning new things	7
	Potential for funding via grant program	5
	Topic is interesting	5
	Good to plan for the future	3
	Feedback from others	2
	Is currently enrolled	1

$n = 87$ (responses are not mutually exclusive)
See also Appendix 3, Table A3.1

When asked directly if eligibility for the grant affected their decision to participate in the program, the study found that grant eligibility was not a factor influencing decisions for 44% of the non-participant respondents ($n = 119$). However, until the survey, the majority (58%) were not aware that there were criteria determining eligibility for the grant.

The factors motivating Farm Planning program participants to participate in the program are listed in Table 5.7. Similar to non-participants (see Table 5.6), the possibility of obtaining funds via the Building Farm Businesses grant program was an important incentive for participation; as was the focus of the workshop (i.e. strategic planning) (Table 5.7).

Of the 137 Farm Planning program survey respondents at t3, 68% had applied for a grant under the Building Farm Businesses program. As previously mentioned (see Chapter 2), the grant was available to eligible Farm Planning participants to help them implement actions from the strategic plans they developed through the program. This aligns with most of the reasons given by Farm Planning program survey respondents (t3) as to why they applied for the grant (Table 5.8). For those that did not apply for a grant, the most common reason was because the application process was too hard and/or was too much paperwork (Table 5.8). Interestingly, 23% of this group of respondents had not heard of the grant program.

Table 5.7: Motivators for participating in the Farm Planning program (program participants)

Motivation	Frequency	Percentage
Possibility of obtaining grants under the pilot program	361	35
Engage in strategic planning	270	26
To get ideas about how to improve the profitability of the farm business	172	17
Need help to develop or update short and long term goals	71	7
Improve financial management skills	41	4
Seeking to diversify farm business	29	3
To get support and discuss ideas/concerns	19	2
Get advice on managing risk	18	2
Recommended by accountant/bank/consultant to attend	18	2
To review farm business achievements	13	1
Learn about better communication tools to use with those involved in the farm	6	1
Other	6	1
To see how the farm business compares with others	5	0.5
Required by financiers for carry on finance	3	0.3

$n = 1032$
Responses collected at t1

Table 5.8: Reasons why Farm Planning program participants applied / did not apply for a grant under the Building Farm Business program

	Reason	Frequency	Percentage
Applied for grant ($n = 20$)	To enable strategic plan to be implemented	7	35
	To buy farm equipment / infrastructure	6	30
	To prepare for drought/changing climate	5	25
	To gain access to additional funds	3	15
	Improve the business	2	10
	Share the risk in trialling new activities	2	10
	As a 'reward' for participating in the program	1	5
Did not apply for the grant ($n = 30$)	Too hard / too much paperwork	9	30
	Not eligible	8	27
	Hadn't heard of the grant program	7	23
	Didn't finish the application	5	17
	Current circumstances	2	7
	Waste of government time and resources	1	3

Responses are not mutually exclusive
Responses collected at t3

An important activity of the Farm Planning program was to encourage all members of the farm business to participate in the workshops (Noonan et al. 2012). Of the 142 Farm Planning program t3 survey respondents, the majority (68%) had at least two members of the farm business participate in the program (Figure 5.5).
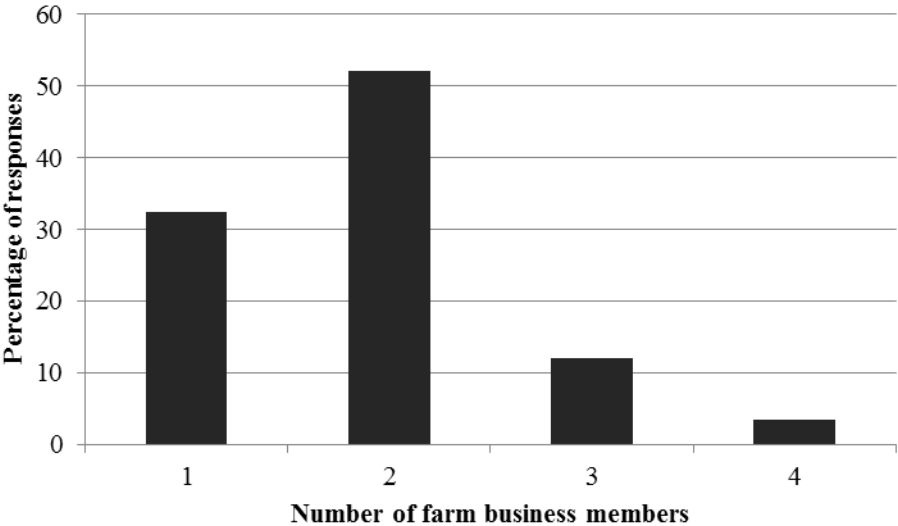
Figure 5.5: Number of farm business members attending at least one Farm Planning workshop

n = 142
Responses collected at t3

5.3.2 Characteristics influencing attendance

Mann-Whitney U tests were run to determine if there were differences in responses to 'learning' attitude statements between Farm Planning program participants and non-participants. It was found that, for three of the four statements, there were no statistically significant differences in the mean ranks between the two groups (Table 5.9). Where a significant difference occurred, program participants were more likely to agree that formal training was essential (Table 5.9). On average, program participants and non-participants agreed with all four statements.

Table 5.9: **Differences in responses to 'learning' attitude statements between Farm Planning program participants and non-participants**

Statement		Participants	Non-participants	p
It is important to invest in learning and stay informed	Mean*	6.20	6.10	
	Mean rank	154.32	154.64	0.97
	n	138	170	
I value the views of other farmers	Mean*	6.15	6.14	
	Mean rank	152.02	156.51	0.64
	n	138	170	
I am willing to trust the advice of experts	Mean*	5.12	4.76	
	Mean rank	163.75	146.99	0.09
	n	138	170	
Formal training is essential to my farm business	Mean*	5.29	4.31	
	Mean rank	160.70	117.01	0.00
	n	97	168	

Significant difference at $p < 0.05$ using Mann-Whitney U test
Responses collected at t3
*where 1 is strongly disagree and 7 is strongly agree

A Mann-Whitney U test was run to determine if there were differences in the distribution of responses between participants and non-participants in terms of their past participation in formal training related to the farm business. Participant responses (mean rank = 570) showed a significantly different distribution than for non-participants (mean rank = 299) ($p = 0.00$). The majority of non-participants (60%) indicated that they had not attended any formal training within the past five years (Figure 5.6). In contrast, 60% of Farm Planning participants had attended formal training at least once a year over the past five years (Figure 5.6).

A logistic regression was performed to ascertain the effects of attitudes and perceived resilience on the likelihood of participating in the Farm Planning program[5]. The model was statistically significant ($p = 0.005$), explained 13% (Nagelkerke R^2) of the variance in participation and correctly classified 65% of cases. Sensitivity was 74% and specificity was 56%. Of the seven predictor variables two were statistically significant: collaboration (resilience factor) and farming future (attitude factor), as shown in Table 5.10. Increasing 'collaboration' score was associated with an increased likelihood of participating in the Farm Planning program, but increasing 'farming future' score was associated with a reduction in the likelihood of participating in the program. In other words, those that perceived their business to work collaboratively were more likely to have participated in the program; whilst

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[5] Analyses of 'attitudes' and 'perceived resilience' are presented in Chapters 6 and 7.

those that had a more positive attitude toward the future of farming were less likely to have participated in the program.
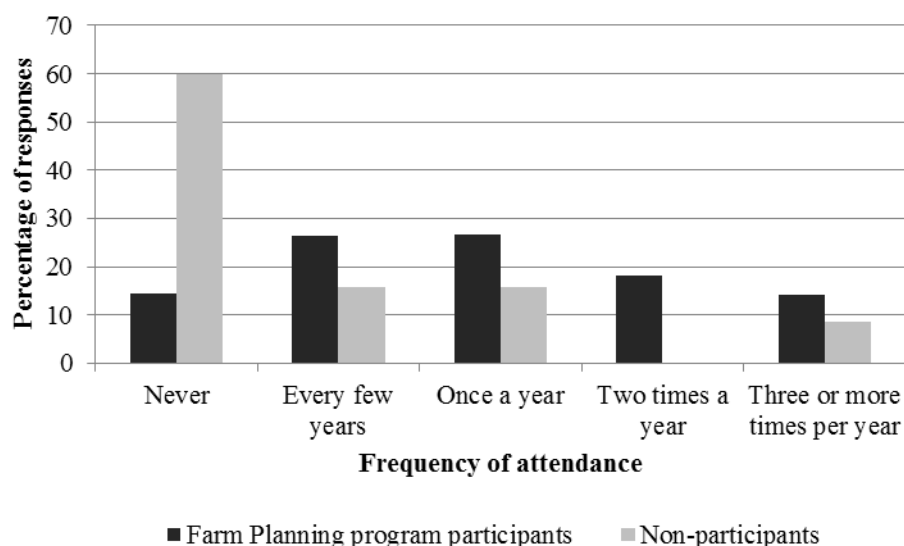
Figure 5.6: Attendance at formal training relating to the farm business over the past five years

$n = 1017$ (Farm Planning program participants); $n = 82$ (non-participants)
$U = 21\ 096$, $p = 0.00$ (Mann-Whitney U test)
Owing to the large differences in sample size, these results should be treated with caution
Participants surveyed at t1; non-participants surveyed at t3

Table 5.10: Summary of logistic regression analysis predicting influence of attitudes and perceived resilience on program participation

Variable	B	SE	Wald	df	p	Odds ratio
Constant	0.090	0.158	0.327	1	0.568	1.094
Farm management	0.001	0.161	0.000	1	0.994	1.001
Lifestyle	0.024	0.162	0.022	1	0.883	1.024
Financial management	-0.131	0.169	0.600	1	0.439	0.877
Climate	0.173	0.182	0.901	1	0.343	1.188
Farming future	-0.404	0.172	5.518	1	0.019	0.668
Collaboration	0.581	0.171	11.513	1	0.001	1.788

$\chi^2(6) = 18.53$, $p = 0.005$
$n = 185$

A logistic regression was also performed to ascertain the effects of demographic characteristics on the likelihood of participating in the Farm Planning program. The model was statistically significant ($p = 0.00$), explained 19% (Nagelkerke R^2) of the variance in participation and correctly classified 69% of cases. Of the 14 predictor variables only 'gender' was statistically significant ($p = 0.02$) — females had 1.93 times higher odds of participating in the program than males (see Table 5.11).

Table 5.11: Summary of logistic regression analysis predicting influence of demographic characteristics on program participation

Variable	B	SE	Wald	df	p	Odds ratio
Constant	1.526	1.268	1.447	1	0.229	4.598
Education (TAFE)	0.001	0.622	0.000	1	0.998	1.001
Age (25-34 yrs)	0.355	0.988	0.129	1	0.720	1.425
Age (35-44 yrs)	0.390	0.846	0.212	1	0.645	1.476
Age (55-64 yrs)	0.523	0.677	0.598	1	0.439	1.688
Education (University)	0.507	0.597	0.722	1	0.395	1.661
Farming in 5 yrs (unsure)	-0.478	0.473	1.020	1	0.313	0.620
Age (45-54 yrs)	0.816	0.724	1.271	1	0.260	2.262
Age (under 24 yrs)	-1.432	1.213	1.395	1	0.238	0.239
Employed off-farm	-0.428	0.316	1.829	1	0.176	0.652
Education (School)	-0.844	0.596	2.006	1	0.157	0.430
Years farming	-0.028	0.019	2.224	1	0.136	0.972
Farming in 5 yrs (yes)	-0.755	0.436	2.994	1	0.084	0.470
Gender (male)	-0.659	0.292	5.095	1	0.024	0.518

$\chi^2(13) = 46.514$, $p = 0.00$
$n = 301$
Education is compared to post-graduate; Age is compared to >65 years; Farming in 5 years is compared to 'no'; Gender is compared to female; Employed off-farm is compared to 'no'

There was a significant association between participation in the Farm Planning program and receipt of government support in the past ($p = 0.00$). The majority (54%) of Farm Planning program participants had not received government support in the past; whilst the majority (67%) of non-participants had previously received support (Figure 5.7).
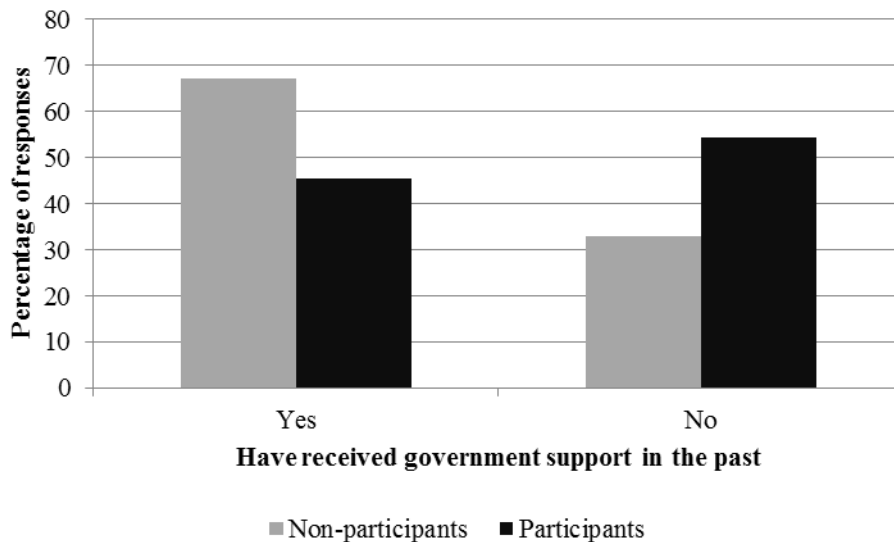
Figure 5.7: Comparison of past support from the government between Farm Planning program participants and non-participants

$\chi^2(1) = 14.53$, $p = 0.00$ (chi-square test)
$n = 82$ (non-participants); $n = 1401$ (participants)
Owing to the large differences in sample size, these results should be treated with caution
Non-participants surveyed at t3; participants surveyed at t1

5.3.3   Summary

Underpinning any success of the Farm Planning program was the ability of the program to attract participation. Almost half (44%) of the non-participants had not heard of the Farm Planning program. Those that had heard of the program mostly heard about it from passive information sources. In contrast, Farm Planning program participants were more likely to have heard about the program from active sources.

The main reason for non-participation was the time and/or effort required to take part in the program, and most non-participants did not think they would participate in the program in future. Eligibility for the grant and the level of understanding of the workshop topics and their relevance were the factors most likely to influence future participation from non-participants. These were also the key factors that motivated the participants to participate in the program. Most of the Farm Planning program participants had applied for a grant. The main reason for not applying for a grant was because the application process was too hard and/or was too much paperwork. Interestingly, almost one-quarter of the program participants that did not apply for a grant had not heard of the grant program.

There were several key differences between the program participants and non-participants:

- Non-participants were less likely to see formal training as being essential to their business

- Participants were more likely to have attended formal training within the past five years

- Participants were less likely to have received support from the government in the past

- Those that perceived collaboration to be a strong part of their business were more likely to have participated in the program; and

- Those with a more positive attitude toward the future of farming were less likely to have participated in the program.

The key demographic differences between program participants and non-participants did not appear to have an effect on participation, with the exception of gender. Here, females were more likely to participate in the program. This may be an effect of the sampling, as males were overrepresented in the non-participant sample.

Chapter 6. The effect of the Farm Planning program on strategic planning

6.1 Introduction

The evaluation of the mid-term effects of the Farm Planning program was guided by the theory of change documented in Chapter 2 and refined in Chapter 3. This paralleled the upper levels of the hierarchy of outcomes proposed by Bennett (1975) and the theory of planned behaviour (Ajzen 1991) — changes in capacity lead to intentions, which leads to behaviour/practice change. It was then theorised that behaviour/practice change will result in more resilient farm businesses (see Chapter 3). This chapter focuses on the effect of the Farm Planning program on strategic planning. The impact of strategic planning (that is, implementing plans to build resilient farm businesses) is addressed in Chapter 7.

The chapter begins by assessing the influence of the Farm Planning program on participant attitudes and beliefs (i.e. components of 'capacity'). Strategic planning capacity and intentions are then examined, followed by assessments of strategic planning behaviours and the quality of the resultant plans. Whether or not program participants will continue to use their strategic planning knowledge and skills into the future is discussed, including the identification of factors influencing strategic planning. The chapter concludes with a summary of the key findings.

6.2 Changes in participant attitudes

An anticipated outcome of the Farm Planning program was for the program participants to be better able to prepare for and self-manage farm risks (see Chapter 2). As seen in Chapter 3, attitudes play an important role in shaping intentions to undertake an action (behaviour). Accordingly, the Farm Planning program deliverers measured specific attitudes and beliefs of the participants before their participation in the program (t1) and on immediate completion of the program (t2) to ascertain changes that may be attributed to the program (Noonan et al. 2012). These measures may be seen to reflect participant attitudes/beliefs in relation to the 'pressure for change' — a key component of the change models described in Chapter 3.

Kruskal-Wallis tests were run to determine if there were differences in participant responses to the attitude statements across the three points in time — prior to their participation in the program (t1), on immediate completion of the program (t2) and 12 to 18 months after completing the program (t3)[6]. Statistically significant differences were identified for all

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[6] Note: Responses were not collected at time 1 and/or time 2 for two attitude statements; therefore these statements have not been included in this analysis.

statements (Table 6.1). On average, the survey respondents agreed with the statements at all points in time.

Table 6.1: Differences in Farm Planning program participant responses to attitudes statements over time

Statement		Time 1	Time 2	Time 3	p
I am confident about the future of farming in my local area	Mean*	5.25	5.58	5.18	
	Mean rank	668.77	738.90	673.66	0.005
	n	658	603	137	
Outside forces such as prices, costs and weather are the major influences on the farm's business performance	Mean*	6.24	6.14	6.30	
	Mean rank	724.16	663.52	743.33	0.005
	n	660	601	138	
I believe a 'climate change' is happening	Mean*	4.95	5.36	4.46	
	Mean rank	660.95	774.92	554.30	0.000
	n	658	602	138	
My management decisions are the main drivers that influence the farm's business performance	Mean*	5.27	5.64	5.38	
	Mean rank	654.26	747.85	708.34	0.000
	n	657	604	138	
There are still plenty of opportunities available to build a successful farm business	Mean*	5.23	5.65	5.09	
	Mean rank	650.18	772.38	615.35	0.000
	n	657	603	134	
Farming is a viable sustainable business for my successors	Mean*	4.47	5.09	4.79	
	Mean rank	626.66	775.71	708.38	0.000
	n	658	604	135	
Climate change demands a 'risk management' approach to farming	Mean*	5.30	5.79	5.45	
	Mean rank	608.90	758.53	662.47	0.000
	n	658	602	97	
Variable seasons demand a 'risk management' approach to farming	Mean*	5.95	6.29	6.26	
	Mean rank	635.10	756.09	770.93	0.000
	n	660	603	137	

Significant difference at $p < 0.005$ using Kruskal-Wallis test
*Where 1 is strongly disagree and 7 is strongly agree

Post-hoc analyses (Dunn's procedure with Bonferroni correction) identified three groupings of the attitude statements (Table 6.2):

1. *Mid-term effect*: Participation in the Farm Planning program appeared to have an immediate effect on participant attitudes that was maintained at t3 — evidenced by statistically significant differences between t1 and t2, and t1 and t3; but no significant differences between t2 and t3.

2. *Declining mid-term effect*: Participation in the Farm Planning program appeared to have an immediate effect on participant attitudes, evidenced by statistically significant differences between t1 and t2. Although there was a slight decline from t2 to t3, this

was not significant, which indicates that the change was maintained over time. However, in these cases, there were also no significant differences between t1 and t3. Consequently, it appeared that the effect of the program on these particular attitudes was in decline.

3. *No mid-term effect*: Participation in the Farm Planning program appeared to have an immediate effect on participant attitudes that was not maintained at t3. For one statement ('There are still plenty of opportunities…'), this was evidenced by a statistically significant difference between t1 and t2 ($p = 0.00$), but no significant difference between t1 and t3 ($p = 1.00$). For the statement 'I believe a "climate change" is happening', there was a significant difference between t1 and t2 ($p = 0.00$), with increased agreement with the statement at t2; however, at t3 the mean level of agreement with the statement had decreased significantly to below that at t1 ($p = 0.01$).

Figure 6.1 uses specific attitude statements to illustrate these groupings.

Table 6.2: Differences in Farm Planning program participant responses to attitude statements between times 1 and 2; times 2 and 3; and times 1 and 3

Group	Statement	*p* (t1-t2)	*p* (t2-t3)	*p* (t1-t3)
1. Mid-term effect	Climate change demands a 'risk management' approach to farming	0.00	0.06	0.00
	Variable seasons demand a 'risk management' approach to farming	0.00	1.00	0.00
2. Declining mid-term effect	My management decisions are the main drivers that influence the farm's business performance	0.00	0.86	0.42
	Outside forces such as prices, costs and weather are the major influences on the farm's business performance	0.01	0.06	1.00
	I am confident about the future of farming in my local area	0.00	0.24	1.00
	Farming is a viable sustainable business for my successors	0.00	0.22	0.09
3. No mid-term effect	There are still plenty of opportunities available to build a successful farm business	0.00	0.00	1.00
	I believe a 'climate change' is happening	0.00	0.00	0.01

Significant difference at $p < 0.01$ using Dunn's post hoc test with Bonferroni correction
Adjusted *p* values are presented
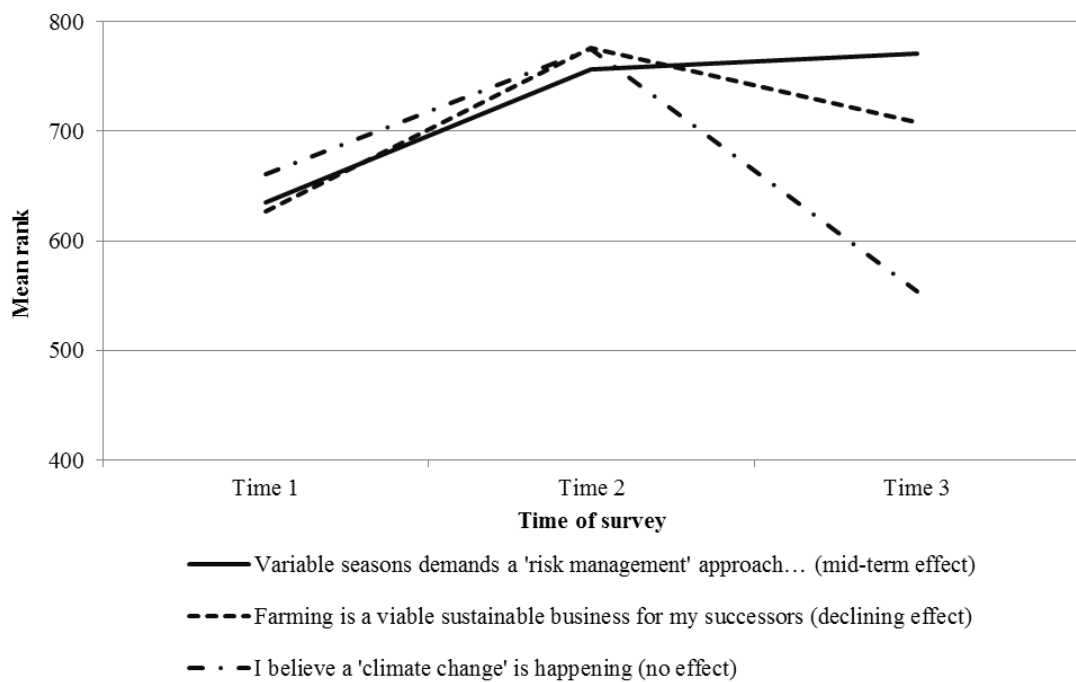
Figure 6.1: Groupings of attitude statements based on changes to the mean ranks over time (illustrated using three statements as examples)

Mann-Whitney U tests were run to determine if there were differences in responses between participants and non-participants to the attitude statements (at t3). For the majority of the statements, there were no statistically significant differences in the mean ranks between Farm Planning program participants and non-participants (Table 6.3). Where statistically significant differences occurred, non-participants appeared to be more positive about the future of farming, and less likely to agree that a 'risk management' approach was required to moderate climatic/seasonal conditions (Table 6.3). On average, the survey respondents agreed with the statements at all points in time, although the mean responses were approaching 'neutral' for the statements relating to financial assistance during exceptional circumstances and belief in climate change (Table 6.3).

Table 6.3: Differences in responses to attitudes statements between Farm Planning program participants and non-participants

Statement		Participants	Non-participants	p
Outside forces such as prices, costs and weather are the major influences on the farm's business performance	Mean*	6.30	6.43	0.64
	Mean rank	152.24	156.34	
	n	138	170	
During exceptional circumstances, taxpayers should pay financial assistance to farm businesses	Mean*	4.59	4.42	0.56
	Mean rank	157.69	151.91	
	n	138	91	
I am confident about the future of farming in my local area	Mean*	5.18	5.44	0.40
	Mean rank	149.40	157.71	
	n	137	170	
My management decisions are the main drivers that influence the farm's business performance	Mean*	5.38	5.59	0.34
	Mean rank	149.30	158.72	
	n	138	170	
I accept change is inevitable	Mean*	6.37	6.23	0.29
	Mean rank	116.76	108.39	
	n	138	88	
I believe a 'climate change' is happening	Mean*	4.46	4.14	0.21
	Mean rank	161.53	148.80	
	n	138	170	
There are still plenty of opportunities available to build a successful farm business	Mean*	5.05	5.38	0.05
	Mean rank	142.64	162.19	
	n	136	170	
Farming is a viable sustainable business for my successors	Mean*	4.79	5.25	0.02
	Mean rank	139.94	163.37	
	n	135	170	
Climate change demands a 'risk management' approach to farming	Mean*	5.45	4.75	0.01
	Mean rank	149.26	125.29	
	n	97	170	
Variable seasons demand a 'risk management' approach to farming	Mean*	6.26	5.70	0.00
	Mean rank	171.67	139.76	
	n	137	170	

Significant difference at $p < 0.05$ using Mann-Whitney U test
*Where 1 is strongly disagree and 7 is strongly agree

A principal components analysis (PCA) was run on the 10 attitude variables to examine the interdependent relationships. The suitability of PCA was assessed prior to analysis, which found four variables without at least one correlation coefficient greater than 0.3, and one variable with a low Kaiser-Meyer-Olkin (KMO) measure. Consequently, these variables were removed from the analysis. The overall KMO measure was 0.62, and individual KMO

measures ranged from 0.50 to 0.76. Bartlett's test of sphericity was statistically significant ($p = 0.00$), indicating that the data was suitable for factor analysis.

PCA revealed two components that had eigenvalues greater than one and which explained 72.3% of the total variance (Table 6.4). Visual inspection of the scree plot supported the retention of two components. A Varimax orthogonal rotation was employed to aid interpretability. The interpretation of the data defined the two attitude factors as 'farming future' (factor 1) and 'climate' (factor 2). Cronbach alpha scores were greater than 0.6, indicating the variables could be reliably combined into the two factors (Table 6.4).

Table 6.4: Rotated component matrix of attitude variables

	Factor	
	1	**2**
Farming is a viable, sustainable business for my successors	0.881	
I am confident about the future of farming in my local area	0.835	
There are still plenty of opportunities available to build a successful farm business	0.771	
Climate change demands a 'risk management' approach to farming		0.859
I believe there is a 'climate change' happening		0.841
Factor mean	15.607	9.225
Eigenvalue	2.167	1.446
Percentage variance	43.345	28.918
Cumulative variance (%)	43.345	72.263
Cronbach's alpha	0.806	0.642

Multiple regression was performed to ascertain the effects of demographic variables (age, gender, education, off-farm employment, number of years farming[7] and time until retirement) on responses for the 'farming future' and 'climate' factors. The analyses produced very low adjusted R^2 values (see Appendix 8, Table A8.1 and Table A8.2). Consequently, these analyses are not reported.

6.3   Strategic planning capacity and intentions

In general, survey respondents believed strategic planning to be useful to their farm business (Figure 6.2). A visual inspection suggested a similar distribution of program participants and non-participants. This was confirmed by a Mann-Whitney U test, finding the median response was not significantly different between participants and non-participants ($p = 0.77$).

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[7] This variable was not linearly related to the independent variable. The assumption of linearity was retested using transformed data, but a linear relationship was not obtained and the variable was removed from the analysis.
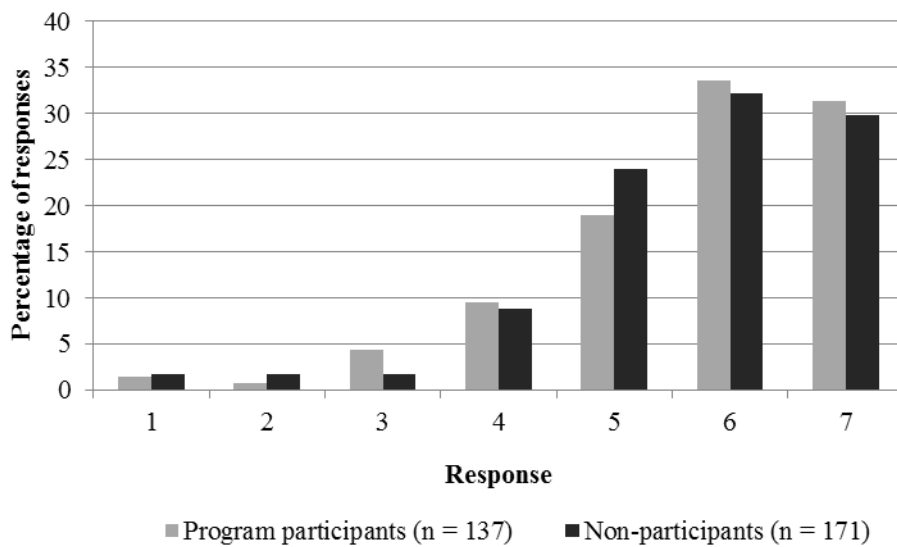
Figure 6.2: Distribution of participant and non-participant perceptions of the usefulness of strategic planning

Responses to the statement 'Strategic planning is useful to my farm business', where 1 = strongly disagree; 7 = strongly agree
Participant mean response = 5.7; non-participant mean response = 5.7
$U = 11,491$, $z = -0.297$, $p = 0.77$ (Mann-Whitney U test)
Surveyed at t3

A binomial logistic regression was performed to ascertain the effects of demographic characteristics on agreement with the statement 'Strategic planning is useful to my farm business'. The analysis used the t3 survey responses. As the Nagelkerke R^2 value was low, the model was not deemed appropriate (see Appendix 8, Table A8.3 for details).

Of the 834 Farm Planning program participants for which matched data were available (i.e. responses at t1 and t2), participation in the program elicited a positive shift in perceptions of the usefulness of strategic planning in 203 respondents (24%), whereas 525 respondents (63%) saw no change and 106 respondents (13%) displayed a negative shift. A Wilcoxon signed-rank test determined that participation in the program elicited a statistically significant median increase in scores at t2 compared to responses prior to participation in the program ($p = 0.00$). On average, program participants believed strategic planning to be useful to their farm business at each of the three points in time; however, a Kruskal-Wallis test identified a significant difference in the mean ranks of the participant responses ($p = 0.00$; Table 6.5). Pairwise comparisons were performed using Dunn's procedure with a Bonferroni correction for multiple comparisons. This post hoc analysis revealed significant differences in mean ranks between t1 and t2 ($p = 0.000$), and t2 and t3 ($p = 0.025$), but not between t1 and t3 ($p = 1.00$; Table 6.5).

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Table 6.5: **Differences in Farm Planning program participant responses regarding the usefulness of strategic planning**

	Time 1	Time 2	Time 3	*p*
Mean	4.13	4.29	4.07	n/a
Mean rank	978.76	1105.49	981.73	0.000
n	1017	915	137	n/a

Significant difference at $p < 0.005$ using Kruskal-Wallis test

The statement used at t1 and t2 was 'How useful is strategic business planning to your farm business?', where 1 is unnecessary and 5 is essential

The statement used at t3 was 'Strategic planning is useful to my farm business', where 1 is strongly disagree and 5 is strongly agree

The above analysis used data from sources measuring the same construct (i.e. the usefulness of strategic planning); however, differences in the statements and scales may compromise the results — specifically the comparisons to the t3 data. Nevertheless, the data indicate that, although there was a significant positive shift in participant attitudes toward the usefulness of strategic planning on completion of the program, this shift was not maintained at t3. By t3, program participant perceptions of the usefulness of strategic planning were comparable to the attitudes displayed at t1 (and also to those of non-participants — Figure 6.2).

On average, 12-18 months after completing the program (t3), the survey respondents were confident that they possessed the necessary skills to maintain their strategic plans (mean = 5.05; Figure 6.3). One-fifth (20%) of respondents were not confident in their abilities, and a further 12% indicated a 'neutral' response (Figure 6.3).
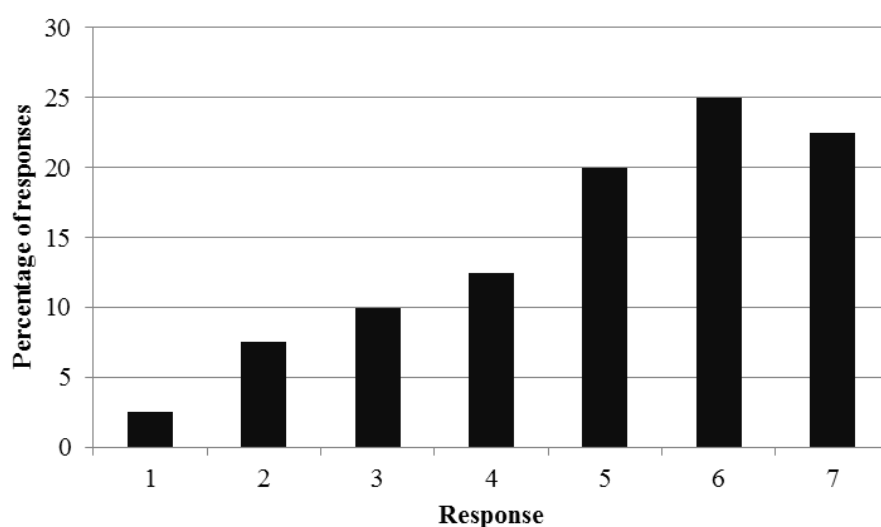
Figure 6.3: Distribution of participant levels of confidence in their ability to update their strategic plan

Responses to the statement 'I am confident in my ability to update my strategic plan', where 1 = strongly disagree; 7 = strongly agree
Mean response = 5.05; *n* = 40
Surveyed at t3

At t3, 70% of the participants attributed their understanding of the usefulness of strategic planning to their participation in the Farm Planning program (Figure 6.4). These findings may seem contrary to those above, where participant perceptions of the usefulness of strategic planning at time three was more akin to that at time one; however, the question here was targeting attribution rather than whether strategic planning is or is not useful. For example, a survey respondent may have rated their response as a '7' (strongly agree) because the Farm Planning program helped them better understand that strategic planning was *not* useful to their farm business. In addition, for the majority of Farm Planning program participants (72%), participation in the Farm Planning program made them more willing to use strategic planning to help them plan for the future (Figure 6.4).
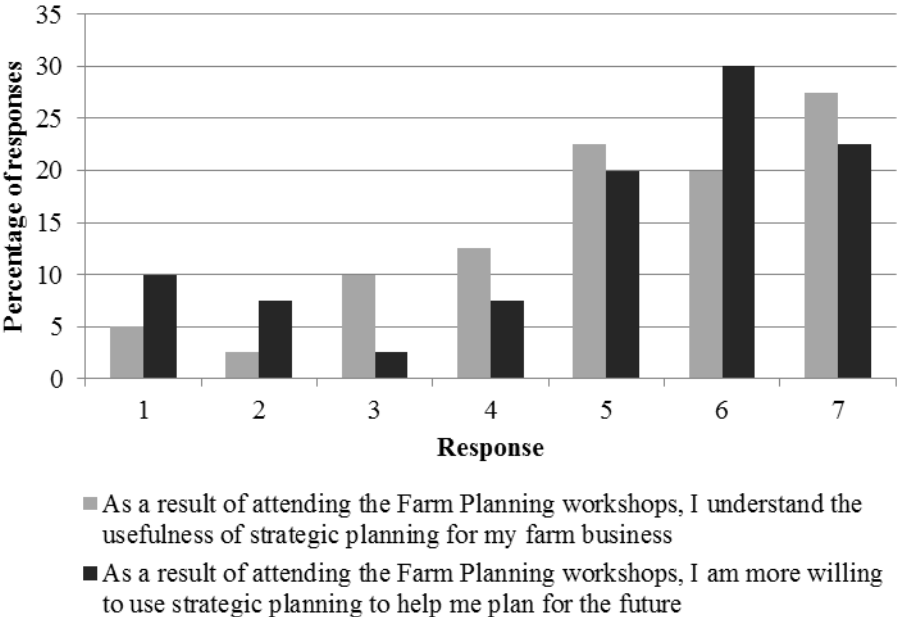
Figure 6.4: Influence of the Farm Planning program on participant strategic planning capacity

1 = strongly disagree; 7 = strongly agree
Mean response (usefulness of strategic planning) = 5.15
Mean response (willing to use strategic planning) = 5.00
n = 40; surveyed at t3

The qualitative data collected via the semi-structured interviews (SSIs) uncovered a tendency for some farm businesses to focus on the short-term. Of the eight SSI farm businesses, four acknowledged the usefulness of strategic planning to help articulate a vision for their business and develop longer-term goals. These businesses saw great value in having a longer-term direction to guide their short-term planning (e.g. one to three years) —*'It's good to have a ten-year snapshot of what you want to achieve and work your way towards it'* — and indicated a willingness to continue to use strategic planning to help plan for the future. However, of these businesses, two were already convinced of the value of strategic planning

prior to their participation in the program. The other two businesses attributed their change in strategic planning capacity to their participation in the Farm Planning program — for example, *'I would never have done this sort of thing beforehand. It's just so good. When you look at it you think 'that's a lot of work', but if you just do one goal at a time and a strategy to get there, it's not that hard'.*

One other business also believed that it was useful to have longer-term goals to aim for; however, they did not see the value in having to put the time and effort into articulating this into a written strategic plan. For the remaining three businesses, it appeared that the concept of 'strategic planning' was not well-understood. These businesses were solely focused on the implementation of short-term activities, and were less inclined to acknowledge a link between these and any documented longer-term goals. For this group, strategic planning was synonymous to annual (or operational) planning. Appendix 3 (Table A3.2) illustrates the coding of the qualitative data relating to the usefulness of strategic planning.

6.4   Strategic planning behaviours

The influence of the Farm Planning program on the number of participants with strategic plans was conspicuous (Table 6.6). Prior to participating in the program (t1), 31% of program participants had a strategic plan for their farm business. This figure had increased to 97% at t2 (Table 6.6). There was a statistically significant association between the time of the survey and possession of a strategic plan ($p = 0.00$). This association was expected given that the purpose of the Farm Planning program was to help participants develop strategic plans for their farm businesses.

The link between participation in the program and possession of a farm business strategic plan was further validated by comparing program participants (t3) and non-participants, where 89% of participants had a strategic plan for their farm business compared to 42% of non-participants (Table 6.6). Again, the association between participation in the program and possession of a strategic plan was significant, with respondents that had participated in the program more likely to have a strategic plan for their farm business ($p = 0.00$).

A greater percentage of non-participants had a written strategic plan for their farm business than Farm Planning program participants at t1 (i.e. prior to them commencing the program) (Table 6.6). There was a significant association between participation in the program (i.e. participant [t1] or non-participant) and possession of a strategic plan ($p = 0.01$) with non-participants more likely to have a strategic plan for their farm business. These results should be treated with caution as there were large differences in the sample sizes used in this analysis ($n = 1008$, t1 participants; $n = 170$, non-participants).

Table 6.6:   Number of survey respondents with strategic plans

Time	Frequency	Percentage (%)
Time 1	311	31
Time 2	862	97
Time 3 (participants)	124	89
Time 3 (non-participants)	71	42

$\chi^2 = 924.440$, d.f. = 2, $p = 0.00$ (t1, t2, t3)
$\chi^2 = 864.311$, d.f. = 1, $p = 0.00$ (t1, t2)
$\chi^2 = 68.521$, d.f. = 1, $p = 0.00$ (t3, non-participants)
$\chi^2 = 7.904$, d.f. = 1, $p = 0.01$ (t1, non-participants)

A logistic regression was performed to ascertain the effects of demographic characteristics on the likelihood of having a strategic plan for people that had not participated in the Farm Planning program (i.e. non-participants and participants at t1). Of the 10 predictor variables, none were statistically significant (see Appendix 8, Table A8.4 for details).

Although the Farm Planning program appeared to have made participants more willing to use strategic planning to help them plan for the future (Figure 6.4), only 34% of participants at t3 had updated their strategic plan since completing the program. Given that the responses were collected 12 to 18 months after the participants had completed the program, it was possible that respondents were planning on updating their strategic plans at a later stage.

To determine if there was an association between updating the strategic plan and the time since completing the program, a chi-square test for association was conducted. This did not identify a statistically significant association ($p = 0.17$)[8]. The association between updating strategic plans and the time since completing the program is presented in Figure 6.5.

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[8] For the chi-square analysis, 'time since completing the program' was categorised into three groups: July-December 2010; January-June 2011; July-June 2012.
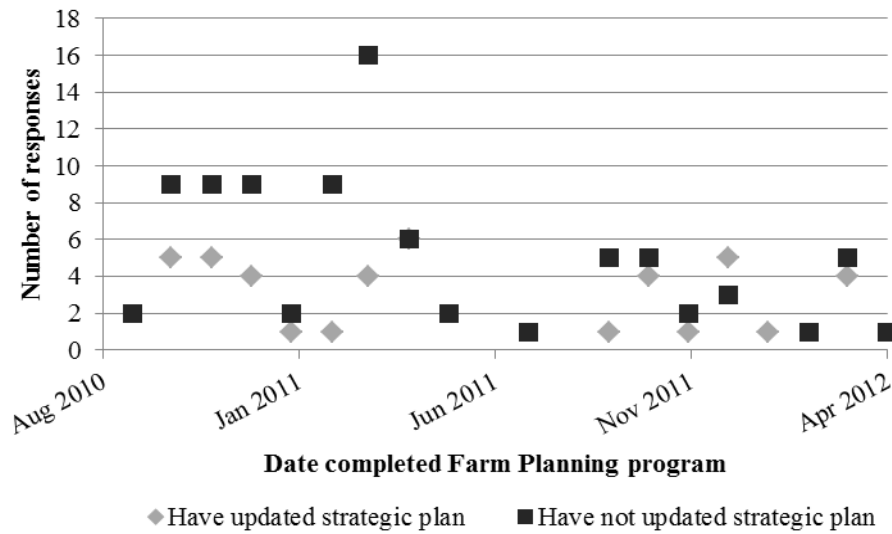
Figure 6.5: Association between updating strategic plan and the date that the Farm Planning program was completed

$n = 129$
$\chi^2 = 3.531$, d.f. = 2, $p = 0.17$ (Chi-square test)

6.5   Quality of strategic plans

At t3, 89% of program participants had a written strategic plan for their farm business (Table 6.6). Of these, 48% had included objectives within their plans to address the four key areas targeted through the Farm Planning program (production, finance, natural resource management and work-life balance) (Figure 6.6). In comparison, 42% of non-participants had a written strategic plan for their farm business (Table 6.6). Responses from 60% of the non-participants with strategic plans identified 14% that had included activities addressing all four of the key areas (Figure 6.6). A chi-square test for association found a significant association between participation in the program and the number of components addressed via strategic planning ($p = 0.00$), indicating that the program influenced strategic plan quality (with 'quality' plans assumed to encompass social, environmental and economic components).
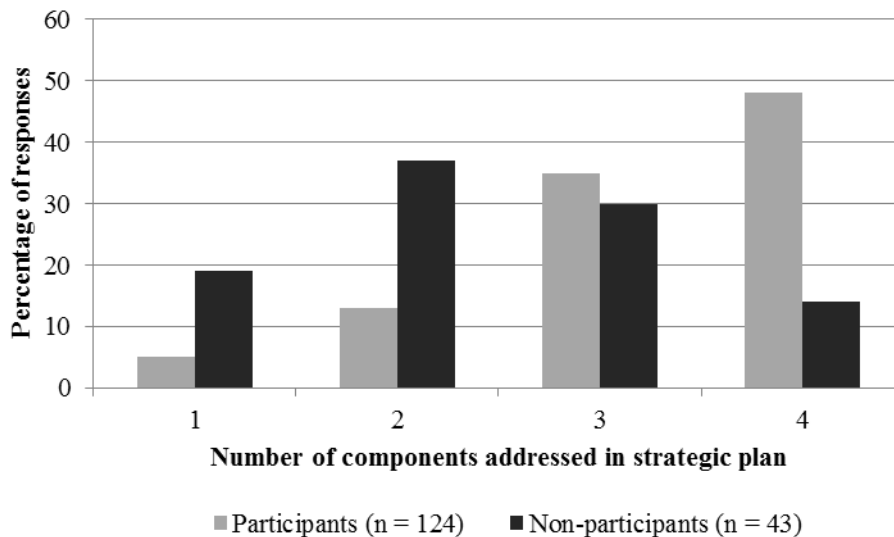
Figure 6.6: Comparison of the number of components covered in strategic plans between participants and non-participants

Components include production, finance, natural resource management and work-life balance
$\chi^2 = 36.177$, d.f. = 3, $p = 0.00$. One cell (12.5%) had an expected count less than five – results should be treated with caution

The two areas most likely to be included in participant and non-participant strategic plans were production and finance; although production was the component most likely to be included in participant plans (79%), whilst finance was the component most likely to be included in non-participant plans (91%) (Table 6.7). Chi-square tests were conducted between participation and the four individual strategic plan components. While there were no significant differences for the inclusion of finance ($p = 0.48$) and production ($p = 0.27$) in strategic plans, there were significant differences between participation in the program and the inclusion of activities to address work-life balance ($p = 0.00$) and manage the natural resources ($p = 0.00$) (Table 6.7). This indicates that the program had a positive effect on holistic planning that encompassed social, environmental and economic components.

Table 6.7: Comparison between participants and non-participants of components covered in strategic plans

Strategic plan component	Participants ($n = 124$)		Non-participants ($n = 43$)		p (chi-square)
	Frequency	Percentage	Frequency	Percentage	
Finance	110	89	39	91	0.48
Production	112	90	36	84	0.27
Natural resource management	106	86	15	35	0.00
Work-life balance	94	76	13	30	0.00

While a visual appraisal suggests relatively similar proportions of participants included production-related and/or finance-related activities within their strategic plans at the three points in time (Figure 6.7), chi-square tests found significant differences between time and the inclusion of production and/or finance-related activities ($p = 0.00$ for both). The percentage of program participants that included natural resources and/or work-life balance components were more varied, and significant differences were evident ($p = 0.00$; Figure 6.7). Of particular note are the significant differences within 'natural resources' between t1 and t2 ($p = 0.00$), and within 'work-life balance' between t2 and t3 ($p = 0.00$). These findings indicate that the program had an immediate impact on the inclusion of the four components in participant strategic plans; however, this had reduced by t3.
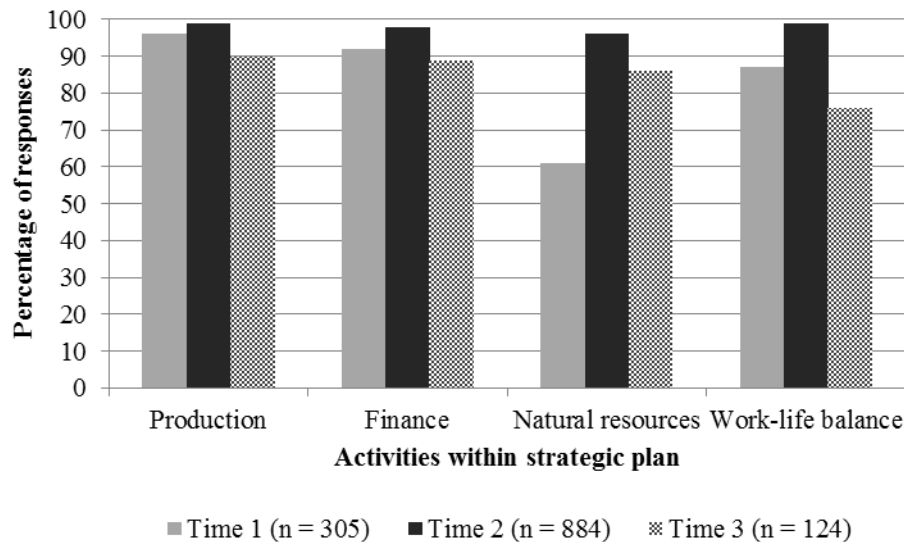
Figure 6.7: Types of activities included in strategic plans prior to participating in the Farm Planning program (t1), on completion of the program (t2) and 12 to 18 months after completing the program (t3).

$\chi^2 = 54.592$, d.f. = 2, $p = 0.00$ (production; one cell [16.7%] has expected count less than five)
$\chi^2 = 44.880$, d.f. = 2, $p = 0.00$ (finance)
$\chi^2 = 243.420$, d.f. = 2, $p = 0.00$ (natural resources)
$\chi^2 = 155.324$, d.f. = 2, $p = 0.00$ (work-life balance)

Responses to the question 'Would you have a similar plan if you didn't take part in the Farm Planning program?' revealed that the majority of respondents were unsure or believed they would not have a similar plan for production, natural resources or work-life balance activities if they had not participated in the Farm Planning program (Figure 6.8). In contrast, the majority (63%) of respondents believed they would have had finance-related plans regardless of the program (Figure 6.8). This highlights the influence of the program on

participant consideration of environmental and social aspects of the farm business in strategic planning, as well as longer-term 'production' planning.
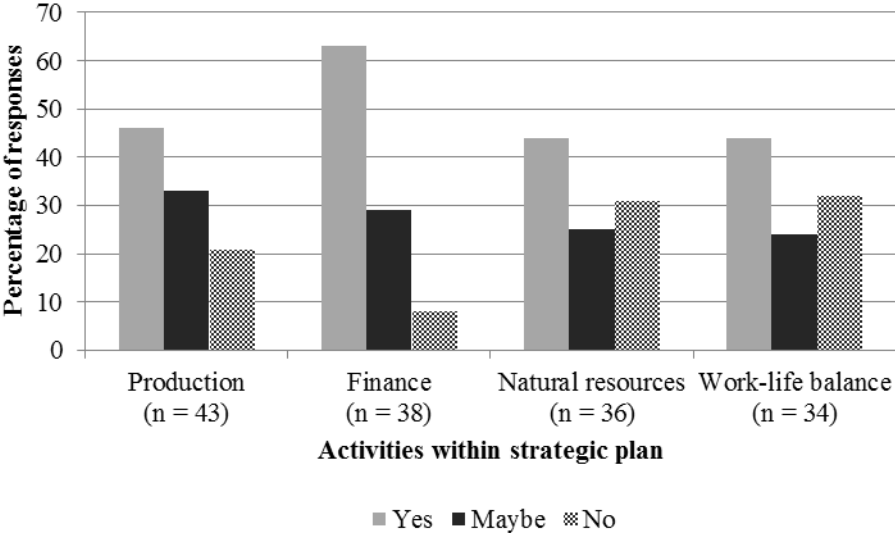
Figure 6.8: Influence of the Farm Planning program on components included in farm business strategic plans (responses to the statement 'Would you have a similar [type of activity] plan if you didn't take part in the workshops?').

Qualitative data collected via the SSIs uncovered a stronger appreciation of the importance of the interactions between social, environmental and economic factors (i.e. production, finance, natural resources and work-life balance) for delivering business success — attributed to participation in the Farm Planning program. For seven of the eight businesses, work-life balance was not previously formalised through strategic planning, particularly things like regular holidays and reduced work hours. Participation in the program appeared to give businesses permission to consider their personal goals. Despite this, four of the eight farm businesses prioritised finance and/or production goals over those for natural resources and/or work-life balance:

> 'That I find extremely difficult. I actually run this place by myself, and I'm double cropping nearly 7500 acres. So, apart from seasonal labour for 12-15 weeks of the year, I'm pretty much on my own, so finding that balance between work and family life is extremely difficult.'

Nevertheless, the Farm Planning program facilitated the development of holistic[9] strategic plans and provided a planning framework for which seven of the eight SSI farm businesses indicated that they would continue to use. In addition, all eight businesses recognised the

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[9] That is, a written strategic plan comprising of production, finance, natural resource and work-life balance objectives.

importance of involving other members of the farm business in the planning process, and are now working more collaboratively.

> 'I tend to get X to come in and work with me a bit more … so there's a bit more co-operation. We've got to be a bit more collaborative.'

Appendix 3 (Table A3.3) illustrates the coding of the qualitative data relating to the quality of the strategic plans.

6.6 Factors influencing strategic planning

6.6.1 Barriers to strategic planning

As shown in the previous sections, not all program participants at t3 had a holistic strategic plan for their farm business despite participating in the Farm Planning program. Analysis of the qualitative data collected via the structured survey identified four factors preventing holistic strategic plans from being developed (see also Appendix 3, Table A3.4):

- Time – having the time available to commit to planning.
- Ability to put the plan into action – some respondents felt there was no point in having a plan unless they had i) the funds to put the plan into action; or ii) the time to put the plan into action. This related particularly to natural resource management and/or work-life balance activities, which were seen as lower-priority.
- Uncertainty – this included uncertainty on how to plan, particularly for the areas of finance and work-life balance; and the uncertainty inherent in agricultural systems (i.e. constantly changing) making it difficult to plan.
- Disagreement amongst business members – this related specifically to the area of work-life balance in family farm businesses, where there was a reluctance of business (family) members to commit and/or discuss this component of the strategic plan.

In comparison, there was a wide range of reasons why respondents that had not participated in the Farm Planning program (i.e. non-participants and program participants at t1) did not have a strategic plan for their farm business (Table 6.8). For both groups, the main reason was because the plan was 'in their heads' (Table 6.8). This reason was not identified by program participants at t3 almost certainly because the Farm Planning program proactively helped participants to put their plans onto paper.

Table 6.8:   Reasons why farm businesses did not have a written strategic plan

	Program participants (t1) (*n* = 666)		Non-participants (*n* = 54)	
	Frequency	Percentage	Frequency	Percentage
Have the strategic plan in their head	381	57	17	32
Don't see the value of a strategic plan	25	4	16	30
Decisions are made as they go (changing farm environment)	20	3	11	20
Never got around to it/don't have the time	268	40	9	17
Someone else does the plan for them	91	14	7	13
Have regular farm meetings	5	1	4	7
Timing (about to retire/new to business)	5	1	1	2
Don't know how to develop plan	13	2	-	-
Have a plan, but it is out of date	12	2	-	-
Haven't compiled into a strategic plan	10	2	-	-
In the process of writing a strategic plan	8	1	-	-
Do not have the money to develop/ implement	5	1	-	-
Difficult to get agreement from all business members	4	1	-	-

Responses are not mutually exclusive.
Statistical analyses were not undertaken owing to the different survey tools used (t1 respondents were presented categories to select from including 'other' category; t3 respondents were not provided with categories).

The actions of the program directly addressed several other reasons identified by those that had not participated as to why they did not have a strategic plan for their farm business:

- *Capacity to undertake strategic planning* (e.g. knowledge, skills and an understanding of the value of planning): The program actively sought to improve the participants' capacity to undertake strategic planning. It is acknowledged that, after completing the program, some participants were still unsure how to undertake financial and/or work-life balance planning (as identified above).

- *Out-of-date, incomplete or separate plans*: The program gave participants the opportunity to update, complete and/or compile strategic plans.

- *Who actually developed the plan*: The plans developed through the program were completed by the farm business members themselves.

It must also be acknowledged that the timing needs to be right for strategic planning. There is no point in developing a strategic plan for a farm business if you are not going to be in the business for much longer, nor can it be expected that a brand new business immediately has

a strategic plan. Interestingly, of the six respondents that had identified 'timing' as a reason as to why they did not have a strategic plan for their farm business, those that were new to farming had enrolled in the Farm Planning program, and the one respondent that was about to retire had not enrolled in the program.

6.6.2 Drivers of strategic planning

Analysis of the qualitative data collected via the SSIs identified three themes, in terms of drivers of strategic planning — identification, direction and justification (Appendix 3, Table A3.5).

There were three aspects to the 'identification' theme. The first aspect related to the identification of issues, and how these may be addressed. In this sense, the process of strategic planning was thought to help expose both long- and short-term issues that may have otherwise gone unrecognised until the effects were at a critical level. By recognising the issues, actions to address them could then be identified and put in place. The second aspect to 'identification' was the identification of activities that had not been considered previously. As one SSI participant pointed out *'the definition of insanity is doing the same thing over and over and expecting a different result.'*[10] Strategic planning was seen by some as a way to reassess the direction of the business and help identify new ways to do things. The third aspect related to the identification of the priorities, which helped businesses to focus on the most important activities to achieve their long-term goals.

The need for direction was an important driver for strategic planning identified by the SSI participants. By having a clear, overarching direction, farm businesses were able to identify and focus on the activities that would achieve their long-term goals. This, in turn, was believed to facilitate decision-making, increase efficiencies and *'make things happen'*. As one SSI participant noted, *'Nothing in farming is short-term. It's long-term. We aim to be farming for a while — so you're thinking long-term. You're not thinking short-term because that is just defeatist.'*

The third theme, 'justification', related to strategic planning as a means to justify why they were doing what they were doing. This was of value internally within the farm business (for example, to know that what they are doing is going to help them achieve their long-term goals) and externally. In terms of the latter, having a written strategic plan that clearly stated the long-term goals was identified as useful (if not imperative) for funding applications — whether for government or other grants, or through financial institutions: *'I mean you're a farm business. People want to invest in a procedure-driven, strategic-focus sort of a farm.'*

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[10] Note: this is a quote most commonly attributed to Albert Einstein.

6.7   Summary

The Farm Planning program appeared to have an immediate effect on participant attitudes and beliefs. However, at t3, participant attitude levels were able to be categorised into three groups: mid-term effect (the change in attitude at t2 was maintained at t3); declining mid-term effect (the change in attitude at t2 appeared to be shifting back to t1 levels); and no mid-term effect (the change in attitude at t2 was not maintained, with t3 attitude levels more akin to those seen at t1). Where a mid-term effect was evident, this related to attitudes toward risk management. The t3 participant and non-participant attitudes were comparable. Where significant differences occurred, non-participants appeared to be more positive about the future of farming, and less likely to agree that a 'risk management' approach was required to moderate climatic/seasonal conditions. The demographic differences between the t3 participant and non-participant samples (see Chapter 5) did not appear to affect the attitude responses, indicating that program participation may be an important contributor to the differences that were identified.

The program appeared to have a positive effect on strategic planning capacity, with the majority of t3 participants attributing changes to their level of understanding and/or intention to use strategic planning to their participation in the program. Nevertheless, understanding of 'strategic planning' (as opposed to 'operational planning') was queried, based on the SSI data. All survey groups at all times generally agreed that strategic planning was useful to their farm business; however, the change in participant perceptions of the usefulness of strategic planning displayed at t2 was not maintained at t3. Furthermore, there was no significant difference between the t3 survey participants and non-participants. It is interesting to note that the survey respondents that were (or had been) also employed off-farm were more likely to agree that strategic planning was useful to their farm business.

The influence of the program on the number of participants with a strategic plan for their farm business was considerable, with a 200% increase from t1 to t3. Furthermore, the quality of the plans developed through the program, based on the inclusion of components to address environmental, economic and social objectives, was highlighted. This was particularly evident in the work-life balance and natural resource management components when compared to those of the non-participants. Despite being more willing to use strategic planning into the future, most participants had not updated their strategic plans since participating in the workshop. This may reflect the timing of the survey, and it is possible that the plans may be updated in the future.

Four barriers to strategic planning were identified by program participants — time, ability to put the plan into action, uncertainty and disagreement amongst family (i.e. business) members. These were also identified by those that had not participated in the program;

however, this group identified a much broader range of barriers. This may indicate that the program was successful in addressing some of the barriers to strategic planning.

The data also identified three factors that were driving strategic planning practice — identification, direction and justification. Strategic planning was seen to enable the identification of issues (and how to address these), new activities and priorities. It was also believed to be fundamental in giving an overarching, long-term direction for the business, and as a means to justify why they are doing what they are doing — and this was viewed as critical to support funding applications.

Chapter 7.   Putting strategic plans into action

7.1   Introduction

The Farm Planning program had a considerable impact on the number of farm businesses with strategic plans (see Chapter 6). However, questions remain as to whether the farm businesses are actually using their strategic plan and putting their plans into action, and if these actions will result in resilient farm businesses. This chapter focuses on these key questions.

The chapter begins by examining the level of implementation of the strategic plans developed through the Farm Planning program, followed by an assessment of the use of the plans for decision-making. The influence of the program on participant understanding of farm business risks and the pathway to resilience was then examined, including the link between this and participant perceptions and intentions to make changes to their businesses. Factors influencing the implementation of the strategic plans are identified, and the perceived resilience of program participants assessed. Participant perspectives on the most significant change that resulted from their participation in the Farm Planning program are described, with seven 'change' areas identified. The chapter concludes with a summary of the key findings.

7.2   Implementing the documented activities

As described in Chapter 6, 124 (89%) of the Farm Planning program participants surveyed at t3 had a written strategic plan for their farm business. Of these, 92% had implemented at least one activity from their plan (Table 7.1). There are, however, discrepancies in the data — of the 124 survey respondents with a strategic plan, 69% indicated that they had implemented at least one activity for each of the four components targeted through the Farm Planning program (production, finance, natural resources and work-life balance; Table 7.1), yet only 48% had included activities in their plan to address all four components (see Chapter 6). Nevertheless, the percentage of survey respondents that had begun to put their plans into action was notable.

Table 7.1: **Number of Farm Planning program participants that had implemented activities from their plan**

Type of activity implemented	Frequency	Percentage (%)
Production-related	114	92
Finance-related	113	91
Natural resource management	99	80
Work-life balance	96	77
Number of components implemented		
One	1	1
Two	14	11
Three	17	14
Four	86	70

$n = 124$
Responses collected at t3
'Components' include production, finance, natural resources and work-life balance

At t2, 96% of the Farm Planning program participants with strategic plans anticipated that they would implement most or all of the activities from their strategic plans (Table 7.2). The actual level of implementation for each component of the strategic plans at t3 is shown in Figure 7.1. This was significantly different for the different components ($p = 0.00$, Friedman test). Pairwise comparisons (SPSS, IBM Corp. 2012), with a Bonferroni correction for multiple comparisons, identified significant differences in the level of implementation between the work-life balance (mean rank = 2.22) and the finance (mean rank = 2.66) components ($p = 0.05$); between the work-life balance and production (mean rank = 2.83) components ($p = 0.00$); and between the natural resource management (mean rank = 2.29) and production components ($p = 0.01$). Seventy-two percent of the t3 participants had undertaken actions that they had never tried before (i.e. new practices).

Table 7.2: **Level of implementation of strategic plans anticipated by Farm Planning program participants at time 2**

Number of activities	Frequency	Percentage (%)
None	4	0.4
Some	36	4
Most	337	37
All	529	58

$n = 906$
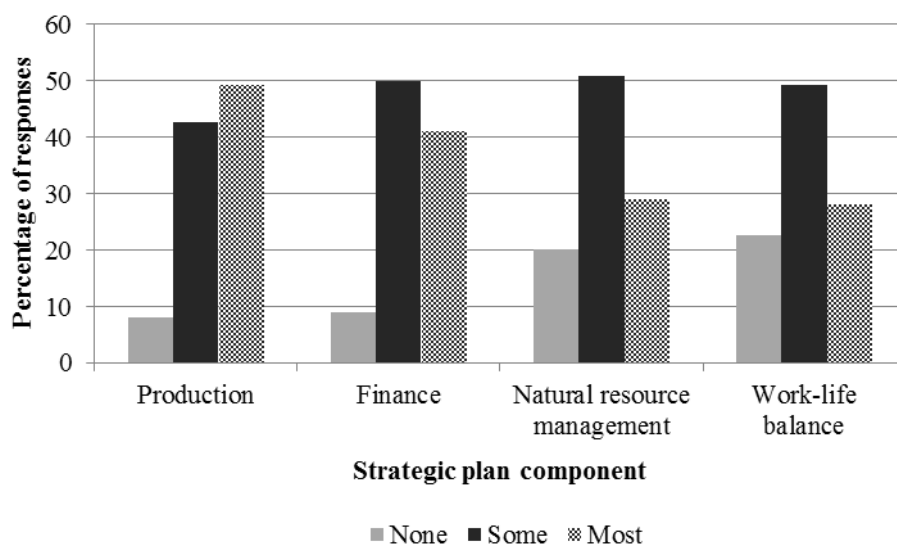
Figure 7.1: Level of implementation of strategic plan components by Farm Planning program participants at time 3

$n = 124$
$\chi^2(3) = 43.40$, $p = 0.00$ (Friedman test)

Of the eight farm businesses that participated in the semi-structured interviews (SSIs), seven had begun implementing their plans, and one had not yet started. One of the businesses that had been implementing activities noted that they had not referred to their strategic plan since its development, although their actions were consistent with what was documented in their plan. For this business, they intimated that the activities would have been undertaken regardless of whether or not they had a written plan.

All seven SSI businesses that had started putting their plans into action had begun to address all four of the key components. Similar to the findings from the structured surveys, the level of implementation of the different components also varied for the SSI businesses. The SSIs revealed three key factors influencing the level of implementation (see also Appendix 3, Table A3.6):

- *The nature of the activities being implemented*: Complex and/or long-term activities, such as debt reduction, were unlikely to have been completed (or near completion) at the time of the SSIs. These activities were undertaken step-by-step requiring completion of one step before the next step could commence. In contrast, quick and/or simple activities, or activities that were part of 'normal' farm practice (e.g. applying lime to reduce soil pH), were more likely to have been undertaken at the time of the SSIs.

- *Changing circumstances*: External factors, such as the weather, costs and markets, influenced the level of implementation of the strategic plans. In some instances, changing circumstances required activities to be put on hold (for example, when

finances were required to be redirected to other activities); in other instances it led to activities being changed (for example, when good prices resulted in livestock being sold at a time that was earlier than expected, leading to changes in timelines and/or activities). Four of the eight SSI businesses highlighted the need to be flexible, in terms of implementing their strategic plans. As one commented:

'Things change, it's changing all the time and I think the key to it is being flexible. No matter what you do you've got to be flexible and you've got to change with what's thrown at you. That's the key to survival; and if you don't do that then forget it, you're out of business in no time at all.'

- *Priorities*: Activities that were seen as priority were the ones that had been started (or completed). The SSIs suggested 'production' and 'finance' as the priority components of the strategic plans — *'The only parts that haven't been followed up is the 'balancing life'... That's the only bit we probably haven't started because we probably don't see that, even though it's important, it wasn't as important as the other areas which were affecting how the business was going to run'*. The prioritisation of production and finance-related activities over natural resource management and work-life balance is supported by the analyses of the structured surveys, as reported previously.

7.3 Using plans for decision-making

The usefulness of strategic planning for decision-making was alluded to in Chapter 6, where program participants saw value in having a longer-term direction to guide short-term planning and actions. A Kruskal-Wallis test identified significant differences between participants at t1, t2 and t3 and non-participants with regard to the frequency in which they referred to their strategic plans ($p = 0.00$). Prior to their participation in the program (i.e. at t1), program participants that had a strategic plan for their farm business were more likely to refer to their plans annually (Table 7.3). On immediate completion of the program (i.e. at t2), participants anticipated that they would refer to their strategic plans more frequently; however, at t3, reference to the strategic plans was more akin to that at t1 (Table 7.3). Post hoc tests (Dunn's procedure with Bonferroni correction) supported these observations. These analyses revealed significant differences between t1 (mean rank = 799) and t2 (mean rank = 605) ($p = 0.00$), and between t2 and t3 (mean rank = 874) ($p = 0.00$), but not between t1 and t3 ($p = 0.88$). No significant differences were identified between the non-participants (mean rank = 741) or any other group combination. Owing to the extreme differences in sample size, the results of this analysis should be treated with caution.

Table 7.3:   The frequency at which survey respondents refer to their strategic plan

	Program participant			Non-participants
	Time 1	**Time 2***	**Time 3**	**Time 3**
	($n = 363$)	($n = 905$)	($n = 41$)	($n = 28$)
Frequency	**Percentage**	**Percentage**	**Percentage**	**Percentage**
Monthly	15	18	5	29
Quarterly	22	40	20	11
Half yearly	13	21	27	18
Annually	33	20	37	22
Never	16	1	12	22

$\chi^2(3) = 83.60$, $p = 0.00$ (Kruskal-Wallis test)
*Responses at t2 indicate the *anticipated* frequency

How often a farm business refers to it's strategic plan is highly subjective and can depend on various factors. As an example, strategic plans were used by three of the eight SSI businesses to help them '*keep on track*'. This included helping them to negotiate the externalities and changing circumstances influencing the farm business in such a way as to ensure consistency with their long-term goals. Consequently, referring to the strategic plans may occur more frequently under certain circumstances. Because the frequency in which businesses refer to their strategic plans is a personal decision and can be influenced by external factors, it is worthwhile to examine further the quantitative responses in terms of those that indicated they never refer to their strategic plan.

Chi-square tests found significant differences in the proportion of respondents that never refer to their strategic plan between t2 and all the other groups ($p = 0.00$ for all; Table 7.4). The analysis did not identify any significant difference between respondents that had not participated in the Farm Planning program (i.e. between t1 and non-participants). On immediate completion of the Farm Planning program (t2) survey respondents were significantly less likely to never refer to their strategic plans than at t1; however, by t3 the proportion of respondents that never refer to their strategic plans was comparable to that at t1 and of the non-participants (Table 7.4). This suggests that participation in the program did not have a lasting effect on the proportion of participants that refer to strategic plans. Nevertheless, it is possible that the survey respondents that indicated that they never refer to their strategic plan at t3 will refer to it in the future.

Table 7.4: Comparison of survey respondents that would never refer to their strategic plans

Survey	Frequency	Percentage	Survey	Frequency	Percentage	p
Time 1	58	16	Time 3	5	12	0.53
Time 1	58	16	Non-participants	6	21	0.30*
Time 3	5	12	Non-participants	6	21	0.24*
Time 2	7	1	Time 3	5	12	0.00*
Time 2	7	1	Non-participants	6	21	0.00*
Time 1	58	16	Time 2	7	1	0.00

Times 1, 2 and 3 = Farm Planning program participants
n = 363 (t1), 905 (t2), 41 (t3), 28 (non-participants)
*Fisher's exact test used as one cell had expected count less than five.
Time 2 responses indicate the *anticipated* frequency of referring to strategic plans

7.4 Building resilient farm businesses

Implementing the strategic plans developed through the Farm Planning program was anticipated to result in businesses that were more self-reliant and prepared to deal with drought and other risks. In support of this, program participants (at t3) expected to make changes to their businesses in order to become more prepared and able to adjust to climatic/seasonal risks, including managing the natural resources (Table 7.5). Furthermore, Grant Completion Report respondents generally agreed with the statement 'Overall, we have adopted a more self-reliant approach to managing farm business risk since participating in the Farm Planning workshops' (Table 7.5). A Friedman test found that the responses to the four statements relating to intentions to make changes were significantly different (p = 0.000). Post hoc analysis (SPSS, IBM Corp. 2012, with a Bonferroni correction for multiple comparisons) revealed significant differences between the responses regarding intentions to make changes to adjust to climate change and the three other variables (seasonal variability, p = 0.00; natural resources, p = 0.01; drought, p = 0.02).

Mann-Whitney U tests identified significant differences in the mean ranks between participants and non-participants (at t3) in terms of their intentions to make changes to their farm business to address climatic/seasonal risks and impacts on the natural resource-base (Table 7.6). On average, non-participants were less likely to agree with the statements than program participants. In terms of 'preparedness', there was a significant difference in the level of preparedness for seasonal variability between participants and non-participants (p = 0.04), with non-participant businesses tending to perceive themselves as more prepared (Table 7.6).There were no significant differences between the two groups in terms of their perceptions of their preparedness to deal with drought and a longer-term climate change. On average, participants and non-participants agreed that their farm businesses were well-prepared to deal with these climatic/seasonal risks (Table 7.6).

Table 7.5: Farm Planning program participant management of business risk

Statement	n	Mean	S.D.	Mean rank*
I intend to make changes over the next 5 years to help accommodate seasonal variability	137	5.8[a]	1.0	2.84
I intend to make changes over the next 5 years to protect or minimise my impact on the natural resources	137	5.7[a]	1.1	2.59
I intend to make changes over the next 5 years to be more prepared for drought and extreme weather events	137	5.7[a]	1.1	2.56
I intend to make changes over the next 5 years to adjust to a climate change	97	5.1[a]	1.3	2.01
Overall, we have adopted a more self-reliant approach to managing farm business risk since participating in the Farm Planning program	654	5.5[b]	1.3	N/A

[a]Where 1 is strongly disagree and 7 is strongly agree
[b]Where 1 is 'not at all' and 7 is 'absolutely'
$\chi^2 (3) = 41.65$, $p = 0.00$ (Friedman test)
Surveyed at t3
*Mean rank based on $n = 97$

The program had a positive influence on participant understanding of farm business risks and how to adjust to these, and participant willingness to make changes (Table 7.7). The influence of the program on climate-related areas was less than the other areas, with mean scores very close to 'neutral' (Table 7.7). A Friedman test determined that the responses to the four statements (mean ranks) were significantly different ($p = 0.001$). Post hoc analysis (SPSS, IBM Corp. 2012, with a Bonferroni correction) revealed statistically significant differences between the two climate change statements ('I understand the impact of climate…' and 'I have a better understanding…') and the statement 'I am more willing to make changes to my farm business' ($p = 0.02$ and $p = 0.05$, respectively).

Data collected via the Grant Completion Report revealed that the majority of respondents believed the activities documented in their strategic plans were effective in achieving strategic outcomes (Table 7.8). It must be noted that these data refer only to activities that had been approved for funding through the Building Farm Businesses grant program. A Friedman test identified no significant difference between the responses to the four statements ($p = 0.26$; Table 7.8).

Table 7.6: Differences in responses from Farm Planning program participants and non-participants regarding management of business risk

Statement		Participants	Non-participants	p
My farm business is well-prepared to deal with drought and extreme weather events	Mean*	4.49	4.62	
	Mean rank	148.75	159.17	0.30
	n	138	170	
My farm business is well-prepared to deal with a longer-term climate change	Mean*	4.56	4.33	
	Mean rank	98.43	87.02	0.13
	n	97	88	
My farm business is well-prepared to deal with seasonal variability	Mean*	4.88	5.15	
	Mean rank	121.60	141.08	0.04
	n	97	170	
I intend to make changes over the next 5 years to adjust to a climate change	Mean*	5.06	4.37	
	Mean rank	150.24	124.73	0.01
	n	97	170	
I intend to make changes over the next 5 years to help accommodate seasonal variability	Mean*	5.82	5.15	
	Mean rank	173.16	138.56	0.00
	n	137	170	
I intend to make changes over the next 5 years to be more prepared for drought and extreme weather events	Mean*	5.67	4.92	
	Mean rank	174.19	137.73	0.00
	n	137	170	
I intend to make changes over the next 5 years to protect or minimise my impact on the natural resources	Mean*	5.66	4.69	
	Mean rank	182.59	130.96	0.00
	n	137	170	

Significant difference between mean ranks at $p < 0.05$ using Mann-Whitney U test
Surveyed at time 3
*Where 1 is strongly disagree and 7 is strongly agree

Table 7.7: Influence of the Farm Planning program on participant understanding of risks

Statement	*n*	Mean[a]	S.D.	Mean rank[b]
As a result of attending the Farm Planning workshops:				
I understand the impact of climate change better	37	4.14	1.75	2.13
I have a better understanding of what I need to do to adjust to the impacts of climate change	37	4.05	1.82	2.20
I understand the impact of risks on my farm business better	40	4.68	1.77	2.66
I am more willing to make changes to my farm business	40	4.95	1.83	3.01

[a]Where 1 is strongly disagree and 7 is strongly agree
$\chi^2 (3) = 41.65$, $p = 0.001$ (Friedman test)
Surveyed at t3
[b]Based on $n = 35$

Table 7.8:   Perceived effectiveness of strategic plan activities* in achieving strategic outcomes

| | **Effectiveness of activities at achieving:** | | | | | | | |
| | **The vision and goals for your business** | | **Improving your capacity to deal with dry seasons and market and climate variability** | | **Better management of your farm business** | | **Improving your risk management** | |
	No. of responses	%	No. of responses	%	No. of responses	%	No. of responses	%
We need to completely revise our plan	1	0.2	3	0.5	3	0.5	2	0.3
We will be changing most of our activities	2	0.3	5	0.8	5	0.8	4	0.6
We need to make some minor adjustments	46	7.0	32	4.9	51	7.8	34	5.2
Need more time to determine effectiveness	121	18.5	118	18.0	83	12.7	114	17.4
We have selected the right activities	203	31.0	218	33.3	211	32.3	211	32.3
Our activities are effective	172	26.3	207	31.7	220	33.6	218	33.3
All our activities are very effective	109	16.7	71	10.9	81	12.4	71	10.9

*Activities that were approved for funding via the Building Farm Businesses grant program
Surveyed at time 3 – secondary data collected via the Grant Completion Report (DAFWA)
$n = 654$
$\chi^2 (3) = 3.99$, $p = 0.26$ (Friedman test)

7.5 Factors influencing the implementation of strategic plans

7.5.1 Barriers to implementing strategic plans

Qualitative data collected via the t3 structured survey and the SSIs identified six barriers to implementing the strategic plans that were developed through the Farm Planning program (Table 7.9; Appendix 3, Table A3.7). Money and time were identified as key barriers by both the SSI businesses and the structured survey respondents.

Table 7.9: **Factors preventing the implementation of strategic plans developed through the Farm Planning program**

Factor	Frequency
Money	15
Time	15
Change in circumstances	4
External constraints	4
Commitment to the plan	3
Level of risk	1

Responses are not mutually exclusive
Qualitative responses collected at t3 from 29 survey respondents and eight SSI businesses

The lack of funds to carry out the activities documented in the strategic plans was a key barrier identified by the survey respondents. The data suggest an important link between money and prioritising, with money directed to the priority areas. The data also suggest that many of the activities documented in the strategic plans were additional to normal business operations, therefore requiring a surplus of funds to implement. The responses revealed three perspectives[11]:

1. Optimistic — the plans developed via the Farm Planning program were long-term plans so there was an expectation that the 'extra' money will be available over the coming years. This perspective was articulated by six respondents to the structured survey and seven SSI businesses:

    '...last year, between October 2011 and March 2012, we've had more than nine and a half inches of rain — which was throughout our harvest as well — so we suffered quite a substantial hit to the budget due to that — in excess of $275 000 worth of losses through grain quality downgrades alone. So that has altered things like the liming procedures etc., which of course does hamper where we want to head with the strategic plan but I guess that's why it's [i.e. the plan] *based over the 10 years.'*

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[11] Note: Eight out of the 11 SSI survey respondents that identified 'money' as a barrier to implementing their strategic plans provided additional detail to explain their perspectives.

2.   Pessimistic — one SSI business and one respondent to the structured survey did not believe they would ever have the funds to implement their strategic plan, and would only be able to implement their plan using external funds (e.g. from grant programs).

3.   Apathetic — one respondent to the structured survey referred to the activities in their strategic plan as 'luxuries'. This is an interesting choice of words considering the activities identified in the strategic plans were expected to be important, if not necessary, to achieve the identified long-term goals. This perspective suggests a level of indifference toward the strategic plan, with the documented activities likely to be non-priorities.

Having adequate time to implement the activities in the strategic plans was another key barrier. Similar to 'money' above, time (as a barrier) appeared to be linked to priorities. There were two aspects to this:

1.   Prioritising 'normal' farming activities over those identified in the strategic plans:

     'Time is the main thing. We say we should be doing that by now but we've run out of time because we're doing this or that [on the farm] *...'*

2.   Prioritising production- and finance-related activities over natural resource management and work-life balance — *'I guess the whole approach to the natural resource management for me is time and money'*. This is supported by the quantitative data presented in Section 7.2, where the level of implementation of production- and finance-related activities was significantly greater than that of natural resource management and work-life balance.

Despite 'time' being recognised as an important barrier, there were no comments by the respondents as to how they might overcome this. As such, their commitment to implementing their documented activities and/or recognition of the collective importance of the activities in achieving their longer-term goals (and, assumingly, to improve the resilience of their farm business) is questionable.

'Change in circumstances', as a barrier to implementing strategic plans, related to significant changes in business or personal circumstances. For example, in one instance, the respondent had left farming. From these data, it was not possible to ascertain whether these respondents would, where appropriate, update their strategic plans to reflect their new situation and then put these new plans into action.

For four respondents, external constraints were preventing activities from being implemented. This included being unable to access appropriate machinery, being unable to access labour, and the timeliness of access to external physical or human resources.

A lack of commitment was also revealed as a barrier to implementing strategic plans — specifically, motivation to carry out the activities. In addition, one survey respondent could not remember what they had documented to do in their plan. It would appear that, for these respondents, there was no need to implement changes within their business, or the potential future impacts of drought, climate variability and water availability were not fully understood despite participating in the Farm Planning program.

One SSI farm business identified 'risk' as preventing them from implementing some activities in their strategic plan. In this context, activities that were perceived to be risky (particularly, financially risky) were less likely to be implemented if the risk cannot be shared. This farm business noted that they would be seeking external funding (e.g. through grant programs) to implement perceived risky activities (such as perennial pastures), thereby reducing the potential financial risk to the business.

The confidence of the program participants did not appear to be a barrier to implementing the strategic plans developed through the Farm Planning program (Figure 7.2). On completion of the program (i.e. at t2) the majority of survey respondents (89%) were confident or very confident about implementing their strategic plan, and only 1% of participants were not confident (Figure 7.2).
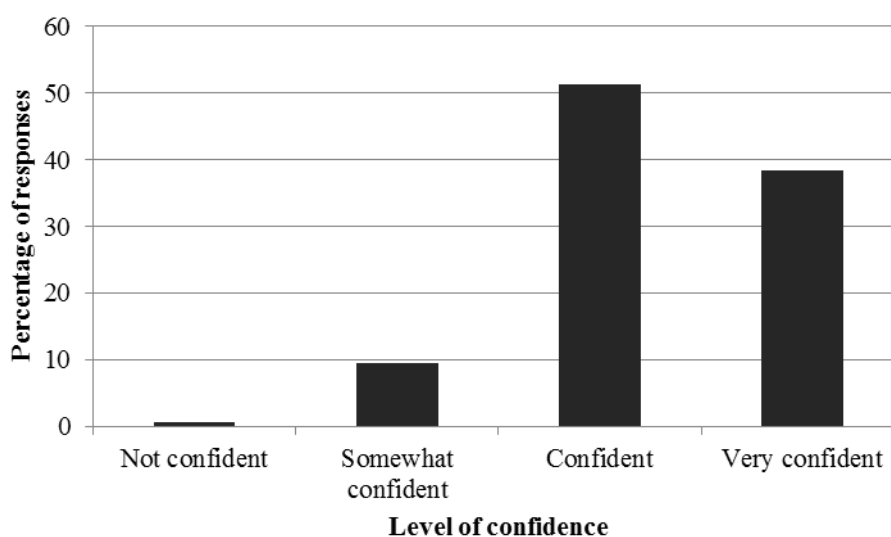
Figure 7.2: Farm Planning program participants' level of confidence to implement strategic plans developed via the program

n = 894
Surveyed at *time 2*

7.5.2 Drivers for implementing strategic plans

As shown in Table 7.1, the majority of Farm Planning program participants with a strategic plan had actually started to put their plans into action. The SSIs revealed five factors driving or enabling the participants to implement their strategic plans — the Building Farm Businesses grant; a desire to be farming for the long-term; a desire for financial resilience; a desire to be self-reliant; and the risk of drought/climate change (Table 7.10; Appendix 3, Table A3.8). The Building Farm Businesses grants were viewed as both a driver and enabler, whilst the other factors were considered to be drivers. Of the 137 t3 participant respondents, 68% received a grant through the Building Farm Businesses program. In total, grant applications for 800 (77%) of the 1042 farm businesses that participated in the program were approved (DAFWA 2014).

Table 7.10: Factors driving or enabling the implementation of strategic plans developed through the Farm Planning program

Factor	Frequency
Building Farm Business grants	6
A desire to be long-term farming	5
A desire for financial resilience	5
A desire to be self-reliant	3
The risk of drought/changing climate	3

Responses are not mutually exclusive
Qualitative responses collected at t3 from eight SSI businesses

The desire to be farming for the long-term was a complex factor. Analysis of the qualitative data suggest this desire may be the key factor underpinning the other drivers for implementing the strategic plans identified by the SSI businesses. Essentially, the SSI businesses wanted to be able to '*survive the hard years*'. To do this, there was a drive to be:

- More prepared by putting in place infrastructure and practices that will lessen the impact of drought, climate variability and reduced water availability. For three SSI businesses, this was influenced by their past experiences with drought:

   'I think it was the drought in 06/07. That was a good kick in the behind. It makes you really think you need to be better prepared for this next time it happens.'

- Self-reliant to reduce the dependence on external inputs and resources, and reduce costs; and/or

- Financially resilient by increasing the income generated by the business — for example, by improving the productive capacity of the land and/or improving efficiencies to reduce the financial costs of production.

The Building Farm Businesses grants were identified as both a driver and enabler for implementing the strategic plans developed through the Farm Planning program. As previously explained (see Chapter 2), the Building Farm Businesses program was another of the programs delivered under the Pilot of Drought Reform Measures. All eight of the SSI businesses received grants through the Building Farm Businesses program.

Four of the eight SSI businesses spoke of the grant as driving the implementation of their strategic plans. Accessing the grant meant that the recipients had to meet certain obligations and timelines, which pushed the delivery and completion of particular activities. Although these activities may have eventually been undertaken, the grant brought the activities to the fore and drove implementation. This may not have been constructive — for two of the SSI businesses, having to undertake funded activities within specified timeframes put additional pressure onto the business during an already difficult period.

On the other hand, access to the grant enabled recipients to put their plans into practice earlier than otherwise would have been possible. It also enabled activities that were perceived as risky to be undertaken, as it reduced the level of financial risk to the farm business. As previously identified, many of the activities documented in the strategic plans were considered additional to normal farm operations and, therefore, required the injection of additional funds to enable implementation. The Building Farm Businesses grants provided this extra funding. In this respect, the Building Farm Businesses grants were an important incentive to spark action from the program participants.

7.6   Perceptions of resilience

The majority (59%) of the t3 participant respondents believed that the Farm Planning program had a positive influence on building farm businesses that were more resilient and able to adapt to change (Figure 7.3).

Mann-Whitney U tests were run to determine if there were differences in perceptions of resilience between participants and non-participants. For 16 of the 23 statements, there were no statistically significant differences in the mean ranks between Farm Planning program participants and non-participants (Table 7.11). Where significant differences occurred, participants appeared to work more collaboratively and have a greater consideration for the natural environment; and non-participants placed a greater emphasis on business assets (Table 7.11).
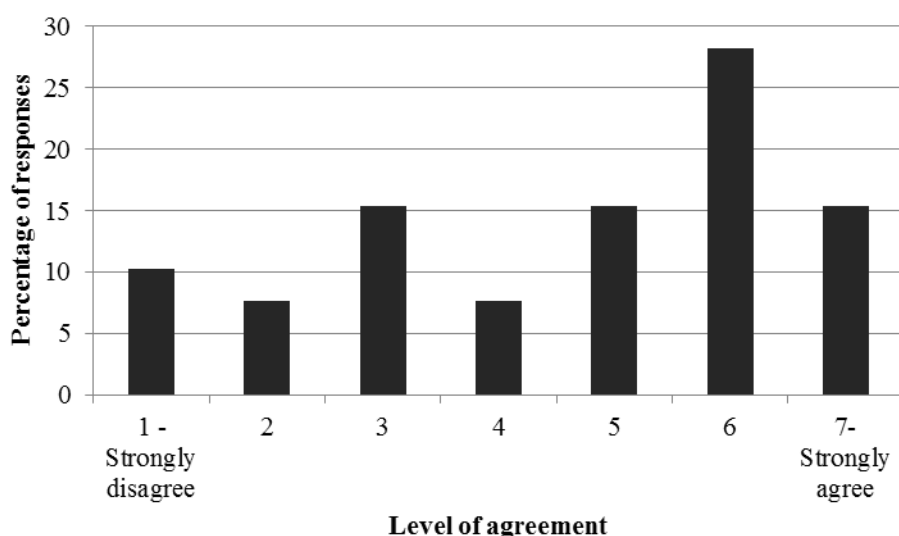
Figure 7.3: Farm Planning program participant management of business risk

Responses to the statement 'As a result of attending the Farm Planning workshops, my farm business is more resilient and able to adapt to change'
Mean = 4.56; S.D. = 1.96; n = 39
Surveyed at t3

Table 7.11: Differences in perceptions of resilience between Farm Planning program participants and non-participants

Statement		Participants	Non-participants	p
It is difficult to decide what information is relevant to farm management decisions	Mean*	4.29	4.72	0.909
	Mean rank	154.64	153.49	
	n	137	170	
I have a diverse range of enterprise mix	Mean*	5.56	5.35	0.879
	Mean rank	114.01	112.69	
	n	138	88	
I am confident with the soil health management on my farm	Mean*	5.54	5.57	0.790
	Mean rank	93.96	91.94	
	n	97	88	
My income is more stable than other farmers I know	Mean*	4.56	4.67	0.697
	Mean rank	91.59	94.55	
	n	97	88	
I effectively use existing resources for new activities where possible	Mean*	5.68	5.74	0.561
	Mean rank	111.07	116.00	
	n	137	88	

Table 7.11 continued

Statement		Participants	Non-participants	p
I have varied social networks for support and ideas	Mean*	5.50	5.33	0.555
	Mean rank	115.49	110.38	
	n	138	88	
I am actively involved in community groups	Mean*	5.56	5.31	0.396
	Mean rank	116.36	109.01	
	n	138	88	
I live a healthy lifestyle	Mean*	5.53	5.54	0.395
	Mean rank	110.64	117.98	
	n	138	88	
I commit to investments incrementally and review before investing further	Mean*	5.58	5.63	0.371
	Mean rank	110.00	117.68	
	n	137	88	
I spend quality time with family and friends	Mean*	5.53	5.80	0.299
	Mean rank	89.25	97.13	
	n	97	88	
I use integrated pest management for effective control of weeds, pests and diseases	Mean*	5.82	5.97	0.276
	Mean rank	89.12	97.27	
	n	97	88	
I believe maintaining a low-medium debt to income ratio is important	Mean*	5.96	6.17	0.240
	Mean rank	88.86	97.56	
	n	97	88	
I rely on a large range of market channels	Mean*	5.09	4.93	0.239
	Mean rank	117.01	106.76	
	n	137	88	
I avoid committing a large share of resources to one activity	Mean*	5.20	5.27	0.234
	Mean rank	109.00	119.23	
	n	137	88	
Members of the business are satisfied with the activities they carry out	Mean*	5.66	5.52	0.210
	Mean rank	97.53	88.01	
	n	97	88	
There is a diverse range of skills, expertise and experience in my business	Mean*	5.78	5.55	0.156
	Mean rank	118.24	106.07	
	n	138	88	
There have been discussion with others in the business about a succession plan	Mean*	5.69	5.10	0.050
	Mean rank	120.03	103.26	
	n	138	88	
I work collaboratively with others to solve problems and generate new ideas	Mean*	5.91	5.52	0.035
	Mean rank	119.52	101.65	
	n	136	88	
I have sufficient infrastructure	Mean*	4.97	5.26	0.017
	Mean rank	104.89	125.63	
	n	137	88	

Table 7.11 continued

Statement		Participants	Non-participants	p
I believe a high percentage equity in my land is important	Mean*	5.89	6.16	0.016
	Mean rank	105.04	125.39	
	n	137	88	
I like to keep up to date with technology	Mean*	5.78	5.91	0.004
	Mean rank	139.14	166.96	
	n	138	170	
I take into consideration the natural environment in decision-making for the farm	Mean*	5.88	5.34	0.001
	Mean rank	124.03	95.83	
	n	137	88	
I involve others in the business in setting plans for the future	Mean*	5.85	5.22	0.000
	Mean rank	105.62	97.09	
	n	97	88	

Significant difference at $p < 0.05$ using Mann-Whitney U test
*Where 1 = strongly disagree and 7 = strongly agree
Surveyed at time 3

To examine the key components describing resilience, principal components analysis (PCA) was run on the 23 resilience variables. The suitability of PCA was assessed prior to analysis. Inspection of the correlation matrix showed that three variables did not have at least one correlation coefficient greater than 0.3, and five variables did not have at least one correlation greater than 0.4. As such, these variables were removed from the analysis. The overall Kaiser-Meyer-Olkin (KMO) measure was 0.77 with individual KMO measures all greater than 0.6, which is 'mediocre' to 'middling' (Kaiser 1974). Bartlett's test of sphericity was statistically significant ($p = 0.00$), indicating that the data was suitable for factor analysis.

PCA revealed four components that had eigenvalues greater than one and which explained 61.3% of the total variance (Table 7.12). Visual inspection of the scree plot indicated that four components should be retained. A Varimax orthogonal rotation was employed to aid interpretability, and statements with a factor loading greater than 0.4 were used to describe the results. The interpretation of the data defined the four resilience factors as:

- Lifestyle (factor 1) – this factor increases with increasing social activity, the diversity of social networks and healthy living.
- Farm management (factor 2) relates to on-farm activities such as pest control, natural resource management, and the use of technology and resources, with factor 2 increasing as the perceived effectiveness of these on-farm activities increases.
- Collaboration (factor 3) – this factor increases as perceptions of a collaborative approach to the farm business increase.

- Financial management (factor 4) relates to the importance placed on a low debt-to-income ratio and high equity, with factor 4 increasing as greater importance is placed on these areas.

Cronbach alpha scores were greater than 0.6, indicating the variables could be reliably combined into the four factors (Table 7.12).

Table 7.12: Rotated component matrix of resilience variables

	Factor			
	1	**2**	**3**	**4**
I am actively involved in community groups	0.821			
I have varied social networks for support and ideas	0.758			
I spend quality time with family and friends	0.724			
I live a healthy lifestyle	0.644			
I use integrated pest management for effective control of pests, weeds and diseases		0.795		
I am confident with the soil health management on my farm		0.725		
I effectively use existing resources for new activities where possible		0.650		
I take into account the natural environment in decision-making for the farm		0.512		
I like to keep up to date with technology		0.473		
I involve others in the business with setting plans for the future			0.886	
There has been discussions with others in the business about succession planning			0.846	
I work collaboratively with others to solve problems and generate new ideas			0.651	
Members of the business are satisfied with the activities they carry out			0.451	
I believe maintaining a low-medium debt to income ratio is important				0.863
I believe a high percentage equity in my land is important				0.852
Factor mean	21.995	28.616	22.276	12.076
Eigenvalue	4.356	1.894	1.599	1.340
Percentage variance	29.038	12.628	10.660	8.931
Cumulative variance (%)	29.038	41.666	52.326	61.257
Cronbach's alpha	0.765	0.675	0.780	0.804

7.7　Most significant change

Thirty-four of the Farm Planning program participants surveyed at t3 identified what they saw as the most significant change resulting from their participation in the Farm Planning program (Appendix 3, Table A3.9). From these qualitative data, seven 'change' themes emerged:

- *On-ground action* (14 respondents). For this group of respondents, the most significant change resulting from their participation in the program was the on-ground action. For many of these respondents, the Building Farm Businesses grant played an important role by providing the funding required to put in place the on-the-ground changes.

- *Learning*. For 12 respondents the learning gained from participating in the program was the most significant change. The areas of learning were diverse — from production, financial management and record keeping through to a greater understanding of risk and the need for longer-term planning and personal resilience.

- *Planning*. Having a strategic business plan that can be reviewed was the most significant change for six respondents. A further four respondents identified looking to the future (rather than day-to-day) as their most significant change. For one respondent, moving forward with their succession planning was the most significant change resulting from their participation in the program.

- *Personal resilience*. A greater appreciation of the importance of personal resilience, and the link between this and the farm business, was identified as the most significant change for two respondents. In addition, one respondent felt that the on-ground actions they were able to implement because of the program had reduced personal stress and pressure, thus contributing to their personal resilience.

- *Attitudes/confidence*. One respondent identified their more positive attitude toward the future of farming as the most significant change resulting from their participation in the program; and one respondent believed they were now more open to making changes to their business. For one respondent, the most significant change resulting from their participation in the program was that they had more confidence in the way in which they ran their farming operation.

- *Collaboration* (three respondents). For this group of respondents, the most significant change resulting from their participation in the program was the collaboration and dialogue between members of the farm business. This resulted in a shared direction for the business and a greater understanding of the perspectives and aspirations of other members of the business.

- *No change.* For two respondents, participation in the program did not deliver any significant change.

7.8   Summary

With the exception of the Building Farm Businesses grant, it was never the intention of the Farm Planning program to go beyond the point of helping farm businesses to have documented strategic plans; however, 92% of survey respondents that had a strategic plan had begun implementing their plans within their businesses. The production- and finance-related activities were the most likely components of the strategic plans to have been put into action at the time of the survey. It is not clear whether these activities would have occurred without the program. Nonetheless, a large percentage of the follow-up survey respondents (68%) did receive Building Farm Businesses grants of up to $60 000 in which to help them implement activities from their plans. This appeared to be an important incentive to spark action by the program participants. Three other factors contributing to the level of implementation were proposed — the nature of the activity, changing circumstances and priorities.

Participation in the program did not appear to have a strong influence on the use of strategic planning for decision-making, with the proportion of t3 participant survey respondents that never refer to their strategic plans similar to that of businesses that had not participated in the program. The timing of the t3 survey may have influenced responses, as it is possible that those that had never referred to their strategic plan will refer to it sometime in the future. Furthermore, the construct is very subjective — the frequency in which businesses refer to their strategic plans is a personal decision and can be influenced by external factors.

As per the Farm Planning program theory of change (Chapters 2 and 3), implementing the strategic plans developed through the program was anticipated to result in businesses that were more self-reliant and prepared to deal with drought and other risks. Program participants generally believed that the actions they were implementing would be effective at achieving strategic outcomes. Furthermore, they believed their participation in the program resulted in their farm businesses being more resilient and better able to adapt to change. In addition to targeting the participants' capacity for strategic planning, the program attempted to provide the participants with a better understanding of the risks and the pathway to resilience (Noonan et al. 2012). The program had a positive influence on participant understanding of farm business risks and how to adjust to these, and participant willingness to make changes. However, the influence of the program on participant understanding of climate change was less than for the other areas. Consequently, although the survey respondents appeared to be taking steps toward becoming more self-reliant and prepared,

intentions for taking climate-related action were weaker than for other areas. Non-participants, in comparison to the Farm Planning program participants, had significantly weaker intentions to take action in all the areas.

Six factors were identified as impeding implementation of the strategic plans — money, time, changing circumstances, external constraints, commitment and riskiness. Some of the barriers give uncertainty to the dedication of some farm businesses in actually implementing their plans to achieve long-term goals. This raises the question of whether the 'pressure to change' (as per the change model – see Chapter 3) was strong enough.

Five factors driving or enabling the participants to implement their strategic plans were identified — the Building Farm Businesses grant; a desire to be farming for the long-term; a desire to be self-reliant; the risk of drought/climate change; and a desire for financial resilience. The Building Farm Businesses grants were viewed as both a driver and enabler — receipt of the grant enabled the plans to be put into action but also drove implementation as the recipients were duty-bound to meet certain obligations. A desire to be farming for the long-term appeared to be the underpinning driver for implementing strategic plans.

Perceptions of resilience were comparable between participants and non-participants. Where significant differences occurred, those that had participated in the program appeared to work more collaboratively and have a greater consideration for the natural environment; and non-participants placed a greater emphasis on business assets. Seven 'change' themes were identified: on-ground action; learning; planning; personal resilience; attitudes/confidence; collaboration; and no change. These represent the participant perspectives on the most significant changes that resulted from their participation in the Farm Planning program, and may be used as evidence for the Farm Planning program as a vehicle for change.

Chapter 8.   Discussion

8.1   Introduction

The findings of the research were presented in Chapters 5-7. This chapter combines the qualitative and quantitative findings to provide a picture of the impact of the Farm Planning program on participant capacity and behaviours, and farm business resilience.

There are five sections in this chapter. Section 8.2 discusses the impact of the program on participant capacity (research objective 1). Section 8.3 addresses research objective 2 – the impact of the program on participant behaviours. Section 8.4 explores the consequences for farm business resilience (research objective 3). Two important factors influencing the effectiveness of the program (research objective 4) are discussed in Section 8.5. The next section reassesses the program's theory of change against the research findings, and explores the link between the program outcomes and the objectives of the National Drought Policy. The chapter concludes by summarising the discussion.

8.2   The impact of the Farm Planning program on capacity

The Farm Planning program appeared to have an immediate effect on participant attitudes and beliefs, as demonstrated by the significant differences in responses to the various attitude statements between *time 1* and *time 2*. This change has been described as 'an unparalleled uplift in attitudes' (Noonan et al. 2012, 91). However, this research indicated that this uplift was generally not maintained 12-18 months after the participants had completed the program. Similar results, obtained using the 'pre, post, follow-up' evaluation design, have been shown for workshops across a wide array of fields (e.g. Champness 2008; Kavanaugh et al. 2015; Zakrajsek and Zizzi 2008). It has also been suggested that there is a propensity for positive response bias in surveys completed immediately following an event such as a workshop (Champness 2008). In terms of this research, three groups were identified in which attitude changes could be classified: mid-term effect; declining mid-term effect; and no mid-term effect.

A mid-term effect (that is, the attitude change between *time 1* and *time 2* was maintained at *time 3*) was evident for attitudes toward risk management — specifically, risk management as an approach to navigate through the changes caused by seasonal variability and climate change. Furthermore, these 'risk management attitudes' were significantly more positive in program participants than in non-participants, indicating a real effect of the program. The OECD (2009) identifies two aims of a risk management approach: risk reduction (reduce the probability of the risk occurring) and risk mitigation (reduce the extent of damage caused by the risk). Adaptation is viewed as an action to reduce or mitigate risk (e.g. Jones and Preston

2011). Risk management and 'adaptation by farmers is normal and is constantly happening' (Pannell 2010, 1); however, climate change adds a 'new set of challenges on the long-standing risks inherent in the practice of agriculture' (Head et al. 2011, 1091). Reducing the somewhat nebulous 'climate change' to a practical farm or local level issue has been suggested as fundamental to supporting climate adaptation and resilience in farm businesses (e.g. Evans, Storer and Wardell-Johnson 2011; Head et al. 2011). This is because it makes the information more relevant and facilitates its framing to the social, economic and environmental intricacies that underpin risk management decisions by farm businesses (Evans, Storer and Wardell-Johnson 2011; Head et al. 2011). Inherent in the approach taken by the Farm Planning program was participant self-discovery of the risks relevant to their farm business and the actions required to reduce or mitigate the risks (Noonan et al. 2012). Consequently, a 'risk management approach' was the cornerstone of the program's strategic planning process. From this research, it may be surmised that the strategic planning process employed by the Farm Planning program was integral to delivering a lasting effect on the program participants in terms of their attitudes toward managing the risks associated with climate change and seasonal variability.

A declining mid-term effect[12] was evident in two areas — beliefs about the influences on business performance, and the future of farming at the individual/local level; and there was no mid-term effect[13] in three areas — belief in climate change, attitudes toward the future of farming (generally) and attitudes toward strategic planning. Furthermore, there were no significant differences between program participants and non-participants in these areas — except, non-participants had a more positive outlook on the future of farming. Accordingly, it is concluded that the Farm Planning program did not have a lasting positive effect on these attitudes/beliefs.

Changing program participant attitudes toward strategic planning was a key anticipated outcome of the Farm Planning program (Keogh, Granger and Middleton 2011). Although this was achieved in the short-term, the effect was not maintained and, after 12-18 months, participant attitudes were similar to those of non-participants. It was apparent, however, that participants and non-participants already exhibited positive attitudes toward strategic planning. Farm business planning has been targeted through government skill development programs for many years — for example, the national Property Management Planning (PMP) campaign began in 1992 (Cock 2001). A review of the Commonwealth government 'Agriculture – Advancing Australia' package, which was implemented between 1997 and

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[12] The attitude change displayed at *time 2* had dissipated somewhat by *time 3* to be approaching levels similar to that seen at *time 1*.

[13] By *time 3* the change displayed at *time 2* had reverted to *time 1* levels.

2004, identified 'significant improvement in strategic planning, information gathering and analysis by Australian farmers' (Department of Agriculture, Fisheries and Forestry, n.d., 6). In Western Australia, under the guise of the Better Business program, PMP had engaged more than 1400 individuals from 650 farm business within three years (Laidler 2000). Furthermore, a change in farmer attitudes toward strategic planning was evident after participation in the Better Business program (Cock 2001). Programs to assist farm businesses with planning have continued since this time. The positive attitudes toward strategic planning displayed by Farm Planning program participants and non-participants may reflect beneficial exposure to strategic business planning in the past. Certainly, several of the businesses participating in the semi-structured interviews (SSIs) believed strategic planning was useful to their business, but held this view regardless of their participation in the program.

Participation in the Farm Planning program saw a significant increase in the number of participants that believed in climate change. Noonan et al. (2012) attributes this change to the facilitated process employed by the program, which 'mitigated the impact of vociferously argued minority views about climate change, in effect depolarising and depoliticising the discussion' (Noonan et al. 2012, 54). However, this increase in climate change belief levels had dissipated within 12-18 months. Climate change is a complex and contentious issue (Pannell 2010). In a survey of Western Australian farmers, only one-third agreed that climate change was occurring; and attitudes toward climate change were shown to be influenced by perceptions of the credibility of the science and levels of trust in government (Evans, Storer and Wardell-Johnson 2011). Since climate change, as a fact, was a premise underlying the Farm Planning program (Noonan et al. 2012), the program's workshop environment may have unintentionally produced an artificial social norm — that is, the socially acceptable stance was that there is a climate change. This may have led to a perceived pressure for participants to conform to this norm at the workshops. As belief in climate change is not the norm within the Western Australian agricultural population (Evans, Storer and Wardell-Johnson 2011), this may explain the reduction in belief levels once the participants returned to their everyday lives. Gifford (2011, 294) notes that 'people routinely compare their actions with those of others…and derive subjective and descriptive norms from their observations about what is the "proper" course of action'. Furthermore, these norms can be positive or negative — 'anti-climate behaviour patterns can dominate, but pro-climate patterns can too' (Gifford 2011, 294).

There are many other possible reasons why the decline in climate change belief occurred — for example, the influence of political leaders (see Tranter 2011) during the period between participating in the program and the *time 3* survey; or, in answering the *time 2* survey,

program participants may have responded in the way they thought the deliverers wanted to hear, of the belief that this would increase their chances of receiving a grant under the Building Farm Businesses program (Noonan et al. 2012). Whatever the case may be, farmer disbelief in climate change is a potential consequence of uncertainty and mistrust (Donnelly et al. 2009; Evans, Storer and Wardell-Johnson 2011; Gifford 2011; Pannell 2010), coupled with personal experiences on their own land (Donnelly et al. 2009; Head et al. 2011). Donnelly et al. (2009, 5) claim that 'rejecting climate change in this way allows primary producers to cope with a difficult situation and to avoid the sense of powerlessness and the inevitable negative impact on their business and lifestyle'.

Non-participants exhibited a more positive attitude toward the future of farming compared to those that had participated in the program. Similar to climate change acceptance discussed above, one can speculate on the possible causes of this difference. For example, some program participants were directed by their financiers to undertake the program (Keogh, Granger and Middleton 2011). This indicates uncertainty in the ongoing viability of a portion of the farm businesses participating in the program, which may have skewed the data. Alternatively, considering that the program 'address[ed] complex and often confronting issues' (Noonan et al. 2012, 91), the program may have prompted a more realistic perspective on the business situation that did not manifest until the *time 3* survey, after participants had an opportunity to reflect on their experiences at the program.

In terms of skills and knowledge, Noonan et al. (2012, 50) state that 'Key areas of improvements in participant capacity included knowledge and understanding of strategic planning, farm business resilience [and] climate change'. This is supported by the findings of this research where, on average, survey respondents attributed their understanding of i) the usefulness of strategic planning; ii) the impact of risks on their farm business; iii) the impact of climate change; and iv) what they need to do to adjust to the impacts of climate change to their participation in the program — specifically, that the program improved their understanding in these areas. Furthermore, the learning gained from participation was identified by participants as one of seven areas that delivered the most significant changes.

In contrast, Keogh, Granger and Middleton (2011, 38) found that some participants believed they already possessed the knowledge and skills being imparted via the program and 'were frustrated with what they considered to be "basic" content'. Indeed, the SSI interviews highlighted that some program participants already understood the usefulness of strategic planning to their farm business; however, the program was still valued as a 'reminder' and the planning process/tools were thought to be useful to sustain farm planning into the future. Heterogeneity within the groups attending each workshop, in terms of knowledge and skill levels, was recognised by the program deliverers (see Noonan et al. 2012). It was the role of

the lead facilitator of the group to identify such differences in capacity levels and put in place appropriate processes to support learning (Noonan et al. 2012). Nonetheless, Keogh, Granger and Middleton (2011, 39) make the recommendation that, in the future, the training 'should be offered in a way that takes account of the variation in participant skills and knowledge, with different streams for participants with entry level and more advanced skills'.

A critical area of learning was the interactions and interdependencies of the social, environmental and economic dimensions of the farm business, and how the health of each of these areas is necessary to facilitate resilience (Noonan et al. 2012). Hill (1998) argues that for too long productivity has been the focus of farming to the detriment of the social and environmental dimensions. Consequently, agriculture 'must aim to achieve its production goals … while maintaining its natural and social capital resource bases' (Hill 1998, 394). This research indicated that participation in the Farm Planning program resulted in a greater appreciation of the interconnectedness of the social, economic and environmental dimensions, particularly the importance of a work-life balance on the resilience of the business.

At *time 3*, 68% of the survey respondents were confident in their abilities to maintain their strategic plans. This implies that these participants possessed (or, at the least, perceived that they possessed) the necessary planning skills and knowledge to continue strategic planning into the future. Keogh, Granger and Middleton (2011, 37) note that 'participation in the Farm Planning program is likely to have enhanced farmers [planning] skills…', whilst Noonan et al. (2012) describe a distinct increase in participant confidence in strategic planning on immediate completion of the program. DAFWA (2011) link this increased confidence to self-efficacy. 'Enhanc[ing] farmers' skills in business, natural resource management and personal planning' was a specific objective of the Farm Planning program (COAG 2010, C-3). Although these data suggest that this objective was achieved, it must be recognised that almost one-third of the survey respondents were not confident in their abilities to maintain their strategic plans.

Overall, the Farm Planning program appeared to have a positive effect on participant attitudes toward risk management and a negative effect on participant confidence in the future of farming. For all other attitude measures, the program did not have a mid-term effect. The program also appeared to provide the majority of participants with a better understanding and the self-efficacy to continue holistic strategic planning into the future. As the Farm Planning program was unique in its approach, there are no other interventions to which comparisons can be made (Noonan et al. 2012). Consequently, it is difficult to draw conclusions about the value of the various attributes of the Farm Planning program in terms

of improving participant capacity. Nonetheless, Noonan et al. (2012, 2) identify two areas of the program as fundamental in delivering (or, at the least, contributing to) important improvements to participant capacity — the use of competency-assessed facilitator teams; and an action-based facilitated learning journey. These are now discussed.

'Mechanisms for ensuring appropriate delivery of training' was one of five good practice criteria recommended by Kilpatrick, Fulton and Geard (2002, 4). The Farm Planning program's use of competency-assessed facilitator teams addresses this criterion. According to Noonan et al. (2012), all facilitators involved in the program were assessed on their capabilities and experience in terms of adult learning, group management, action learning and facilitation; and their expertise or understanding of the technical areas (natural resource management/agricultural production, human resource management, financial management, strategic planning). This enabled 63 'high calibre' facilitators to be engaged in the program (Noonan et al. 2012). Based on the outcomes of pre-pilot testing, facilitators were placed into teams consisting of a lead facilitator and three supporting facilitators. The members of each team were deliberately selected. This was to ensure an advantageous mix of skills to best support the learning environment, given the heterogeneity of the participants, and provide experience across the range of technical areas. Such a mix was also seen to increase the 'richness of [the] learning environment' (Noonan et al. 2012, 36).

An adaptive management approach was taken by the program in that delivery teams were 'recalibrated' to ensure positive team dynamics and to meet the needs of the specific workshop groups (Noonan et al. 2012). Furthermore, training and professional development opportunities were available to strengthen the capacity of the facilitators (Noonan et al. 2012).

The use of facilitator teams gave an effective facilitator-to-participant ratio, which was believed to rapidly develop trust between the facilitators and participants (Noonan et al. 2012). Trust was an important principle underpinning the delivery of the Farm Planning program for two reasons. Firstly, farmers today do not take the word of 'advisors' at face value (Vanclay 2004) — that is, there needs to be trust in the information and who it is coming from (Pannell 2010). Secondly, in order to develop holistic strategic plans, the program required participants to 'step out of their comfort zone and consider issues that would be critical in addressing risks and challenges' (Noonan et al. 2012, 36). As such, 'honesty and openness in [the] discussion' was required (Noonan et al. 2012, 36). A level of trust in the facilitators, and the other workshop participants, was necessary for participants to be confident enough to take this step.

The second area of the program that was believed by Noonan et al. (2012) to be fundamental in improving participant capacity was the 'action-based facilitated learning journey' approach. Action-based learning is described well by O'Neill (1999 quoted in O'Neill and Lamm 2000, 44) as 'an approach to working with, and developing people, which uses work on a real project or problem as the way to learn. Participants work in small groups or teams to take action to solve their project or problem, and learn how to learn from that action. A learning coach works with the group in order to help them learn how to balance their work, with the learning from that work'. For the Farm Planning program, the facilitators undertook a role similar to that of a learning coach to 'assist in managing the process of learning rather than the content' (Noonan et al. 2012, 35). Program actions to further support the learning journey included:

- *Using the same facilitator team to deliver each workshop module to the group*. This was shown to 'enhance connectivity, empathy and trust building' (Noonan et al. 2012, 35). The education literature identifies a link between trust and student achievement (e.g. Bryk and Schneider 2002 cited in Ronfeldt et al. 2011), and that teacher continuity is required in order to build this trust (Ronfeldt et al. 2011). Continuity also delivers valued outcomes in the health sector (Gray et al. 2003; Stokes et al. 2005). Similar to the health sector, facilitator understanding of the participant situations would have assisted in their efforts to support the development of realistic and relevant strategic plans.

- *Providing opportunities for participants to learn from each other*. Collaborative learning 'has been widely researched and advocated throughout the professional literature' (Gokhale 1995, 22). In particular, it facilitates critical learning and problem solving (Gokhale 1995). To support collaborative learning, the program encouraged participation from all members of the farm business. Furthermore, the mix of businesses at each workshop series was, where possible, deliberate to maximise the learning from each other (Noonan et al. 2012).

- *Tailoring the content to suit the participants*. The content of the workshop modules was designed to be flexible, enabling information to address specific group needs and relevant/local examples to be built into the delivery (Noonan et al. 2012). Relevant information is critical for farm business management training as it encourages participation and supports learning (Industries Development Committee Workforce, Training and Skills Working Group 2009; Kilpatrick et al. 1999; Murray-Prior, Hart and Dymond 1999, 2000). The competencies of the facilitators were also important, in terms of their capacity to recognise the needs and adapt the content as required.

Furthermore, the content and processes were 'farmer centric [and had a] balanced use of effective and cogitative learning domains' (Noonan et al. 2012, 59).

8.3   The impact of the Farm Planning program on behaviours

The purpose of the Farm Planning program was to support farm businesses to develop written strategic business plans (COAG 2010; Keogh, Granger and Middleton 2011; Noonan et al. 2012). As a result, the program made a concerted effort to encourage 'good' strategic planning behaviours in the participants. Furthermore, a high level of guidance was provided to the participants in the task of documenting their strategic plan (Noonan et al. 2012). It was therefore a realistic assumption that the program would strongly influence the number of participating businesses with a strategic plan and the attributes of these plans (i.e. plans that covered the production, environmental, social and economic aspects of the business). In fact, 'increas[ing] the number of farm enterprises with comprehensive written strategic business plans' was a specific objective of the Farm Planning program (COAG 2010, C-3). This objective was achieved (Keogh, Granger and Middleton 2011; Noonan et al. 2012), and this research suggests that, for the majority of the participating farm businesses, the strategic plans remained in place 12-18 months after completing the program. However, a small proportion of program participants did not have a complete holistic plan after participating in the program.

Similar to the findings of Grant (2003), Stanford-Billington and Cannon (2010) and Cordeiro (2013), the uncertainty inherent in the agricultural system was identified as a barrier to strategic planning. Specifically, some program participants found planning difficult because of the unpredictable and constantly changing environment in which they were operating. This finding also supports the Theory of Planned Behaviour (Ajzen 1988 in Ajzen 1991) where perceived behavioural control (i.e. controllability of the situation) is required to strengthen intentions to perform a behaviour — in this case, strategic planning. Resources (time and money) and capacity (planning skills, understanding) were also identified as barriers to strategic planning. These too can be placed within the framework provided by the Theory of Planned Behaviour (Ajzen 1988 in Ajzen 1991), whereby perceived behavioural control (i.e. perceived skill/knowledge levels) and resources influence the strength of intentions to perform the behaviour. In line with the findings of this research, a study of UK farmers by Stanford-Billington and Canon (2010) and a study of Canadian farmers (Harling and Quail 1990 cited in Stanford-Billington and Canon 2010) also identified time as a key barrier to developing plans. Disagreement amongst business (i.e. family) members was another barrier to strategic planning identified by some program participants. This related specifically to planning for work-life balance by family farmers. Sharma, Chrisman and Chua (1997, 6) note that 'business and family needs can come into conflict.' However, in

light of the holistic approach underpinning resilience thinking (Berkes 2007; Darnhofer, Fairweather and Moller 2010), it is necessary for 'social' areas to be addressed through the strategic planning process if the ultimate goal is a resilient farm business.

Comparing program participants and non-participants revealed a greater range of factors preventing plan development from the non-participants. This indicates that the Farm Planning program successfully addressed some of the barriers to planning — in particular, the program enabled the shift from ideas to written plans; and provided participants with the time to develop strategic plans. The shift from ideas to plans is a fundamental aspect of planning, with the expectation that planning will lead to action (Hudson, Galloway and Kaufman 1979). It must be acknowledged that, after completing the program, a small number of participants still lacked planning skills/understanding or did not have enough time to complete their plan. Nevertheless, for the majority of program participants, the barriers to planning were overcome by the planning process and content delivered through the Farm Planning program. Two key points should be made: there were a significantly greater percentage of program participants with strategic plans than non-participants; and the program participant strategic plans were much more comprehensive (i.e. holistic) than those of non-participants.

No matter how robust and well-formulated a plan may be, it will not succeed if it is not properly implemented (Robbins and Coulter 2002). As identified in Chapter 2, the program had no control beyond supporting the participating farm businesses to develop their strategic plan — that is, implementing the plan (and, therefore, the potential for achieving the anticipated resilience outcomes associated with this) was a decision to be made by the farm business. Experience has shown that helping farm businesses to develop plans does not guarantee their implementation (e.g. Lund and Christensen n.d.; Henneberg 1990 cited in Lund and Christensen n.d.; Bodman 2011 cited in Noonan et al. 2012).

This research identified resources (financial, time, human and technological) to be the main factors preventing implementation. Resources have been recognised as important factors influencing strategy implementation across many industries and organisations (e.g. Jiang and Carpenter 2011; Mukora 2012). Porter (1985 cited in Alfaxard 2013) suggests commitment to the strategy is demonstrated by the level of resources allocated to implementation; however, this research indicates that 'resourcing' is a much more nuanced issue for farm businesses. For many of the participating farm businesses the activities documented in the strategic plans were additional to normal business operations, therefore requiring a surplus of funds and time to implement. With reference to the adoption of sustainable farm practices, Vanclay (2004, 214) notes that 'it is hard to be green when you are in the red'. That is, it is difficult for farmers to justify the allocation of resources to areas where financial returns may

not immediately manifest. On the other hand, Hill (1998, 393) argues that 'to achieve sustainability we must learn to conduct our affairs within the limits of environmental absolutes [e.g. water, air, nutrients etc.], and not continue to delude ourselves that we can only do this if we can afford it'.

Nevertheless, this research has shown there is optimism in some of the farm businesses — that is, they are looking to the longer-term and anticipate allocating the necessary resources to their plans in the future. In fact, the long-term aspirations of the farm businesses were identified through this research as important drivers for implementing their strategic plans. In line with these findings, Topp and Shafron (2006, 27) found that farm managers that believed their operations would continue to be viable were 'almost twice as likely to have a written farm business plan than those who did not see themselves as viable in the longer-term.' Although Topp and Shafron (2006) did not investigate whether these plans were being implemented, their research implies a connection between long-term aspirations, planning and implementation. In contrast, some farm businesses participating in the program did not believe they would ever have the resources to fully implement their plans or viewed their planned activities as non-essential. This is somewhat concerning as it suggests that, in some cases, the strategic plans were not realistic, a commitment to long-term farm resilience was lacking and/or the plans did not adequately identify the risks/goals and strategies to build resilience.

Despite this, this research has shown that the majority (92%) of the program participants with a strategic plan at *time 3* had begun to implement at least one activity from their plan. Given that 68% of these survey respondents received a grant under the Building Farm Businesses program to help put their plan into action, it is reasonable to assume that the grants were an important enabler of implementation for many of the farm businesses — an assumption that is supported by this research, and discussed further in Section 8.5.2. Nonetheless, the potential influence of the Farm Planning program should not be dismissed. The program developers understood the limitations of their influence in the process, so 'consciously built the programs workshop content, delivery methods and evaluation systems to [better support continued strategic management by farm businesses]' (Noonan et al. 2012, 21). Noonan et al. (2012) describe two ideologies applied by the program to support continued strategic management:

- *Recognising the underlying dynamic of the complex agricultural system*. Agricultural systems have large numbers of interacting networks and relationships that are unpredictable and constantly changing (that is, they are 'complex adaptive systems' — see Dooley 1997; Eoyang and Berkas 1999; McElroy 2000), and span social, economic and environmental dimensions (Darnhofer, Fairweather and Moller 2010).

Such complexity has implications for strategic planning and implementation (Cordeiro 2013; Grant 2003; Mintzberg 1994). An understanding of this by the facilitators and program participants was believed to support the development of more meaningful, robust and realistic strategic plans and, in turn, their implementation (Noonan et al. 2012).

- *Building ownership of the strategic plans.* 'Ownership' is believed to be an important factor influencing the implementation of strategic plans (Bracht et al. 1994; Joyaux n.d.). Stoeglehner, Brown and Kørnøv (2009, 15) illustrate the importance of ownership by noting that dis-ownership results in 'refus[al] to acknowledge or accept [the plans] as their own, repudiate them, deny or refute them, or ignore them'. Ownership is not just about the plan — it also concerns the process, concepts and outcomes (Joyaux n.d.; Stoeglehner, Brown and Kørnøv 2009). The Farm Planning program encouraged participants to adapt the process to suit their situations (Noonan et al. 2012). This acknowledged the flexibility required for family-based businesses, where family values, priorities and interests underpin the planning (Craig, Dibrell and Garrett 2014; Nordqvist and Melin 2010), whilst also encouraging ownership.

Despite applying these principles to the Farm Planning process, as mentioned above, some program participants appeared to develop unrealistic plans, lacked a commitment to long-term farm resilience and/or did not adequately identify the risks/goals and the strategies to build resilience. This may have been caused, in part, by inadequate application of the Farm Planning content or delivery methods in some circumstances; or may be a result of the deeply ingrained values and beliefs of these participants (see Pannell et al. 2006; Vanclay 2004). Lund and Christensen (n.d.) suggest that it is difficult to change the embedded work routines (i.e. tacit knowledge) of farmers, and see a 'lack of understanding of the real nature of working routines and tacit knowledge as major barriers for strategy implementation' (Lund and Christensen n.d., 16). Furthermore, although many of the program participants were putting their strategic plans into action, the finance- and production-related activities were prioritised over activities relating to natural resource management and work-life balance. This may suggest the interrelatedness and importance of the social, economic and environmental components was not as fully appreciated as suggested by the program participant capacity levels (see discussion in Section 8.2). However, if a robust prioritisation process was used that identified the economic/production aspects as priorities, then this focus should be considered as valid (Agriculture Victoria 2015). Productivity/profitability is often the overriding focus of farm businesses (Hill 1998), and the majority of farmers are hesitant toward adopting practices that will not produce immediate outcomes (Makeham and Malcolm 1993, Wilkinson and Cary 1992 cited in Pannell et al. 2006). This may explain why

the finance and production-related activities were prioritised over those relating to natural resource management and work-life balance.

Nevertheless, the Farm Planning program facilitated the development of holistic strategic plans and provided a planning framework that could be applied and adapted by farm businesses to support strategic planning into the future (Noonan et al. 2012). Indeed, data from the SSIs indicated that the framework would continue to be used. Miller, Boehlje and Dobbins (1998, i) note that 'successful strategic plans are seldom created by a one-time planning effort. Rather, they evolve by a continuing process of assessing business strengths and weaknesses and assessing opportunities'. The ongoing planning process is critical in developing and assessing the direction for the business (Miller, Boehlje and Dobbins 1998). Given that family values, priorities and interests strongly underpin planning in family-based businesses (Craig, Dibrell and Garrett 2014; Nordqvist and Melin 2010), the ongoing involvement of family members is an important aspect of the planning process and can introduce different perspectives (Keogh, Granger and Middleton 2011). Collaboration was encouraged by the Farm Planning program, and 'farm businesses that sent more than one member of the business to the course benefited the most' (Keogh, Granger and Middleton 2011, 21).

This research revealed that such a collaborative approach to planning has continued for some farm businesses. Furthermore, for some participants the most significant change resulting from their participation in the program was the collaboration and dialogue between members of the farm business. This resulted in a shared direction for the business and a greater understanding of the perspectives and aspirations of other members of the business. These benefits align with those proposed by others (e.g. Nordqvist and Melin 2010; Sharma, Chrisman and Chua 1997; Whittington 2006). It has been advocated that a collaborative approach to planning 'should be seen as a socially and institutionally embedded practice' (Nordqvist and Melin 2010, 17; Whittington 2006).

The majority of program participants (72%) indicated a willingness to use strategic planning in the future. Although 'willingness' is only a statement of intention and therefore may not be translated into action, a relationship between intention and action has been theorised (see Ajzen 1991). In terms of strategic planning action, the Farm Planning program presented an opportunity and resources for the farm business to undertake planning. The program gave the participants the time away from their businesses to focus on planning, provided frameworks and information to help them plan, offered support through the facilitator teams, arranged for financial reimbursements for travel and child care, provided advice in terms of whether implementation of the plan would actually result in a more viable farm business, and participation in the program was without charge (Keogh, Granger and Middleton 2011;

Noonan et al. 2012). However, there were no mechanisms to reinforce the capacity changes or maintain the momentum after the program (with the exception of the Building Farm Businesses grants — discussed in Section 8.5.2) (Keogh, Granger and Middleton 2011). As Zakrajsek and Zizzi (2008, 9) highlight, 'if intentions are not acted on quickly they will most likely regress', and this research has highlighted that implementation is dependent on a variety of factors. Structures for ongoing support were not part of the program, which can be a deficit of many government-funded programs with a strict end-date and finite resources.

A survey of Australian farmers by Top and Shafron (2006) revealed that 'pessimistic farmers are much less likely to have a risk management strategy to deal with drought compared to farm managers who believe that they have a longer-term future in farming' (Top and Shafron, 2006, 27). Although a direct comparison is somewhat ambiguous, this research has shown that pessimistic farmers (i.e. reduced confidence in the future of farming – program participants) were much more likely to have a strategic plan (which deals with drought) compared to the non-participants who were much more confident in the future of farming. Despite the great number of participating farm businesses with strategic plans and their indicated willingness to use strategic planning in the future, the pessimism of the program participants coupled with the findings of Top and Shafron (2006) suggest that the continued application of strategic planning may be questionable.

In addition, most survey respondents had not updated their plans at the time of the *time 3* survey; and the proportion of respondents that indicated they would never refer to their strategic plans had reverted to levels similar to that seen before participation in the Farm Planning program. The relevance of these findings to the continued application of strategic planning is somewhat tentative, as it is possible that respondents were planning on updating their strategic plans at a later stage. In terms of the frequency the businesses refer to their plans, this is highly subjective and can depend on various factors. As an example, this research has shown that the strategic plans are used to help negotiate changing circumstances in such a way as to ensure consistency with the business' long-term goals. As such, referring to the strategic plans may occur more frequently under certain circumstances. This supports the observations by Bodman (2011 cited in Noonan et al. 2012, 21) whereby strategic plans were more likely to be 'put into action when times were tough', but raises concerns about the commitment of the program participants to building preparedness and self-reliance into the farm business.

Nonetheless, this research identified three important factors driving strategic planning amongst the program participants:

- The *identification* of i) issues, and how these may be addressed; ii) activities that had not been considered previously; and iii) the priorities.

- The need for *direction*. By having a clear, overarching direction, farm businesses were able to identify and focus on the activities that would achieve their long-term goals. This, in turn, was believed to facilitate decision-making, increase efficiencies and *'make things happen'*. This finding supports the fundamental underpinnings of strategic management (Stanford-Billington and Cannon 2010).

- *Justification* for why they were doing what they were doing. This was of value internally within the farm business (for example, to know that what they are doing is going to help them achieve their long-term goals) and externally. In terms of the latter, having a written strategic plan that clearly stated the long-term goals was identified as useful (if not imperative) for funding applications — a finding that aligns with Burke, Fraser and Green (2009) where plans written for the purpose of raising capital were shown to support improved business performance.

Overall, it is difficult to draw solid conclusions regarding the impact of the Farm Planning program on participant strategic planning practices and behaviours, including plan implementation. On the one hand, the program definitely enabled the majority of the program participants to put together comprehensive strategic plans for their farm businesses. Such a level of planning was not evident in farm businesses that had not taken part in the program, and the program did appear to address some of the barriers to developing strategic plans. Furthermore, participation in the program appeared to improve the collaboration (in terms of planning) between members of the business/family. On the other hand, contradictory findings question the willingness of the participants to continue strategic planning into the future, and to fully implement the social and environmental aspects of their plans. This raises questions about the commitment of the participants to building the resilience of their businesses. Given that this research was conducted 12-18 months after the businesses had completed the program, it is suggested that further follow-up is required after more time has elapsed. Such work should focus on the use of strategic planning (including implementation), the factors influencing this, and the relationship between ongoing strategic planning processes and the Farm Planning program.

The main reason the program affected behaviour (i.e. the development and implementation of holistic strategic plans), despite the vague intentions displayed by the participants, was because of the opportunities and resources presented by the Farm Planning program and the associated Building Farm Businesses grant program — the Farm Planning program directly assisted the farm businesses to apply a strategic planning process and develop a plan; whilst the Building Farm Businesses program provided funding to put the plans into action. In

doing so, the programs overcame the key barriers to planning (time, skills and understanding) and implementation (financial resources). Both programs were a one-off, and did not include mechanisms to support ongoing practice or behaviour change. Consequently, barriers to planning and implementation will be an issue into the future. This is already evident as participant perceptions and intentions are at odds with their behaviours. For example, they indicated a willingness to use strategic planning into the future, yet hadn't referred to or updated plans. They also believed the program had increased their understanding of the interactions between the social, economic and environmental components, yet implementation focused on finance and production not natural resource management and work-life balance.

8.4 The impact of the Farm Planning program on farm business resilience

The strategic planning undertaken through the program was considered to be comprehensive given that it addressed social, environmental and economic objectives (Keogh, Granger and Middleton 2011; Noonan et al. 2012); and comprehensive and realistic strategic planning can result in robust and efficient decision-making, leading to improved business performance (Lyles et al. 1993; McElwee and Bosworth 2010). Although measures of business performance were beyond the scope of this research, participants in the program held the belief that their activities, as documented in their strategic plans, would help their business to become more resilient in the long-term. It has been previously noted that the Farm Planning program appeared to have engendered a greater appreciation of the linkages between the social, economic and environmental dimensions, and facilitated the integration of these into the strategic plans — a critical step toward farm business resilience (Darnhofer, Fairweather and Moller 2010). However, 'resilience' will only manifest i) if the plans continue to be implemented (as discussed in Section 8.3); ii) if there is exposure to adversity to test the effectiveness of the plans; and iii) where the plans are less effective, if there is positive adaptation to the adversity (Luthar and Cicchetti 2000 cited in Greenhill et al. 2009). Consequently, resilience is an emergent property (Cabell and Oelofse 2012) that is difficult to measure. It was beyond the scope of this research to provide 'hard' measurements of resilience; however, some observations can be made.

Program participants had significantly stronger intentions to make changes to their farm businesses than non-participants, indicating a real impact of the Farm Planning program. A comparison of performance measures between program participants and non-participants by Connell (2014) suggests that participation in the Farm Planning program resulted in productivity and profitability improvements. This outcome can support the building of financial reserves, which is an important strategy used by farm businesses to prepare for

potential adversities that can affect the unpredictable agricultural system (Topp and Shafron 2006). As the analyses by Connell (2014) have only measured performance over the short-term, it is not clear whether these improvements can be attributed to the Farm Planning program or to the Building Farm Businesses grant program. There are several factors that require consideration:

- A large proportion (77%) of businesses participating in the Farm Planning program received a grant of up to $60 000 (DAFWA 2014).

- Only activities deemed to improve business viability were able to be funded via the grant (COAG 2010).

- Conditions of the grant meant that the funded activities were to be implemented within short timeframes.

Given the three points above, it is reasonable to assume that the productivity gains observed by Connell (2014) may be attributed to the Building Farm Businesses grant, and that these gains could continue to manifest over time. The contribution of the Farm Planning program to the observed short-term productivity and profitability improvements may be via the program's success in supporting businesses to identify, scope and document activities to improve viability. However, the benefits of 'resilience-building' activities often take time to manifest. Consequently, the results from the work by Connell (2014) raise the question of the true value of the activities funded through the Building Farm Businesses program to long-term farm viability. Keogh, Granger and Middleton (2011, 45) also query the long-term benefits of the funded activities, noting that 'more than half of the grant funds were used to purchase precision farming equipment, seeders, boom-sprays and soil conditioners. While these activities were likely to deliver efficiency gains and short-term productivity benefits, the panel was less convinced about their long-term benefits with respect to improving preparedness for the future impacts of drought, climate variability and reduced water availability'.

In terms of perceived levels of resilience, this research showed that, in general, the perceived levels of resilience were similar between Farm Planning program participants and non-participants. However, there were three areas in which significant differences occurred:

- Participants appeared to work more collaboratively. This is an important aspect of resilience building as it increases the capacity to learn (Berkes 2007). This finding fits into the principle of 'combining different types of knowledge and learning' identified by Folke, Colding and Berkes (2003) and believed to help build the resilience of socio-ecological systems.

- Participants had greater consideration for the natural environment; and non-participants placed a greater emphasis on business assets. Along with the social dimension, the economic and environmental dimensions are integral to resilience thinking (Berkes 2007; Darnhofer, Fairweather and Moller 2010). It has been argued that, traditionally, farm businesses focus on productivity to the detriment of the environmental and social resources (e.g. Hill 1998). This finding suggests that participation in the program may have produced a shift in these views. However, the step from intention to action is still vague (see Section 8.3, regarding the priority of social and environmental actions).

The link between the Farm Planning program and business resilience is tenuous. Nevertheless, program participants believed that their participation in the program resulted in their business being more resilient and able to adapt to change; planned actions that will be effective at achieving strategic outcomes; and/or their adoption of a more self-reliant approach.

8.5 Factors influencing the effectiveness of the Farm Planning program

The previous sections identified several factors influencing the effectiveness of the Farm Planning program in a) achieving its objective of having more farm businesses with comprehensive written strategic plans; and b) encouraging the implementation of the strategic plans. This section focuses on a further two areas influencing program effectiveness. These are recognised as important areas, as they underpinned the effectiveness of the program as a whole — the factors influencing participation in the program and the Building Farm Businesses grants.

8.5.1 Participation in the program

The breadth of the potential impact of the Farm Planning program depended on attracting participation in the program. This is because learning will only occur in the groups involved in the training (Coutts et al. 2005; Marsh and Pannell 2000a). As a first step, farm businesses needed to know that the program was taking place (Murray-Prior, Hart and Dymond 2000). This research revealed that most participants were made aware of the program through active sources such as family, friends, neighbours and consultants. In contrast, non-participants were more likely to have heard about the program through passive sources (e.g. newspapers and radio). This finding aligns with the literature, where 'word-of-mouth' has been shown to be an important avenue for attracting program participation (e.g. DPIPWE 2014; Lynch and Lovell 2003; Morrison and Greig n.d.; Thompson, Sultana and Firoz Khan 2005). Similar to the findings of this research, Lynch and Lovell (2003) found that those that had heard about

programs through word-of-mouth were more likely to participate than those that had heard about programs through other means.

At the time of the survey, 75% of the non-participant respondents did not want to participate in the Farm Planning program, mainly because of the time and/or effort required; and 55% did not think they would attend the program in the future. An understanding of the factors influencing participation can assist in attracting future participation, and may be relevant to other interventions with a similar target audience. For those that were unlikely to attend the program in the future, the key factors influencing this decision were their eligibility for the grant (as discussed in Section 8.5.2), and the relevance of the training. Interestingly, these were also important factors motivating the non-participants that were likely to attend the program in the future, as well as motivating attendance from the program participants. In addition, a positive attitude to learning was another key factor motivating non-participants to attend the program in the future.

These findings support those of others, where the perceived relevance of the training is shown to be an important factor influencing training attendance (e.g. Kilpatrick et al. 1999; Murray-Prior, Hart and Dymond 1999, 2000). In this research, 'perceived relevance' related to the potential participants' understanding of the area being addressed via the program, the benefits of attending, skill level and the practical application to the farm business. Some of these perceptions were influenced by feedback from others that had attended the program.

The timing of training has also been identified by others as an important factor influencing training attendance (e.g. Kilpatrick 2000; Cameron 1995 cited in Murray-Prior, Hart and Dymond 2000), and farmers will assess this 'indirect cost' in conjunction with the perceived benefits of attending the training (Murray-Prior, Hart and Dymond 2000). In the case of the Farm Planning program, the training was time consuming (five full days) and required extracurricular work to finalise the strategic plans. Given the relatively widespread uptake of the training[14], it is possible that the lure of obtaining a grant under the Building Farm Businesses program negated the indirect cost (i.e. time and effort) of participation in the program.

Kilpatrick (2000) highlights that past experiences with learning and training, and/or the length of time since last participating in a learning activity, can affect farmer confidence as a 'learner' and their attitudes toward training. Consequently, this can influence participation (Kilpatrick 2000). This appears to be consistent with the findings from this research where significant differences between program participants and non-participants, in terms of attitudes and behaviours toward learning, were identified — participant attitudes were more

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[14] 1125 people from more than 990 farm businesses participated in the program (DAFWA 2012).

positive and they were more likely to participate in training events. Furthermore, positive attitudes toward learning were identified as the key influencer for future participation in the small number of non-participants that were likely to participate in the program in the future.

The location and cost of training are also factors influencing training attendance (Murray-Prior, Hart and Dymond 2000). This research identified the distance required to travel to attend the program was a barrier for a very small number of survey respondents. This may reflect the concerted effort by the program to minimise travel, where the majority of participants travelled less than 50kms to attend the training (DAFWA 2011). Direct costs (i.e. out-of-pocket expenses) were irrelevant in the case of the Farm Planning program, as the program was provided free of charge and other expenses (travel and child care) were reimbursed up to the value of $1000. However, it is uncertain if attendance numbers would have decreased if there had been a charge. Given the strong influence of the Building Farm Businesses grant as an incentive for participation (see Section 8.5.2), a reasonable charge for the training may have been acceptable. In fact, it has been suggested that free or low-cost training may not be as valued as training activities that have an associated cost (Murray-Prior, Hart and Dymond 2000).

8.5.2 Building Farm Businesses grants

The Building Farm Businesses program was one of the seven programs encompassing the Pilot of Drought Reform Measures. The program provided grants to 'improve the capacity of farm businesses to prepare for and adjust to drought and a changing climate and contribute to natural resource management outcomes' (COAG 2010, 3). Only farm businesses that had completed the Farm Planning program and had net off-farm assets not exceeding $750 000 were eligible to receive grants of up to $60 000 via Building Farm Businesses. There were three aims of the Building Farm Businesses program (COAG 2010, D-7):

- Assist eligible farm enterprises to adjust their business, improve risk management and improve their capacity to prepare for drought, reduced water availability and the impacts of increased climate variability

- Increase natural resource management efforts to improve on-farm resilience and reduce the environmental impact of agricultural activity in times of extreme climatic conditions, such as drought; and

- Reduce human stress associated with drought and reduce reliance on in-drought assistance.

This research identified several ways in which the grant influenced the effectiveness of the Farm Planning program. There were positive and negative effects. The grant provided positive program outcomes by acting as an incentive to participate in the program; enabling

the strategic plans to be put into action, which resulted in outcomes such as short-term productivity/profitability gains (Connell 2014); and enabling financially risky actions to be trialled that may otherwise not have been tested. On the other hand, the grant resulted in negative effects as it drove implementation, meaning that implementation had set timeframes that put pressure on the business; supported on-ground activities that did not appear to align with long-term 'resilience' outcomes (Keogh, Granger and Middleton 2011); and acted as a disincentive for participation where businesses were not eligible to access the grant. Furthermore, some plans seemed to be written to access the grant rather than to provide long-term direction for the business; and evaluation responses at *time 2* may have been positively-biased, with participants believing positive responses would increase their chances of receiving a grant (Noonan et al. 2012).

This research confirmed the findings of DAFWA (2012) and Noonan et al. (2012), showing that the possibility of obtaining a grant was an important motivator for participation in the Farm Planning program. The percentage of participants that viewed the possibility of obtaining a grant as the main benefit of attending the program had reduced on completion of the program, suggesting that the program was valued on its own merits (DAFWA 2012). Nevertheless, the grant provided an important incentive to draw participation from the target audience. This is critical for program success as learning will only occur in those that participate (Coutts et al. 2005; Marsh and Pannell 2000a). Other studies have also shown that financial incentives can be an important factor to gain farmer attendance at training sessions (e.g. Bowyer and Heath 2009; Heath, Slaven and Bowyer 2010). On the other hand, in some cases the grant also acted as a disincentive for participation where businesses were ineligible to access the grant. During data collection for this research, it was observed that some farm businesses did not recognise a separation between the Farm Planning and Building Farm Businesses programs — that is, in some instances there appeared to a belief that ineligibility for the grant meant ineligibility for the Farm Planning program, resulting in non-participation. This aligns with the fact that non-participants were generally made aware of the program via passive sources rather than active sources where discussion may have occurred to clarify the purpose and benefits of Farm Planning.

Another area in which the grant influenced the effectiveness of the Farm Planning program was its role in enabling the strategic plans to be put into action. As previously mentioned, no matter how robust and well-formulated a plan may be it will not succeed if it is not properly implemented (Robbins and Coulter 2002). Furthermore, intentions are more likely to be put into practice if they are acted on sooner rather than later (Zakrajsek and Zizzi 2008). From this research, it was shown that the grant helped to do this, and acted as a mechanism to reinforce the capacity changes and maintain the momentum after the program. The logic

underpinning the grant program is highlighted in its objectives identified above — it provided funding to enable actions to be undertaken that would build resilience. Whether the grant actually supported resilience-building actions was questionable (see Section 8.4).

Grants have historically been an important incentive to achieve on-ground change, particularly in the realm of environmental action, as they help overcome the key barrier of 'financial risk' (Bowyer and Heath 2009; Marsh 2010). Indeed, this research highlighted the use of the grant to trial financially-risky activities. However, the processes used to deliver these types of measures can impede their use. In particular, imposed timeframes, caveats and complex application procedures prevented or discouraged some participants from making use of the funding. Additionally, the reporting process and timelines for implementation were shown to be a source of stress for some businesses. External factors, such as poor seasonal conditions, can influence the ability of farmers to implement on-ground actions, even if the money to do so is available (Bowyer and Heath 2009). Another important factor is the availability of technical support to assist with implementation of the on-ground works, or to provide technical advice on the management aspects (Garbach, Lubell and DeClerck 2012) — particularly for 'new' practices (Pannell 2010). Studies have shown that where new practices have not been successful, farmers can dismiss the practice without full knowledge of what went wrong and possible ways to achieve better results (Bowyer and Heath 2009; Heath, Bowyer and Lacey 2006; Heath, Slaven and Bowyer 2010).

Keogh, Granger and Middleton (2011) note that 'the grants caused a tension for the participants between the aim of the Farm Planning program — to facilitate the development of strategic farm plans best suited to individual circumstances — and the desire to tailor strategic plans towards eligible Building Farm Businesses grant activities'. This is further supported by the comments of Noonan et al. (2012) where is it suggested that, in answering the *time 2* survey, program participants may have responded in the way they thought the deliverers wanted to hear, in the belief that this would increase their chances of receiving a grant under the Building Farm Businesses program. A submission to the review of the Pilot of Drought Reform Measures highlights the issue (Keogh, Granger and Middleton 2011, 47):

> '[The association between the Farm Planning program and the grants program] relegates the document to the same pile as budgets that are done to get finance. Strategic plans are a high level planning tool that should focus the business on overall policy within the business — not how to get a free lick feeder or lime.'

This research has shown a stronger focus from the program participants on implementing the finance- and production-related activities, to the detriment of the environmental and social components. The grant may have been a factor contributing to this discrepancy given the activities that were funded and the timeframes for implementation. As such, the findings of

this research question the veracity of the grant program in terms of its resilience-building objectives, a conclusion that is also supported by Keogh, Granger and Middleton (2011). However, the strength of the claim that participants tailored their plans to include activities that were eligible for funding is ambiguous. This research has shown that many of the participants believed implementation of their plans would result in more resilient farm businesses. If the activities funded through the grant program deliver little in terms of long-term benefits, then the issue may lie with the 'self-discovery' process used by the Farm Planning program since that is how the participants identified the actions within their strategic plans; or with the criteria for determining activities eligible for the grant. Nevertheless, as mentioned, the grant enabled recipients to put their plans into practice earlier than otherwise would have been possible, and supported financially-risky activities to be trialled. Many of the activities documented in the strategic plans were considered by the participants as additional to normal farm operations. In this respect, the Building Farm Businesses grants were an important incentive to spark action from the program participants.

8.6 The logic of the Farm Planning program

The anticipated outcomes of the Farm Planning program were presented in Chapter 2, including the theorised linkages between the program outcomes, the anticipated outcomes of Pilot of Drought Reform Measures and the objectives of the National Drought Policy. In Chapter 3, this 'theory of change' was tested against the literature, and a revised model presented. Using the findings of this research, the model was reassessed to present the actual mid-term outcomes of the Farm Planning program and the factors that influenced these outcomes (Table 8.1). The relevance of Bennett's Hierarchy (Bennett 1975) and the Theory of Planned Behaviour (Ajzen 1988 cited in Ajzen 1991) as the framework for the program's theory of change continued, with this research supporting the linkages between capacity, intentions, behaviours/practices and social, economic and environmental (i.e. resilience) outcomes. Sulemana and James (2014, 51) note 'there is a growing consensus within the literature that attitudes affect behaviour'. The similarities and differences between the Farm Planning program's 'theory of change' (presented in Chapters 2 and 3) and the program's actual pathway to change (Table 8.1) are now discussed.

Capacity, as an area of change, saw some differences between the anticipated outcomes and the actual outcomes (Table 8.1); however, it must be noted that, in some cases, the anticipated outcomes were not directly measured. The important differences were that, over the mid-term, the program did not affect participant attitudes toward strategic planning; the level of planning skills was mediocre, as one-third of participants were not confident in their planning skills; and the 'resilience' capacity of the participants was questionable as holistic implementation of the plans was not observed (Table 8.1).

Table 8.1: **Mid-term outcomes of the Farm Planning program and the factors influencing these**

Area of change	Anticipated outcomes	Actual outcomes	Factors influencing outcomes
Participation in the program	Unknown	1125 people from more than 990 farm businesses participated in the program	Awareness of program Relevance of program Participant attitudes toward training /attitudes toward the future of farming / training behaviours / level of collaboration Timing / effort required The grant provided an incentive or disincentive for participation
Capacity	Increased capacity to better prepare for and self-manage farm risks Improved ability to: manage farm risks; adapt to changes in the farm's environment; adapt to climate variability; manage finances Better understanding of: the farms financial situation and finance-related activities; personal interactions in the farm business; the future roles of family members in the business Increased awareness of: where/how time and energy is spent; change and its impact on the business; personal interactions Improved skills to: undertake planning; manage change More value is placed on strategic planning	Positive effect on participant attitudes toward risk management Negative effect on participant confidence in the future of farming* No effect on attitudes toward strategic planning (and in other areas) Increased understanding of planning processes/ tools; and interactions between social, environmental and economic dimensions; however, this was questioned owing to the 'low priority' status given to environmental and social planned activities Increased planning skills and confidence (self-efficacy) — although one-third were not confident	The program's use of competency-assessed facilitator teams The program's use of an action-based facilitated learning journey The participants' level of prior knowledge The participants' values and beliefs
Strategic planning intentions	No outcomes documented	Participants were willing to use strategic planning into the future, but this finding was questioned owing to conflicting data*	Lack of resources (time and money) weakened planning intentions Lack of capacity (planning skills, understanding) weakened planning intentions The participants' values and beliefs influenced their attitudes, which influenced their intentions Lack of mechanisms to reinforce capacity changes

Table 8.1 continued

Area of change	Anticipated outcomes	Actual outcomes	Factors influencing outcomes
Strategic planning behaviours/ practices	More farm businesses have comprehensive written strategic plans	Increased number of farm businesses with comprehensive written strategic plans Increased collaboration between business/family members* Reduced intentions to refer to plans*	Differing values/priorities of business (i.e. family) members prevented planning from taking place The constantly changing agricultural environment made planning difficult The program facilitated planning, as it addressed many barriers to developing a strategic plan, but there were no mechanisms to support ongoing planning The program supported comprehensive planning, as it recognised the interactions between social, economic and environment Perceived benefits of planning - being able to identify, have direction, and justify
'On ground' behaviours/ practices	Strategic plans/ activities are implemented Farm businesses implement improved management of farm risks Improved financial management by farm businesses Farm businesses prepare to respond to and manage future challenges Farm businesses sustainably manage and use the natural resources Farm businesses undertake succession planning Farm businesses adapt to changes Farm businesses adopt self-reliant approaches to managing farm risks Members of the farm business stay fit and healthy, and manage stress	Many program participants had begun to put their plan into action; however, it was uncertain if the plans would be fully implemented. Participants believed that they had adopted self-reliant approaches Production/finance-related behaviours/practices were prioritised over those relating to natural resources and work-life balance* Increased pressure to get activities underway/ implemented*	Lack of resources (money, time, human and technological) prevented implementation Long-term aspirations drove the implementation of plans Ownership of the plan encouraged implementation Lack of understanding regarding the interactions between social, environmental and economic dimensions Building Farm Businesses grants enabled/drove implementation, but no mechanism to support ongoing implementation

Table 8.1 continued

Area of change	Anticipated outcomes	Actual outcomes	Factors influencing outcomes
Farm business resilience	Improved farm viability Improved family and personal side of life Increased personal resilience Increased resilience of the business More effectively functioning farm family business	Improvements in short-term productivity and profitability Participants believed their planned actions would result in resilience and deliver strategic outcomes; however, this was questionable given lower priority assigned to environmental and social activities Program participants were more collaborative than non-participants Program participants had greater consideration for the natural environment Non-participants placed a greater emphasis on business assets	Building Farm Businesses grants, as they enabled implementation Farm Planning program, as it facilitated comprehensive planning Level of plan implementation and adaptation Building Farm Businesses grants, as participants aligned plans to access funds rather than focus on resilience

The 'area of change' is influenced by the preceding 'area of change'. For example, farm business resilience is influenced by 'on-ground' behaviours/practices, which is influenced by strategic planning behaviours/practices and so on.
*unexpected outcome

There were no anticipated outcomes relating to strategic planning intentions identified in the program documents (Table 8.1); however, the Theory of Planned Behaviour (Ajzen 1988 in Ajzen 1991) depicts 'intentions' as an important factor affecting behaviour, with 'intention' influenced by capacity. Through this research, it was revealed that participants were willing to use strategic planning in the future; though, this finding was questionable owing to conflicting data (see Section 8.3).

This research confirms that the anticipated outcome of more farm businesses with comprehensive written strategic plans was achieved. It was also shown that program participants were much more likely to use a collaborative approach to strategic planning. This was an unexpected outcome. In terms of on-ground practices and behaviours, the anticipated outcomes were quite prescriptive (see Table 8.1). Although strategic plans were being implemented, it was not certain whether they would be fully implemented, particularly the activities relating to natural resource management and work-life balance. An unexpected outcome, in terms of on-ground practices, was the increased pressure felt by many farm businesses. This related specifically to businesses that had received a grant and were therefore required to undertake the funded activities and provide reports (see Section 8.5.2).

In terms of farm business resilience, this was measured via participant perceptions. Consequently, participant perceptions suggest the anticipated outcomes are being addressed; however, stronger measures are required to definitively say that these have (or have not) been achieved.

Table 8.1 also identifies the factors influencing the actual outcomes of the program. These have been discussed elsewhere in this chapter. Nevertheless, it is important to note that this list of factors is much more extensive than that depicted in the program's theory of change presented in Chapter 3. Furthermore, the identified factors provide valuable information that can be used by other initiatives or training programs to help develop and deliver effective programs. For example, the identified barriers may present areas in which actions need to be put in place to minimise their impacts; and the drivers may be able to be exploited to achieve greater impact.

The high-level outcome of broad-scale resilience was not included in Table 8.1 as it was beyond the scope of this research. Nevertheless, some observations are made. For the purpose of the Farm Planning program, the broad-scale resilience outcomes were seen to be equivalent to the objectives of the National Drought Policy. This assumption was based on the fact that the Pilot of Drought Reform Measures was developed to better contribute to the objectives of the National Drought Policy (see Department of Agriculture, Fisheries and Forestry 2010; Kenny et al. 2008). Consequently, it is possible for tension between the process used by the Farm Planning program (i.e. participant self-discovery of their risks and ways to address these for their particular circumstances) and the policy objectives. An assumption was made by the program developers that the actions documented in the strategic plans would align with the objectives of the program, pilot and National Drought Policy. This is an important assumption given the 'self-discovery' process applied by the program and the fact that, in family businesses, the values, priorities and interests of the farm family affect the context for strategic planning (Nordqvist and Melin 2010) and will 'have overriding importance' (Sharma, Chrisman and Chua 1997, 4).

On the other hand, although the workshop facilitators played a central role in providing an environment for self-learning (Noonan et al. 2012), there is evidence that, in outcomes-driven programs such as the Farm Planning program, the actions of the facilitators may inhibit self-learning and empowerment in favour of ensuring program outcomes are met (Cock 1992). In short, there may have been a trade-off between achieving the anticipated program outcomes and empowering the workshop participants. Similarly, Keogh, Granger and Middleton (2011, 47) suggest a tension between the self-discovery process to produce plans that meet the needs of the business and 'the desire to tailor strategic farm plans towards eligible Building Farm Businesses grant activities'. As discussed in Section 8.5.2, this may

have been the case in some instances; however, the fact that more than half of the grant funds were used for activities that produce short-term benefits rather than longer-term farm resilience (Keogh, Granger and Middleton 2011) may be evidence of a greater focus on the self-discovery process. As such, it would suggest a tension between business priorities and the program/pilot/policy outcomes. Consistent with the change models of Mortiss and Chamala (1990) and Kotter (1995), a shared understanding of the pressure for change (i.e. the risk of increased drought, climate variability and reduced water availability) may better support planning to align with policy objectives. It must be acknowledged that the pressure for change may not be relevant to some businesses, particularly if it is dictated by the underpinning policy rather than an examination of the farm business.

8.7   Summary

Overall, the program appeared to have a positive effect on attitudes toward risk management, a negative effect on confidence in the future of farming, and gave participants a greater understanding and the self-efficacy to continue holistic strategic planning into the future. It was suggested that the program's use of competency-assessed facilitator teams and an action-based facilitated learning journey were important at achieving these outcomes. These support a positive learning environment that can deliver lasting changes to participant understanding and skill levels. However, they do not support lasting changes to participant beliefs, which are shaped by the internal values of the individual and external influences such as social norms.

In terms of the impact of the program on participant practices and behaviour, the program had a positive effect on the development of holistic strategic plans. The large majority of program participants had comprehensive strategic plans, and many had begun implementation. However, it was unclear if the plans would be fully implemented, or if strategic planning would continue to be used into the future. There are barriers preventing plan development (or review) and implementation that the program did not address, which may have consequences for farm business resilience.

The contribution of the Farm Planning program to farm business resilience is tenuous, with such a link possible only if i) the strategic plans developed through the program include resilience-building activities across the social, environmental and economic dimensions; and ii) the activities across these dimensions are undertaken. The strong focus on implementing activities relating to the production and finance side of the business, coupled with the questionable long-term benefits of the activities and the influence of factors preventing implementation, make it doubtful that farm business resilience will be realised as an outcome

of the program. However, participants in the Farm Planning program did appear to be working more collaboratively, which is an important aspect of resilience building.

There are many factors influencing the effectiveness of the program to deliver its anticipated outcomes; however, the factors influencing participation in the program and the Building Farm Businesses grants are particularly important as they underpinned the effectiveness of the program as a whole. The possibility of obtaining a grant and the relevance of the training were shown to be the main factors influencing participation in the program. These factors should be addressed to encourage participation in the future. The Building Farm Businesses grants were argued to have had positive and negative effects on program effectiveness, and the veracity of the grant at supporting resilience was questionable.

There were similarities and differences between the original theory of change presented in Chapters 2 and 3 and the actual pathway to change for the Farm Planning program. Importantly, anticipated outcomes relating to strategic planning intentions were not originally identified; however, 'intentions' are an important factor affecting behaviour (Ajzen 1988 in Ajzen 1991). Unexpected outcomes of the Farm Planning program were also revealed, as were unanticipated factors that influenced program outcomes.

It appears that the 'action-based facilitated learning journey' approach applied by the program facilitated participant learning and built ownership of the strategic plans; however, such an approach may not be appropriate for a program that has a clear mandate to support policy objectives. A shared understanding of the pressure for change may better enable planning that aligns with program or policy objectives. However, businesses may not perceive the pressure for change as relevant to their circumstances, particularly if it is dictated by the underpinning policy.

Chapter 9.   Conclusions

9.1   Introduction

This research aimed to examine the mid-term outcomes of the Pilot of Drought Reform Measures' Farm Planning program. In conjunction with the other six programs being piloted, the Farm Planning program was anticipated to deliver improvements to the delivery of the National Drought Policy objectives by focusing on helping farmers to better manage risk and prepare for challenges associated with drought and a changing climate (Keogh, Granger and Middleton 2011). Consequently, the objectives of this research were to:

1.   Determine the impact of the program on participant capacity.
2.   Determine the impact of the program on participant behaviours.
3.   Investigate the potential impact of the program on farm business resilience.
4.   Identify the factors influencing the effectiveness of the program.

This chapter brings together the major findings and arguments presented in this thesis, identifies the practical implications and contributions of this research, and provides recommendations. The key limitations and learning experiences from the study are noted. As a pilot program, evaluation is critical to understand the actual effects of the Farm Planning program and how these relate to the higher-order objectives of the overarching National Drought Policy.

The chapter begins by presenting a succinct synthesis of the conclusions of this work for each research objective, including the practical implications. It is shown that the primary objectives of this research were met, and the aim of the study was achieved. By identifying and exploring the program outcomes, their interactions and linkages, and the influencing factors, recommendations were able to be made, and these are presented in Section 9.3. This is followed by a summary of the contributions of this research to theory, practice and policy. The thesis concludes by noting the limitations of the study and areas for future research.

9.2   The mid-term impact of the Farm Planning program

Positive mid-term effects of the Farm Planning program are evident in relation to participant attitudes toward risk management and perceptions of their level of i) understanding of planning processes/tools; ii) understanding of the interactions between social, economic and environmental dimensions, and iii) planning skills. Uncertainty remains with regard to belief in climate change; and attitudes toward strategic planning show no improvement over the mid-term. A negative mid-term effect of the Farm Planning program is apparent on the confidence levels of participants, specifically their confidence in the future of farming. Using competency-assessed facilitator teams and an action-based facilitated learning journey are

important in building ownership and trust. These processes also support a positive learning environment that delivers lasting changes to participant understanding and skill levels. However, they do not support lasting changes to participant beliefs, which are shaped by the internal values of the individual and external influences such as social norms.

In terms of the impact of the program on participant practices and behaviour, it is concluded that the program had a positive effect on the development and implementation of holistic strategic plans. This is evidenced by the number of farm businesses with strategic plans, the 'comprehensiveness' of the plans compared to those of businesses that did not participate, and the number of businesses that are implementing their plans. The Farm Planning program and the associated Building Farm Businesses grant program present important opportunities and resources to support practice and behaviour change by farm businesses — specifically, the programs directly address the key barriers to planning (time, skills and understanding) and implementation (financial resources).

Participant intentions to *continue* to use and implement holistic strategic plans are at odds with their behaviours — for example, they indicated a willingness to use strategic planning into the future, yet hadn't referred to or updated plans. They also believed the program had increased their understanding of the interactions between the social, economic and environmental components, yet implementation focused predominately on finance and production. Consequently, it is concluded that the program did not sufficiently strengthen participant intentions to continue to undertake holistic planning and implement their plans. There are barriers preventing plan development (or review) and implementation that the program did not address. The implications are such that policy objectives may not be achieved if these barriers cannot be overcome. It is unclear if the barriers can be addressed by the farm businesses without external assistance. Both the Farm Planning and Building Farm Businesses program were a 'one-off', and did not include mechanisms to support ongoing behaviour change or reinforce capacity changes.

The contribution of the Farm Planning program to farm business resilience is tenuous. Such a link is possible only if i) the strategic plans developed through the program include resilience-building activities across the social, environmental and economic dimensions; and ii) the activities across these dimensions are undertaken. While the program facilitated strategic plans that included social, environmental and economic components, the resilience-building ability of the activities is questionable. The clear focus of the participants on implementing activities relating to the production and finance side of the business (with the social and environmental areas viewed as lower priorities), coupled with the uncertain long-term benefits of the activities and the influence of factors preventing implementation, make it doubtful that resilience can be increased.

The action-based facilitated learning journey may not be appropriate for a program that has a clear mandate to support policy objectives. This is because the 'self-discovery' process used by the individual businesses to identify their challenges and potential solutions to these challenges does not guarantee that a) the 'challenges' will be the same issues on which the policy is focussed; and b) 'solutions' will align with the program or policy objectives. A shared understanding of the pressure for change (in the case of Farm Planning, the risk of increased drought, climate variability and reduced water availability) may better support planning to align with program or policy objectives. However, businesses may not perceive the pressure for change as relevant to their circumstances, particularly if it is dictated by the underpinning policy. Consequently, this is a critical learning area that will support informed decisions on the relevance of this 'pressure' to the individual farm business. There is no reason why other pressures for change cannot guide the planning process, as long as the business fully considers the risks to their business posed by increased drought, climate variability and reduced water availability.

There are many factors influencing the effectiveness of the program to deliver its anticipated outcomes. Identifying these provides valuable information that can be used by other initiatives or training programs to increase program effectiveness. For example, the identified barriers may present areas in which actions need to be put in place to minimise their impacts; and the drivers may be able to be exploited to achieve greater impact. Linking the program to financial grants has positive and negative effects for attracting participation and delivering outcomes effectively. Consequently, the benefits need to be weighed against the impediments. Although the Building Farm Businesses grants support strategic plan implementation, they may not support longer-term resilience outcomes. The purpose for providing grants requires careful consideration, and should be strictly aligned to supporting the achievement of policy outcomes.

9.3 Recommendations and contributions of this research

9.3.1 Recommendations

This research supports the following recommendations. This information can inform program development to improve the effectiveness of the Farm Planning program and other similar initiatives to better achieve the policy objectives.

- Mechanisms to support ongoing strategic planning and implementation, and reinforce capacity changes, are explored and implemented.
- The 'pressure for change' targeted through the Farm Planning program, or similar initiatives under the National Drought Policy, is clearly understood and discussed as the underpinning driver for the planning process.

- Incentives to support plan implementation must be used to deliver activities that align with the overarching program and policy objectives.

- Any financial incentive provided to businesses to implement their plan should be allocated equally to social, economic and environmental activities.

- An action-based facilitated learning journey is applied to support learning and build ownership, acknowledging that such a process cannot guarantee alignment between strategic plans and policy objectives.

- Activities are put in place to minimise barriers (or their effect) to achieving the anticipated program outcomes. Similarly, drivers for strategic plan development and implementation are exploited to achieve greater impact.

9.3.2   Contributions to theory, practice and policy

The primary objectives of this research were met in identifying the impact of the Farm Planning program on participant capacity and behaviours, and investigating the potential impact of the program on farm business resilience. Furthermore, the research successfully identified a number of factors influencing the effectiveness of the program in delivering its anticipated outcomes. The use of mixed methods, comparisons to non-participants and the use of longitudinal data strengthened the research findings. The key contributions of this research are:

- *Information to inform and improve program/policy development and delivery*. As a pilot program, it is important to understand the actual effects of the Farm Planning program as a policy measure. To date, no published study has looked beyond the immediate impact of the program to examine it's potential to deliver the longer-term outcomes associated with the overarching National Drought Policy. This research has enabled an assessment of the contribution of the policy measure to the objectives of the policy, and offers appropriate recommendations on how the policy measure may be improved.

- *An assessment of farmer attitudes and behaviours*. This information can enhance the understanding of Western Australian agricultural businesses and the values and needs that drive them. These valuable insights can be used to inform the development and/or refinement of agricultural projects working within water-limited environments to take into account the social, environmental and economic factors influencing farm businesses.

- *Preliminary exploration of resilience factors for Western Australian farm businesses*. Resilience is becoming an important objective of Australian agriculture, reflected in the language of public policy. It is important that long-term measures of 'resilience'

are established to help determine if 'resilience' is being achieved. This research has provided an initial process that can be critiqued and refined.

9.4   Study limitations and areas for future research

It is acknowledged that there are limitations to this study. Unforeseen circumstances resulted in the use of multiple data collection methods and multiple data collectors. Although actions were taken to ensure data quality, measurement errors and variations in the data are likely. There were also large differences in the number of responses to the *time 3* surveys compared to the *time 1* and *time 2* surveys. Consequently, longitudinal data analyses with assumptions relating to sample size are affected. The effects of these limitations will remain unknown, as this study pertains specifically to a set point in time for a specific program.

The mid-term impact of the Farm Planning program was assessed 12-18 months after participants had completed the program. This is a relatively short period in which to assess participant use of strategic planning and plan implementation (i.e. strategic management). Although this research has provided important findings, conflicting data made it difficult to make a definitive assessment regarding continued strategic management by the participating farm businesses.

This research uncovered a strong focus of the program participants on implementing the production- and finance-related components of their plans, with the natural resource management and work-life balance components viewed as lower priorities. However, the research was unable to determine the participants' level of commitment toward the lower-priority areas — for example: Will the participants eventually implement these lower-priority areas, or will they continue to be dismissed in favour of production/finance-related areas? A greater understanding here will enable judgements to be made regarding the potential of the strategic plans to build resilient farm businesses.

Farm business resilience was measured using respondent perceptions of their personal, social, economic and environmental resilience. As the fundamental outcome of the program was long-term resilience, this is an important area requiring long-term evaluation. Although the perception measures used in this research provided valuable data, other measures may provide more reliable data over time. It is therefore suggested that robust resilience indicators, which may include resilience perceptions, should be developed and measured over time.

Consequently, there are various opportunities for future research:

- Further research focused on participant use of strategic planning, the implementation of strategic plans and the factors influencing these (including the influence of the

Farm Planning program). Furthermore, this research suggests that participant confidence in the future of farming may influence future planning behaviours. Consequently, this should be investigated as an important factor influencing strategic management.

- Long-term evaluation of farm business resilience, using robust resilience indicators.
- Further research to determine the commitment of the program participants to the social and environmental aspects of their strategic plans.

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Appendix 1. Statements relating to the Farm Planning program theory

Table A1.1: Statements relating to the theory behind the Farm Planning program

Statement	Revised outcome statement
Encourage primary producers and other sections of rural Australia to **adopt self-reliant approaches** to managing for climate variability (National Drought Policy 1992,1) Farmers are encouraged to **adopt self-reliant** approaches to managing farm risks (Keogh, Granger and Middleton 2011, 11; COAG 2010, 3) ...increase the resilience and capacity of farmers, farming families and their communities to better prepare for and **self-manage** drought, climate variability and reduced water availability (Drought Pilot Review Panel 2011, 3; COAG 2010, 3)	Farmers [are encouraged to] adopt self-reliant approaches to managing farm risks
Facilitate the maintenance and protection of Australia's agricultural and environmental resource base during periods of climatic stress (National Drought Policy 1992,1) ...assist participants to identify on-farm practices that would **improve the sustainability of their farms' resource base** (Keogh, Granger and Middleton 2011, 33)	Agricultural and environmental resource base is maintained and protected during periods of climatic stress
Facilitate the **early recovery** of agricultural and rural industries, consistent with long-term sustainable levels (National Drought Policy 1992,1)	Early recovery (from drought) of agricultural and rural industries
...**increase the resilience** and capacity of farmers, farming families and their communities to better prepare for and self-manage drought, climate variability and reduced water availability (Drought Pilot Review Panel 2011, 3; COAG 2010, 3) **Building your resilience** and that of your business (Curtin University 2011c, 1)	Increased resilience of the farm business

Table A1.1 continued

Statement	Revised outcome statement
Farmers are encouraged to more **sustainably and efficiently use Australia's natural resource base** and water resources (Keogh, Granger and Middleton 2011, 12; COAG 2010, 3) Support farmers' **sustainable management of natural resource**s (Drought Pilot Review Panel 2011, 12; Keogh, Granger and Middleton 2011, viii) The identification of practical improvements to **better manage [natural] resources** (Keogh, Granger and Middleton 2011, 33)	Farmers [are encouraged / supported to] sustainably manage and use the natural resources
... to encourage farm businesses to better **prepare for** adverse seasonal conditions (Drought Pilot Review Panel 2011, 3). To better support farmers, their families and rural communities in **preparing for** future challenges, rather than waiting until they are in crisis to offer assistance (Department of Agriculture, Fisheries and Forestry 2010a,1; Drought Pilot Review Panel 2011, 3; Keogh, Granger and Middleton 2011, 11) ...increase the resilience and capacity of farmers, farming families and their communities to better **prepare for** and self-manage drought, climate variability and reduced water availability (Drought Pilot Review Panel 2011, 3; COAG 2010, 3) The plan will identify priority activities to help improve the management and **preparedness** of the farm business to respond to future challenges (Department of Agriculture, Fisheries and Forestry 2010a, 2; 2010b, 1; Drought Pilot Review Panel 2011, 5; Keogh, Granger and Middleton 2011, 16)	Farm businesses [are encouraged / supported to] prepare to respond to and manage future challenges

Table A1.1 continued

Statement	Revised outcome statement
Farmers and farm families can better **adapt and adjust** to the impacts of drought, increased climate variability and reduced water availability (Keogh, Granger and Middleton 2011, 11; COAG 2010, 3) Improve farmers' ability to **adapt** and to manage farm risks (Drought Pilot Review Panel 2011, 12; Keogh, Granger and Middleton 2011, viii) Improved ability to **adapt** to climate variability (Keogh, Granger and Middleton 2011, 33) Improved ability to **adapt** to changes in your farm's environment (Curtin University 2011b, 1)	Farmers and farm families [have improved ability] adapt to changes
...increase the resilience and **capacity** of farmers, farming families and their communities to better prepare for and self-manage drought, climate variability and reduced water availability (Drought Pilot Review Panel 2011, 3; COAG 2010, 3)	Farmers and farming families have increased capacity to better prepare for and self-manage farm risks
Improve farmers' ability to adapt and to manage farm risks (Drought Pilot Review Panel 2011, 12; Keogh, Granger and Middleton 2011, viii)	Farmers have improved ability to manage farm risks.
The plan will identify priority activities to help **improve the management** and preparedness of the farm business to respond to future challenges (Department of Agriculture, Fisheries and Forestry 2010a, 2; 2010b, 1; Drought Pilot Review Panel 2011, 5; Keogh, Granger and Middleton 2011, 16) Improve farmers' ability to adapt and to **manage farm risks** (Drought Pilot Review Panel 2011, 12; Keogh, Granger and Middleton 2011, viii) …**better manage** and prepare for future challenges, including drought (Drought Pilot Review Panel 2011, 5)	Improved management of farm risks

Statement	Revised outcome statement
Enhance farmers' skills in business, natural resource management and personal planning … (COAG 2010, C-3; Keogh, Granger and Middleton 2011, 16)	Farmers [are encouraged to] have improved skills to undertake planning
The Farm Planning program provides financial assistance for farmers to undertake an approved program of training to **build skills** in business planning (Department of Agriculture, Fisheries and Forestry 2010b, 1)	
The Farm Planning program aims to encourage farmers … to **improve their farm business planning skills** … (Drought Pilot Review Panel 2011, 5)	
Enhance farmers' skills in strategic business planning (COAG, 3)	
...encourage farmers to … **improve their business planning skills** (Keogh, Granger and Middleton 2011, 20)	
Increase the number of farm enterprises with comprehensive written strategic business plans (COAG 2010, C-3; Keogh, Granger and Middleton 2011, 16)	[More] farm businesses have comprehensive written strategic plans
Farmers will **develop or update a strategic plan** for their farm business (Department of Agriculture, Fisheries and Forestry 2010b, 1; Drought Pilot Review Panel 2011, 5; Keogh, Granger and Middleton 2011, 16)	
The Farm Planning program aims to encourage farmers … to **identify** and implement **activities** to better manage and prepare for future challenges, including drought (Drought Pilot Review Panel 2011, 5)	
...assist participants to **develop a robust financial plan** for their farm businesses (Keogh, Granger and Middleton 2011, 32)	
To help you **develop a robust financial plan** for your farming business (Curtin University 2011d, 4)	
To **set overall direction** for your farming business and identify the way forward (Curtin University 2011a, 1)	

Table A1.1 continued

Statement	Revised outcome statement
Grants of up to $60 000 may be available under this measure to **implement priority activities** identified in the strategic plan (Department of Agriculture, Fisheries and Forestry 2010b, 1) ...an independent assessment that the **implementation of the plan** would lead to a more viable farm business (Department of Agriculture, Fisheries and Forestry 2010b, 1; Drought Pilot Review Panel 2011, 5; COAG 2011, C-4) … **implement activities** to better manage and prepare for future challenges, including drought (Drought Pilot Review Panel 2011, 5)	Strategic plan/activities are implemented [using grant money available via the Building Farm Businesses program]
... the implementation of the plan would lead to a **more viable farm** business (Department of Agriculture, Fisheries and Forestry 2010b, 1; Drought Pilot Review Panel 2011, 5; COAG 2011, C-4) **Improved viability** (Keogh, Granger and Middleton 2011, 33) **Improved viability** (Curtin University 2011b, 1)	Improved farm viability
...encourage farmers to **place more value on strategic business planning** (Keogh, Granger and Middleton 2011, 20)	Farmers [are encouraged to] place more value on strategic business planning
… **improve participant ability** to manage finances (Keogh, Granger and Middleton 2011, 32)	Participants have improved ability to manage finances
With their **improved understanding**, participants were encouraged to identify actions that would improve the financial management of their farm business **Understanding** finance-related activities (Curtin University 2011d, 4)	Participants have improved understanding of the farms financial situation and finance-related activities
… **improve the financial management** of their farm business (Keogh, Granger and Middleton 2011, 32)	Improved financial management by farm businesses

Table A1.1 continued

Statement	Revised outcome statement
...help participants **improve the family and personal side of their lives** (Keogh, Granger and Middleton 2011, 33-34)	Participants [are helped to] improve the family and personal side of their lives
Improving understanding of how they interact with others, and how others interact with them (Keogh, Granger and Middleton 2011, 33-34) **Improving your understanding of how you interact** with others in your farm business (Curtin University 2011a, 1)	Participants have improved understanding of personal interactions in the farm business
Building individual resilience and managing stress (Keogh, Granger and Middleton 2011, 33-34) **Building your resilience** and that of your business (Curtin University 2011c, 1)	Increased personal resilience
Planning to stay fit and healthy (Keogh, Granger and Middleton 2011, 33-34) Being able to **stay fit and healthy** (Curtin University 2011c, 1) Building individual resilience and **managing stress** (Keogh, Granger and Middleton 2011, 33-34)	Participants [plan to] stay fit and healthy, and manage stress
Clarifying the future roles of family members in the farm business (Keogh, Granger and Middleton 2011, 33-34) **Gaining clarity** on the roles of family members in the business now and into the future (Curtin University 2011c, 1)	Participants have a better understanding of the future roles of family members in the business
Planning to undertake a comprehensive succession planning process (Keogh, Granger and Middleton 2011, 33-34)	Participants plan to undertake a comprehensive succession planning process
Building your awareness of change and its impact on your business (Curtin University 2011a, 1) **Building some awareness** and skills to manage change (Curtin University 2011e, 1)	Participants have increased awareness of change and its impact on the business

Table A1.1 continued

Statement	Revised outcome statement
To help you to have a more effectively functioning farm family business (Curtin University 2011c, 1)	Participants [are helped to] have a more effectively functioning farm family business
Improving your awareness of where and how you focus your time and energy (Curtin University 2011c, 1)	Participants have improved awareness of where and how time and energy is spent
Improving your awareness of where and how you focus your time and energy and how you interact with others (Curtin University 2011c, 1)	Participants have improved awareness of personal interactions
Building some awareness and **skills** to manage change (Curtin University 2011e, 1)	Participants have increased skills to manage change.

A1.1 Objectives of the National Drought policy (National Drought Policy 1992, 1):

- Encourage primary producers and other sections of rural Australia to adopt self-reliant approaches to managing for climate variability.

- Facilitate the maintenance and protection of Australia's agricultural and environmental resource base during periods of climatic stress.

- Facilitate the early recovery of agricultural and rural industries, consistent with long-term sustainable levels.

A1.2 Objective of the Pilot of Drought Reform Measures (COAG 2010):

- Enhance government ('the Parties') understanding of potential measures that will increase the resilience and capacity of farmers, farming families and their communities to better prepare for and self-manage drought, climatic variability and reduced water availability.

A1.3 Outcomes of the Pilot of Drought Reform Measures (Keogh, Granger and Middleton 2011):

- Farmers and farm families can better adapt and adjust to the impacts of drought, increased climate variability and reduced water availability.

- A more effective social support system for farm families and communities.

- Farmers are encouraged to adopt self-reliant approaches to managing farm risks.

- Farmers are encouraged to more sustainably and efficiently use Australia's natural resource base and water resources.

A1.4 Objectives of the Farm Planning program (COAG 2010, C-3):

- Enhance farmers' skills in business, natural resource management and personal planning with a particular focus on managing drought and climate variability.

- Increase the number of farm enterprises with comprehensive written strategic business plans.

A1.5 Aims of Module 1 'Moving Forward' (Curtin University 2011a):

- To understand the aims and format of the Pilot Program

- To set overall direction for your farming business and identify the way forward through:

  - Improving your understanding of how you interact with others in your farm business

  - Building your awareness of change and its impact on your business

  - Setting a vision and determining your goals for the business; and

  - Identifying what you will need to focus on as you proceed with this journey.

A1.6 Aims of Module 2 'Managing Environments' (Curtin University 2011b):

- Identify further sustainable on-farm practices to assist you in managing for the future, leading to:

  - Improved viability; and

  - Improved ability to adapt to changes in your farm's environment.

A1.7 Aims of Module 3 'Balancing Life' (Curtin University 2011c):

- To help you to have a more effectively functioning farm family business through:

    - Improving your awareness of where and how you focus your time and energy and how you interact with others

    - Building your resilience and that of your business

    - Being able to stay fit and healthy; and

    - Gaining clarity on the roles of family members in the business now and into the future.

A1.8 Aims of Module 4 'Managing Finances' (Curtin University 2011d):

- To help you develop a robust financial plan for your farming business, through:

    - Understanding your farm's Profit and Loss situation

    - Understanding your farm's Assets and Liabilities Sheet

    - Recognising the need to access cash and funding for you to survive and thrive

    - Identifying the key actions to be taken within your farm's financial plan; and

    - Identifying what you will need to focus on as you proceed with this journey.

A1.9 Aims of Module 5 'Bringing it all Together' (Curtin University 2011e):

- To complete the strategic planning and prepare for implementation through:

    - Reviewing the work done in the first four modules

    - Building some awareness and skills to manage change

    - Completing and refining the Strategic Plan

    - Selecting projects and activities for funding applications where required

    - Planning clear steps to move to actions; and

    - Agreeing on reviews and support.

A1.10 References

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Appendix 2.   Semi-structured interview documents

A2.1   Semi-structured interview information sheet

INFORMATION SHEET

My name is Rebecca Heath, and I am currently completing a piece of research for my Masters in Rural Management at Curtin University. I am investigating the effectiveness of the *Farm Planning* pilot drought policy measure in achieving potential behaviour change and improvements in natural resource outcomes.

Your role
I am conducting interviews with participants of the *Farm Planning* workshops, which were piloted in Western Australia as part of the *Pilot of Drought Reform Measures.*

I will ask you a series of direct questions, as well as conduct a less formal discussion about your experiences since completing the workshops where you developed a strategic plan for your farm business. The interview will be digitally recorded, and you will be given a copy of the interview transcript to check and make changes.

The interview will take approximately **one hour**, and is divided into three parts:

1.   Semi-structured interview about the use of your Strategic Plan since the workshops and the impact of the workshops on your values and/or attitudes.
2.   A series of statements that you may agree/disagree with on a scale of 1 to 7.
3.   A series of demographic and farm situational questions.

Consent to participate
Your involvement in the research is entirely voluntary. You have the right to withdraw at any state without prejudice or negative consequences. When you have signed the consent form I will assume that you have agreed to participate and allow me to use your data in this research.

Confidentiality
The information you provide will be kept separate from your personal details, and only I will have access to this. The interview transcript will not have your name on it but will be assigned a unique code. Once the unique code has been assigned, all identifiable information will be destroyed—as such, the transcript will not be traceable back to you. In adherence to university policy, the interview recording and transcribed information will be kept in a locked cabinet for five years before it is destroyed.

The information that you provide me will be used only for the purposes of this research. Although specific quotes may be published, no names will be attached to responses. The contribution and cooperation of all participants will be acknowledged (in a way that retains confidentiality) in the final thesis and any other publications.

Further information
This research has been reviewed and given approval by Curtin University Human Research Ethics Committee (Approval number **SOM—3-2012**). If you would like further information about the study, please feel free to contact me on XXXX or by email: XXXX. Alternatively, you can contact my supervisors:

Roy Murray-Prior	Christine Storer
p: XXXX	p: XXXX
e: XXXX	e: XXXX

The secretary of the Curtin University Human Research Ethics Committee may be contacted on 9266 2784 or hrec@curtin.edu.au or in writing C/- Office of Research and Development, Curtin University, GPO Box U1987, Perth WA 6845.

A2.2   Semi-structured interview consent form

Department of Agriculture and Food
GOVERNMENT OF WESTERN AUSTRALIA

Curtin University

CONSENT FORM

I _____ (print name) have read the information on the attached Information Sheet. Any questions I have asked have been answered to our/my satisfaction.

I have been informed of and understand the purposes of the study.

I agree to participate in this research but understand that I can change my mind or stop at any time without prejudice.

I understand that all information provided is treated as confidential.

I agree for this interview to be recorded.

I agree that research gathered for this study may be published provided names or any other information that may identify us/me is not used.

I agree to participate in the study as outlined to me.

Name _____   Signature _____

Date _____

Investigator _____   Signature _____

A2.3   Semi-structured interview guide

Introduction
Introduce self and research – see Information Sheet.

Section 1a

Qualitative survey to identify:
- What participants have done as a result of participating in the workshops, and adoption stage/s
- Barrier / drivers to implementing strategic plan
- Unexpected outcomes of the program (in terms of program impact)

1. **Looking back on the time since you completed the Farm Planning workshops, I'd like to ask you to begin by outlining how you have used your Strategic Plan that was developed during the workshops.** [wait for response]

2. **What key strategies or actions from your strategic plan have you undertaken, or made a start on?**

     Prompts:
     - Production / NRM
     - Work-life balance
     - Financial management
     - When? Who? Where? What? How?

     Determine the adoption stage for each:
     Awareness of the problem / opportunity
     Non-trial evaluation (e.g. collecting information)
     Trial evaluation
     Adoption
     Review and modification
     Non-adoption or dis-adoption

     a. **Is this strategy / action something you have tried before?**
     b. **What made you decide to give it a go?**
     c. **What problems or issues have arisen?**
          i. **How have these problems/issues been resolved?**
     d. **What kind of effect do you see the action having?** [actual / anticipated outcome of implementing strategy / action]

3. **What other actions or changes [from your strategic plan], which you haven't tried before, do you plan to do in the future?**
     Prompts:
     - Production / NRM
     - Work-life balance
     - Financial management
     - When? Who? Where? What? How?

     a. **What kind of effect do you see the action having?**
     b. **How easy do you think it will be?**

4. **Did your participation in the workshops prompt you to do any other things, which aren't documented in your strategic plan, to address production or natural resource issues? Can you tell me about that?**
     a. **How about work-life balance issues?**
     b. **Financial management?**
     Prompts:
     - When? Who? Where? What? How?

5. **What kind of things motivated you to put your strategic plan into action? How?**

6. **What kind of things are stopping you from putting your strategic plan into action? How?**
    a. **What could help you put your plan into action?** [*probe: timeframe*]
    b. **Did you do what you thought you were going to do?**
    c. **How committed are you to implementing the remainder of your plan?**

7. **In general, what do you think about the Plan that you put together through the workshops?**
    [*probe: updating the plan*]

Section 1b

> Qualitative survey to identify:
> - Impact of the program on participant values / attitudes
> - Unexpected outcomes of the program (in terms of program impact)

8. **How do you think your participation in the program affected your views or actions in terms of maintaining a work-life balance?**
    Probe: past, present, future

9. **What about managing your finances?**
    Probe: past, present, future

10. **How do you think your participation in the program has affected your views or actions in terms of natural resource and production management?**
    Probe: past, present, future

11. **How do you think your participation in the program has affected your views or actions on building the resilience of the farm businesses to self-manage drought and climate variability?**
    Probe: past, present, future

12. **How did the workshops affect you personally?**
    a. **What would you say you got out of the experience?**

13. **Suppose I was a farmer thinking about taking part in the program and I asked you if it was worth it. What would you tell me?**

14. **That covers the first section of the survey – is there anything else that you would like to add?**

[Prompt (if not already covered): Did you apply for a grant through the program? Why / why not?]

Checklist:
- Was the plan completed? ☐
- Has the plan been updated? ☐
- Implemented strategies / actions from the Plan? ☐
- Outcomes of strategies / actions implemented? ☐

- Stage/s of adoption? ☐
- Value of having a strategic plan? ☐
- Barriers / drivers re putting the plan into action? ☐
- Apply for grant? ☐
- Grant received? For what? ☐

Probes – When? Who? Where? What? How?

A2.4   Structured questionnaire

Section 3

Quantitative survey to enable comparisons with non-participant data and program evaluative data.

I'm now going to read a series of statements. I'd like you to tell me how much do you agree or disagree with each statement, on a scale of 1 to 7, with <u>1 being strongly disagree</u> and <u>7 strongly agree?</u>

_____
1.	4.	7.
Strongly disagree	Neutral	Strongly agree

1. Your farm business is well prepared to deal with seasonal variability _____
2. Your farm business is well prepared to deal with drought _____
3. Your farm business is well prepared to deal with a longer-term climate change _____
4. During drought, taxpayers should pay financial assistance to farm businesses _____

----

5. Seasonal variation is having a major impact on your farming operations _____
6. You don't believe there is a 'Climate change' happening _____
7. Climate change demands a 'risk management' approach to farming _____
8. Variable seasons demand a 'risk management' approach to farming _____

----

9. Your management decisions are the main drivers that influence the farms business performance
10. Outside forces such as prices, costs and weather are the major influences on the farms business performance _____
11. Strategic planning is useful to your farm business _____

----

12. You intend to make changes to your management practices over the next 5 years to protect or minimise the impact of your farm business on the natural resources _____
13. You intend to make changes to your management practices over the next 5 years to help accommodate seasonal variability _____
14. You intend to make changes to your management practices over the next 5 years to be more prepared for drought _____
15. You intend to make changes to your management practices over the next 5 years to adjust to a longer-term climate change _____

----

16. You are confident about the future of farming in your local area _____
17. Farming is a viable sustainable business for your successors _____
18. There are still plenty of opportunities available to build a successful farm business _____

----

19. You like to keep up to date with technology _____
20. You feel it is important to spend time keeping yourself informed _____
21. You value the views of other farmers _____
22. It is difficult to decide what information is relevant to the management decisions you need to make for the farm business _____
23. You are willing to trust the advice of 'experts' _____
24. Formal training is essential to your farm business _____

Section 4

Demographic and farm situational information.

1. **Who from your farm business attended the workshops?**

2. **a) Do you think you will be running your farm business in 5 years time?**
   1. YES   2. NO   3. UNSURE

IF NO OR UNSURE:
   b) Why might you not be running your farm business in 5 years time?
   1. Retirement
   2. Sold business to undertake another business venture
   3. Sold business because it was no longer viable
   4. Passed farm onto another member of the farm business
   5. Leased farm out
   6. Other (please specify)_____

NOTE: prompt as to WHY they are selling the business.

3. **I am going to read a list of ages, stop me when I get to yours**
   1. 15-19 years old
   2. 20-24 years old
   3. 25-34
   4. 35-44
   5. 45-54 years old
   6. 55-64
   7. 65+

4. **Gender:**   1. Male   2. Female

5. **What is your highest level of education completed?**
   1. Junior or senior high school
   2. TAFE certificate/diploma
   3. University Degree
   4. Post graduate qualification

6. **What is your postcode? _____**

7. **How many years have you been involved in farming, as an adult? _____**

8. **Over the past 12 months, have you been employed away from your farm?**
   1. YES, REGULARLY   2. YES, OCCASSIONALLY   3. NO

9. **I am going to read out a list of income levels. Please stop me at the one that best represents your annual gross farm income, averaged over the last 5 years?**
   1. Less than $50,000
   2. $50,000 - $350,000
   3. $350,000 - $500,000
   4. $500,000 - $1,000,000
   5. More than $1,000,000

10. **Approximately what percentage of your <u>total</u> annual income is derived from off-farm sources? ____**

11. **Are you and your business partners' off-farm assets greater than about $750,000?**
    1. YES   2. NO

Thank participant for their time and ask if they would like to be sent a copy of the results. Note down postal / email details if necessary. **ENDS.**

Appendix 3. Qualitative data analysis

This appendix provides evidence to demonstrate rigour behind the qualitative data analysis. Only a selection of qualitative data is included to illustrate the coding of the data.

A3.1 Future participation in the Farm Planning program

See Chapter 5, Section 5.3.1

Table A3.2: A selection of qualitative responses associated with each factor influencing the likelihood of non-participants participating in the Farm Planning program in the future

Factor	Responses
Not eligible for the grant	Waste of time due to ineligibility Not eligible for the grant
Not relevant / don't need it	Waste of time due to in eligibility and no information gained Unsure of use to our business
Do not like workshops / 'experts'	Not a big one for workshops Not interested in training Don't want some bloke on a computer telling me how to run my farm
Program takes too long / too busy to participate	Very expensive due to time commitment – 6 people not a work = 24 work days No time, work instead
Feedback from others	Other farmers' experiences
Others will benefit more	Others need it more. Have done drought proofing before Not in trouble [i.e. don't need grant]
Distance required to travel	Distance to the workshop Distance and cost of workshop
Anticipate that other family members will attend	Son would like to go Will get son to do it
Depends on timing/location	Depends on where it is held Depends on timing
Need to be able to justify the time	Justify the time
Interested in learning new things	New ideas, other views For the info, as I do not know about it
Potential for funding via grant program	Try to get grant Information and grant are appealing
Topic is interesting	Want to learn about strategic planning Looks interesting
Good to plan for the future	Thinking for the future Seems like a good way to plan for the future
Is currently enrolled	I am enrolled

A3.2   Strategic planning

See Chapter 6, Section 6.3

Table A3.3: A selection of qualitative responses relating to the usefulness of strategic planning

Coding framework	Responses
Experience Direction	I really like strategic planning, and I've used it in my work previously and I'm currently doing it in my work at the moment and because I'm dealing with a bunch of not-for-profit committee members that are farmers' wives – I would call it the same nonsense that you get with old farmers that don't want to do strategic planning – but it's basically getting everything out of their head and getting it down, and it's amazing how once you actually write stuff down it's very effective, because things don't happen unless you put a timeline on them.
Program influence Direction	Interviewer: Did you have any long term goals? Respondent: Oh yeah just in my head but it was handy to have it written down, and the framework to actually write it all down was good because I would never have done this sort of thing beforehand. It's just so good. When you look at it you think, 'that's a lot of work', but if you just do one goal at a time and a strategy to get there, it's not that hard.
Future use Program influence	Interviewer: So in general what do you think about the plan that you put together? Respondent: Very happy with it, yeah. I think in a year or so we'll probably update it a bit more. It's on your computer actually, we've got the framework still there so we can retype it.
Direction	It's handy if you sit down and you go what are we doing here, where are we going in the next five years, should we continue to do what we're doing or should we be changing everything completely. It's good to have that 10 year snapshot of what you want to achieve and work your way towards it.
Future use (negative)	I think it will happen just because a lot of it is in my partner's head, because he was already going to do it. In terms of putting it on paper that was a lot harder than him knowing what he was going to do already.
Short-term	I just haven't looked at it since we did it because it's not important. I'll make my financial decisions by if it hasn't rained for three weeks

See Chapter 6, Section 6.5

Table A3.4: A selection of qualitative responses relating to the quality of strategic plans

Coding framework	Responses
Priorities Work-life balance	That's all wasn't it, apart from taking holidays and all that. You can't afford it because it's just me and XX on the farm, that's it. And my health isn't the best so he's basically just the main worker out there and he can't take holidays because there is no-one else.
Work-life balance	I'm trying to commit at least one full day a week to family whether that be on a weekend or mid-week. We're trying to change that around so even if I am working weekends there's at least one mid-week day that I spend at home.
Work-life balance	I worked just about 13½ out of 14 days in a fortnight, and when I say 'work' it would be 15-20 hour days - so it's really not something that I was able to do. Doing the workshop and doing, I forget what they called it but it looked a bit like a target with a spider web in it, the balancing life thing, in doing that it gives you a bit of a slap in the face on reality and what is important to you and are you actually paying it the attention level you should.
Natural resource management	Non wetting soils, that's part of the thing and also some of the soils have declined in productivity so we're planting perennials on the lighter soils and ameliorating some problems to do with some of the better soils so that we've got the object of trying to get back to where we used to be years ago.
Production Finance Preparedness	Well see, the liming just turns your soil more productive. It's essential because our pH is coming down so we need to balance the soils and by doing that you get better use of water efficiency and also production, and therefore it increases your income. It's such a flow-on effect. Well that's the name of the game - to increase your income. As far as the storage of fodder and that, we're running livestock in conjunction with our cropping so we need to protect ourselves for the future, put stuff away so in the future we don't have to go and purchase fodder or what have you.
Production	Basically we're looking at increasing the scale of cropping because we already had sufficient machinery so increasing our scale of cropping, bigger returns on lambing and improving soil health and basically the maximising capacity of stock water and all those were within five years.
Priorities Natural resource management	I guess the whole approach to the natural resource management for me is time and money. It's something that we're definitely hoping to target more in the future but at the moment it's 'use what you've got' because we had a tight season last year.

See Chapter 6, Section 6.6.1

Table A3.5: A selection of qualitative responses relating to the factors preventing plan development

Factor	Responses
Time	Slackness. It is in our head though.
	Always working and putting the farm first.
	Hadn't got to it yet – time issue.
Ability to put plan into action	[Natural resource management is] not a priority, as there is not enough excess funds available to implement.
	Haven't got the time to do anything extra on the farm.
Uncertainty	The uncertainty of all that is happening in the farming business.
	[Work-life balance] was not something that was really covered in any detail at workshops.
	I'm too busy and I don't know how to [develop plan].
	If poor seasons occur, or poor prices, our plans are thrown out the door.
Disagreement	We are working on it but it is a constant struggle with two farming families.

See Chapter 6, Section 6.6.2

Table A3.6: A selection of qualitative responses relating to the drivers of plan development

Theme	Responses
Identification	We've been thinking of perennials for a while but there's been lots of 'fors' and 'againsts' but now, after doing this plan and saying what we want to do, I think it makes it more enthusiastic to say let's get these perennials, we've got some funding for them and you can see it going year after year - or that's what you envisage.
	I guess it's identifying a problem and putting a resolution in place. I think it got us to think about it a lot more, to put it right in the forefront out there and say this is what we've had to do.
	We've highlighted the things that were priorities at the time, which have been achieved.
Direction	And I think going back to this overarching plan that's up there that we're trying to work to, it's made it much clearer for me to see what we're doing each year because I can come back to this. Whereas before I probably wouldn't think so much about it.
	It's given us a bit of a clear path on how to achieve what we want.
	Well I actually ended up typing it so it's on the computer and it's adjustable year by year. So we had year by year plans but to have that 10 year snapshot of where we want to be - it's basically just trying to make that work in that 10 year period to the best of our ability.
Justification	But you've sort of got to know what your long-term goal is to get grants and stuff too. So this is very helpful when you're doing it. I mean you're a farm business and people would want to invest in a procedure-driven, strategic-focus sort of a farm
	The whole strategic plan that you get out of it is quite useful, and I know that the advisors and the banks quite like to see those things too so they sort of see your outlook on where you're going and what you want to achieve.

A3.3 Putting the strategic plan into action

See Chapter 7, Section 7.2

Table A3.7: A selection of qualitative responses relating to the factors influencing the level of implementation

Factor	Responses
Nature of the activities	Well I suppose they're all long-term sort of actions, like the build-up of assets of farm, that's a long-term process.
	We're trying to reduce debt but it doesn't seem to happen very quickly. It's a long-term thing.
	We are on schedule. Some actions have not been completed because they are not due for completion.
Changing circumstances	Well, if anything, we used to make five-year plans but the way things happen nowadays things get blown out so quickly.
	But it's typical farming, how we live, that your plans don't go necessarily to plan because we didn't get the rain last year until very late in June.
	Things change. It's changing all the time, and I think the key to it is being flexible. No matter what you do you've got to be flexible and you've got to change with what's thrown at you. That's the key to survival, and if you don't do that then forget it, you're out of business in no time at all.
Priorities	That I find extremely difficult. I actually run this place by myself and double cropping nearly 7500 acres, so apart from seasonal labour for 12-15 weeks of the year I'm pretty much on my own. So finding that balance between work and family life is extremely difficult.
	The only parts that haven't been followed up is the balancing life, in terms of updating wills and stuff like that. That's the only bit we probably haven't because we probably didn't see that, even though it's important, it wasn't as important as the natural resources and the other areas which were affecting how the business was going to run.

See Chapter 7, Section 7.5.1

Table A3.8: A selection of qualitative responses relating to barriers preventing implementation

Factor	Responses
Time	The briquette machine we got from China and we haven't had the time, purely based on personal circumstances, to really go into it.
	Time is the main thing. We say we should be doing that by now but we've run out of time because we're doing this or that and so you say, 'Oh well just move it'. If we don't do it now we might have a week or so in May or something.
	Having no time or the right finance.
Money	Apart from the financial side of, and a bit of time, there is no real barrier.
	Lack of funds for perceived luxuries.
Change in circumstances	Change in family partnership status.
	Change in circumstances.
	Left farming.
External constraints	We looked at the price of lick feeders but they're all down south and there's an issue with freight.
	We just got a spreader ourselves not long ago, within the last week basically, so the holdup has been on that.
	Time and labour constraints.
Commitment	Time management and motivation.
	I don't remember what is in my plan.
	Apathy.
Level of risk	Yeah, well the thing is that some of the things, if you like, are risky from my point of view and … it may or may not work so you've got to have somebody sharing the risk.

Table A3.9: A selection of qualitative responses relating to factors driving implementation

Factor	Responses
Building Farm Businesses grants	We would have done liming, building sheds, these are all our projects we wanted to do anyway. It's just this opportunity came up with a grant to achieve it and be quicker.
	Yep, the utilisation of my strategic plan so far has been through the Building Farm Businesses Grant. The 10-year strategic plan mentions increasing on - farm grain storage and reducing variable input costs as two of the main keys, and through Building Farm Business, the grant process, I have obtained the best part of $33 000 GST inclusive.
	We wrote contracts to put fertiliser on this year, to buy the fertiliser but that in itself, I was wanting to do something else but I had this fertiliser that had to be picked up and had to be spread and all this, and we made a note afterwards 'don't do that again'. We need the flexibility that if we say it's halfway through April we should be doing this but we've been forced to do this because we've written a contract.
	Well, we've got to put it into action this year because I think it's the end of June when you've got to submit what you've done with receipts and everything so you can get the next portion of funding.
A desire to be long-term farming	We want to be here long-term.
	Well we're as committed as surviving on the farm, so that's basically how committed we are because that's part of survival. I shouldn't use 'survival' because that's a sort of desperate thing, but it's sustainability.
A desire for financial resilience	I think that's the big one that we've come up with too is trying to reduce our debt to a bit more manageable level so when bad news does come in, and they will come, you're not so much under the pump the first year after a drought.
	It's only early days yet, but reduce debt and become stronger so in a harder time you can ride it through, so you've got some resources to fall back on.
A desire to be self-reliant	So the small things that we want to invest in, well not small but with the briquette machine we want to be in a situation where we've got our own energy source and biochar is something that XX is really interested in.
	Yeah, pretty much to cut our fertiliser, just trying to reduce the amount of off-farm inputs really and see if we can actually create some of our own stuff on farm.
The risk of drought/ changing climate	2006 and 2007, the droughts. I guess that was the biggest catalyst really to sit down and really assess everything … That was a good kick in the behind. It makes you really think you need to be better prepared for this next time it happens.
	As time goes on there are other things we are going to do to help us survive hard years because this is Australia and this is what happens in Australia. We have good years and we have hard years so we need to survive that and things will change.
	I tried to base the entire strategic plan basically around those micromanaged type things – so things like controlling our variable inputs through the auto steer, controlling the sheep feed situation – purely because out of the last five we've had three and a half years of drought conditions so our fodder expenses were just climbing and climbing, and that's not something that we could afford to do. One drought season where you're expenses out-of-pocket are $40 000-$50 000 a budget on fodder. It takes two years to cover those losses from that operation. I guess my entire focus there was in the sense of attempting to drought-proof to a degree.

A3.4 Most significant change

See Chapter 7, Section 7.7

Table A3.10: Selection of qualitative data identifying the most significant change resulting from participation in the Farm Planning program

Theme	Responses
On ground action	Receiving funding to implement projects identified in our strategic plan.
	Another huge step forward was the grant money that enabled us to buy sheep feeders and silos. This has resulted in much better animal health outcomes and has relieved a lot of stress and pressure in feeding hungry sheep.
Learning	More knowledge on preparation and maintaining plantation. More educated and open to more room for improvement.
	The understanding that there was more to just farming. Everything needs a little planning right down to your family.
Planning	Identifying the financial risk as well as the uncontrollable events that can and do impact our business.
	Development of a strategic plan.
	As a result we have also now moved forward with our succession planning.
	A thorough awareness to stand back and look at the business with a clinical eye and not be caught in the day-to-day running of the farm. We are all passionate and love farming and we need to look at the business more critically.
Personal resilience	Work-life balance. The need for my husband and I to be resilient individuals will have the biggest impact on our farm.
Attitudes/confidence	Our attitude towards the future of farming in the face of harsh weather events is much more positive.
	More confidence in how we run our farming operation.
Collaboration	Time for important and significant discussion and thought between business partners occurred, which gave us an agreed-on and formal strategic plan. The group interaction and discussion with other participants about how they approach their businesses was also very useful.
	Specific and guided dialogue with business partners regarding activities brought up during the workshop.
	It brought both families together to discuss goals and future plans. Everyone in the business now has a bit more of an idea of what the others are wanting to achieve.
No change	None.
	I did not learn anything that I did not already know.

Appendix 4.   Structured survey (program participants)

A4.1   Introduction to online questionnaire

This survey has been designed for Rebecca Heath's Masters research project (DAFWA and Curtin University). The research focuses on the impact of the *Farm Planning* program on the people that participated in Phase 1 (1 June 2010 – 30 June 2011).

The survey will take approximately 15 minutes to complete, and should be completed by someone that took part in Phase 1 of the Farm Planning workshops. If more than one person from your business took part, each workshop participant can complete the survey. Your participation in this research is greatly appreciated, and will provide valuable information to guide future programs.

This research has been given approval by Curtin University Human Research Ethics Committee (Approval number SOM—3-2012). Your involvement is entirely voluntary, and the information you provide will remain confidential and will be used only for the purposes of this research.

Further information about the study can be obtained from :

Rebecca Heath, Department of Agriculture and Food (Northam), XXXX

Roy Murray-Prior, Curtin University, XXXX

A4.2   Introduction to hardcopy questionnaire

Date:

NAME
ADDRESS 1
ADDRESS 2

Dear NAME

SURVEY OF FARM PLANNING PARTICIPANTS

My name is Rebecca Heath, and I am currently completing a piece of research for my Masters in Rural Management at Curtin University. I am investigating the impact of the *Farm Planning* program on the people that participated in Phase 1 of the program (1 June 2010 – 30 June 2011).

I have enclosed a survey that has been sent to all the participants of Phase 1 of the program to gather information on four key areas:

1. If participation in the program built relevant knowledge, understanding and skills;

2. If participation in the program resulted in actions to improve business and personal resilience;

3. Indicators of resilience; and

4. The demographics of the program participants.

I believe that you took part in Phase 1 of the Farm Planning program—as such, it would be greatly appreciated if you could take the time to complete the survey and send back to me in the enclosed postage-paid envelope as soon as possible. Alternatively, the survey will be available to be completed on-line in the near future. I will let you know how this can be accessed once this information is available. Your participation in this research is greatly appreciated, and will provide valuable information to guide future programs.

The survey will take approximately 15 minutes to complete, and should be completed by someone that took part in the Farm Planning workshops. If more than one person from your business took part, they may also want the opportunity to complete the survey – I can post or email another copy or you may want to record answers on the same paper in a different colour.

This research has been given approval by Curtin University Human Research Ethics Committee (Approval number SOM—3-2012). Your involvement is entirely voluntary, and the information you provide will remain confidential and will be used only for the purposes of this research.

If possible, I will email or post a reminder for you to complete the survey. If you would like a summary of the research results, please let me know your postal or email address on a separate piece of paper with your returned survey, or by emailing me at the address below.

For further information about the study, feel free to contact me or my supervisor (Roy Murray-Prior, XXXX). Thank you.

Yours sincerely

Rebecca Heath
Development Officer
Department of Agriculture and Food WA

A4.3 Questionnaire

1. Where did you attend the workshops? _____

2. When did you finish the workshops? *Month/Year* _____

3. How many members from your farming business attended at least one workshop? _____

4. As a result of attending the Farm Planning workshops, do you have a <u>production</u> plan for the next 5-10 years? *(please circle)*

   1. Yes → Would you have a similar plan if you didn't take part in the workshops?
         1. Yes   **2. No**   **3. Maybe**

   2. No → What prevented you from putting together a production plan?

   _____

   _____

5. As a result of attending the Farm Planning workshops, do you have a <u>finance</u> plan for the next 5-10 years? *(please circle)*

   1. Yes → Would you have a similar finance plan if you didn't take part in the workshops?
         1. Yes   **2. No**   **3. Maybe**

   2. No → What prevented you from putting together a finance plan?

   _____

   _____

6. As a result of attending the Farm Planning workshops, do you have a <u>natural resource management</u> plan for the next 5-10 years? *(please circle)*

   1. Yes → Would you have a similar natural resource management plan if you didn't take part in the workshops?
         1. Yes   **2. No**   **3. Maybe**

   2. No → What prevented you from putting together a natural resource management plan?

   _____

   _____

7. As a result of attending the Farm Planning workshops, do you have a <u>work-life balance</u> plan for the next 5-10 years? *(please circle)*

    1. Yes →Do you think you would have a similar work-life balance plan if you didn't take part in the workshops?

        1. Yes   **2. No**   **3. Maybe**

    2. No → What prevented you from putting together a work-life balance plan?

_____

_____

8. Since completing the workshops, how many planned actions have you started from your: *(please circle)*

    a. Production plan?

        1. None   **2. Some**   **3. Most**   **4. All**

    b. Natural Resource Management plan?

        1. None   **2. Some**   **3. Most**   **4. All**

    c. Work-life balance plan?

        1. None   **2. Some**   **3. Most**   **4. All**

    d. Financial Management plan?

        1. None   **2. Some**   **3. Most**   **4. All**

9. What is preventing you from carrying out the actions in your plans?

_____

_____

_____

10. Are any of the actions you have started, things you have not tried before?

    1. Yes   **2. No**   **3. Have not started any actions**

11. How often do you use your strategic plan to help with decision-making?

    1. Monthly   **2. Quarterly**   **3. Half yearly**

    4. Annually   **5. Never**

12. Have you updated your strategic plan since completing the workshops?

    1. Yes   2. No

13. Have you applied for the Building Farm Business funding?   **1. Yes   2. No**

    b. What were your reason/s?

_____

_____

On a scale of 1 to 7, with 1 being strongly disagree and 7 strongly agree, how much do you agree or disagree with the following statements? *(circle the most appropriate number)*

AS A RESULT OF ATTENDING THE FARM PLANNING WORKSHOPS:	*Strongly disagree*							*Strongly agree*	*Not sure*
14. I understand the impact of risks on my farm business better	1	2	3	4	5	6	7	8	9

Comments: _____

15. I understand the impact of climate change better	1	2	3	4	5	6	7	8	9

Comments: _____

16. I have a better understanding of what I need to do to adjust to the impacts of climate change	1	2	3	4	5	6	7	8	9

Comments: _____

17. I am more willing to make changes to my farm business	1	2	3	4	5	6	7	8	9

Comments: _____

18. I understand the usefulness of strategic planning for my farm business	1	2	3	4	5	6	7	8	9

Comments: _____

19. I am more willing to use strategic planning to help me plan for the future	1	2	3	4	5	6	7	8	9

Comments: _____

20. I am confident in my ability to update my strategic plan	1	2	3	4	5	6	7	8	9

Comments: _____

21. My farm business is more resilient and able to adapt to change	1	2	3	4	5	6	7	8	9

Comments: _____

22. The most significant change resulting from my participation in the Farm Planning workshops was ... *(please explain)*

_____

_____

_____

_____

_____

On a scale of 1 to 7, with 1 being strongly disagree and 7 strongly agree, how much do you agree or disagree with the following statements? *(feel free to make comments on a separate piece of paper)*

	Strongly disagree						*Strongly agree*		*Not sure*
23. I accept change is inevitable	1	2	3	4	5	6	7	8	9
24. Seasonal variation is having a major impact on my farming operations	1	2	3	4	5	6	7	8	9
25. Variable seasons demand a 'risk management' approach to farming	1	2	3	4	5	6	7	8	9
26. My farm business is well prepared to deal with drought and extreme weather events	1	2	3	4	5	6	7	8	9
27. I believe 'Climate change' is happening	1	2	3	4	5	6	7	8	9
28. During exceptional circumstances, taxpayers should pay financial assistance to farm businesses	1	2	3	4	5	6	7	8	9
29. My management decisions are the main drivers that influence the farms business performance	1	2	3	4	5	6	7	8	9
30. Outside forces such as prices, costs and weather are the major influences on the farms business performance	1	2	3	4	5	6	7	8	9

31. Strategic planning is useful to my farm business to plan the future	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**		**9**
32. I am willing to experiment with new ideas	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**		**9**
33. I am willing to change as new ideas become available	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**		**9**
34. I am able to change to take advantage of opportunities	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**		**9**
35. I intend to make changes to my management practices over the next 5 years to:										
a. protect or minimise the impact of my farm business on the natural resources	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**		**9**
b. help accommodate seasonal variability	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**		**9**
c. be more prepared for drought and extreme weather events	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**		**9**
36. I have strong relationships with others involved in my farm business	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**		**9**
37. I value the views of other farmers	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**		**9**
38. I am willing to trust the advice of 'experts'	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**		**9**
39. I keep up to date with technology	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**		**9**
40. It is important to invest in learning and stay informed	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**		**9**
41. It is difficult to decide what information is relevant to the management decisions I need to make for the farm business	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**		**9**
42. I discuss succession plans with others in the business	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**		**9**

43. I work with others to solve problems and generate new ideas	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
44. I live a healthy lifestyle	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
45. I am actively involved in community groups	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
46. I have varied social networks for support and ideas	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
47. I take holidays at least annually	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
48. I have a diverse enterprise mix	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
49. There is a diverse range of skills, expertise and experience in my business	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
50. I am able to sell my produce to different customers	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
51. I effectively use existing resources for new activities where possible	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
52. I avoid committing a large share of resources to one activity	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
53. I have sufficient infrastructure	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
54. I commit to investments incrementally and review before investing further	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
55. My finance provider is happy with my percentage equity	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
56. My return on equity ratios are generally better than others	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
57. My variable costs, as a percentage of my income, are generally better than others	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

58.	I am able to control pests and disease effectively	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
59.	I am able to maintain healthy soils on my farm	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
60.	I take into account the natural environment in decision making for the farm	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
61.	I am able to control weeds effectively	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
62.	I manage wind and water erosion effectively	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
63.	I manage salinity effectively	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
64.	I am confident about the future of farming in my local area	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
65.	Farming is a viable sustainable business for my successors	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
66.	There are still plenty of opportunities available to build a successful farm business	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

67. Have you had a major change in your life since you participated in the workshops (e.g. crop failure, management change, change in personal life etc.)

1. Yes   2. No

68. What is your gender: **1. Male   2. Female**

69. What is your postcode _____

70. How many years have you been involved in farming, as an adult? _____**years**

71. What is your highest level of education completed?

1. Junior or senior high school   2. TAFE certificate/diploma

3. University Degree   4. Post graduate qualification

72. Age   **1. 15-19 years**   **2. 20-24 years**   **3. 25-34 years**

                4. 35-44 years   **5. 45-54 years**   **6. 55-64 years**

                7. 65 years plus

73. Do you think you will be running your farm business in 5 years time?

1. Yes   **2. No**   **3. Unsure**

b. *If answered '**NO**' or '**UNSURE**',* what is the main reason for this?

_____

74. Over the past 12 months, have you been employed away from your farm?

1. Yes, regularly   **2. Yes occasionally**   **3. No**

75. Approximately what percentage of your <u>total</u> annual income is derived from off-farm sources? ____**%**

76. What is your estimated annual <u>gross</u> farm income, averaged over the last 5 years?

1. Less than $50,000   **2. $50,000 - $350,000**

3. $350,000 - $500,000   **4. $500,000 - $1,000,000**

5. More than $1,000,000

77. Name or Farm Business Resilience (FBR) ID number (optional) _____

78. Any final comments?

_____

_____

_____

_____

That's the end of the survey. Thank you for your time and input.

Appendix 5.   Questionnaire (non-participants)

INTRODUCTION

Good evening. My name is Rebecca Heath from the Department of Agriculture and Food. I am currently doing a Masters research project through Curtin University, looking at the effectiveness of the pilot of drought reform measures that are currently being run across the State.

As part of my project, I am doing a survey of farmers that have not taken part in the first round of workshops that were held as part of the pilot program, and was wondering, if it is convenient, if I could speak to a person who has either sole or joint responsibility for making decisions about managing your farming property and business?

[REINTRODUCE IF NECESSARY]

Your participation is completely voluntary and will involve answering a few questions that will take around 10-15 minutes to complete. Your responses will be strictly confidential and not traceable back to you.

Would you like to participate in this research?   **YES**   **NO**

IF NO, NOT A GOOD TIME – ARRANGE A TIME FOR A CALL-BACK, ASK

'Can I call back a later time?'

IF YES, RECORD DETAILS IN SPREADSHEET

IF NO, NOT INTERESTED – THANK AND CLOSE. RECORD IN SPREADSHEET.

IF YES – CONTINUE

Before I begin, I just need to double-check that you fit into the category of people that I am currently surveying.

Are you solely or jointly responsible for making decisions about managing your farming property and business?   **YES** (continue)   **NO** (end call – see below)

Does at least one member of your farm business, under normal circumstances, contribute at least 50% of his or her labour to the business, and derive at least 50% of his or her income from the business?
YES (continue)   **NO**

IF NO:
I am sorry to have disturbed you, but you don't fit into the category of people that I am currently surveying. Thank you for your time.   ENDS.

IF YES: see next page

Did you participate in the Farm Planning Program, which is part of the pilot program of drought reform measures, where farm businesses attend 5 days of training to develop a strategic plan?

| YES | | NO |

Did you begin the program before the 1st of July this year?

| YES | | NO |

I am sorry to have disturbed you, but I am only surveying those that did not participate in the first round of workshops – so before 1 July this year. Thank you for your time.
ENDS.

Well you do fit into group of people that we are surveying, but before I start, I just need to make sure you are aware of a couple of key points of the research – The project has been approved by the Curtin University Ethics Committee, and, under no circumstances will any of your responses be used for any purpose other than the research study.

As mentioned before, participation is completely voluntary and you can withdraw from the survey at any time. If you do withdraw, your responses to any questions answered will not be used in the study.

Do you have any questions?

The first set of questions are ABOUT THE PILOT OF DROUGHT REFORM MEASURES

a) Have you heard of the pilot program of drought reform measures being conducted in WA over the last year or so?   **1. YES**   **2. NO**

Have you heard of the Farm Planning Program, which is part of the pilot program, where farmers attend 5 days of training workshops to develop a strategic plan?
1. YES   **2. NO** *(note: if answered NO <u>do not</u> ask Q5-7)*

Have you heard of the Building Farm Businesses grant program, which is part of the pilot, that provides funding to put in place strategies developed in the strategic plan?
1. YES   **2. NO**

IF ANSWERED NO TO Q1, 2 <u>AND</u> 3, GO TO CAPACITY/CURRENT PRACTICE Q8

IF ANSWERED YES TO Q1, 2 <u>OR</u> 3:
Where did you hear about the pilot program? *(wait for response + ask each item in list. Circle for yes)*

1. Radio	**7. Training provider**
2. Newspapers	**8. Information session**
3. Friends/neighbours /family	**9. Consultant**
4. TV	**10. Accountant**
5. Department of Agriculture and Food	**11. From any other source** *(specify)*
6. Internet	_____

IF ANSWERED <u>NO TO Q2</u>, GO TO CURRENT PRACTICE Q 8

IF ANSWERED <u>YES TO Q2</u>, CONTINUE.

a) At that time, did you want to attend the workshops?   **1. YES**   **2. NO**

b) Why did you decide not to attend the workshops at that time? *(DO NOT read list)*
1.   **Timing of the workshops**
2.   **Distance to workshop**
3.   **Knowledge of content of workshops**
4.   **Ability to leave the farm in a capable persons hands**
5.   **Eligibility for the grant**
6.   **Don't value strategic planning**
7.   **Feedback from others that had attended**
8.   **Other (s*pecify)*_____

_____

a) On a scale of 1 to 7, with <u>1 being not at all likely</u> and <u>7 being very likely</u>, what is the likelihood of you attending future workshops in the Farm Business Resilience Farm Planning Program?

       1   2   3   4   5   6   7   9 Don't Know

b) Why this rating?

a) Does your eligibility for the grant affect your decision regarding attending future workshops?
          1. YES   **2. NO**

The next section asks some questions about your CURRENT PRACTICES

Have you received any support under the following schemes? *(read out list and circle if answer is YES)*
    1. **Exceptional Circumstances interest rate subsidies**
    2. **Exceptional Circumstances relief payment**
    3. **Exceptional Circumstances farm exit payment**
    4. **Farm ready training grants**
    5. **FarmBis**

STRATEGIC PLANNING
a) Do you have a written strategic plan for your farm business?　　　**1. YES**　　　　**2. NO**

IF NO:
b) Why is that? *(circle answers given then go to Q11)*
    1. **Don't see the value of a strategic plan**
    2. **Have the strategic plan in my head**
    3. **Bank manager/ accountant/ consultant does the plan for me**
    4. **Never got around to it**
    5. **Don't have the time**
    6. **Other** *(please specify)*_____

IF YES:
c) How often do you or members of your farm business refer to it? _____

d) How often is it revised? _____

LEARNING & TRAINING
The next couple of questions refer to 'training' – which, in these instances, means formal training that you have had to attend in-person with a qualified presenter. It does NOT include things like field days, crop updates and similar events.

In the last 5 years, how often have you attended formal training related to your farm business? *(read list and circle answer)*
    1. **Never**
    2. **Every few years**
    3. **Once a year**
    4. **2 times a year**
    5. **3 or more times per year**

Have you undertaken any formal training relating to your farm in any of the following areas? *(read list and circle if answer is YES)*
    1. **Book keeping**
    2. **Farm management**
    3. **Accounting**
    4. **Financial management**
    5. **Marketing**
    6. **Natural resource management**
    7. **Production management**
    8. **Mechanical trades**
    9. **Human resource management**
    10. **Other** *(please specify)*_____

ATTITUDES [RANDOMLY CHOOSE A SET OF QUESTIONS TO BEGIN WITH]
I'm now going to read a series of statements. I'd like you to tell me how much do you agree or disagree with each statement, on a scale of 1 to 7, with <u>1 being strongly disagree</u> and <u>7 strongly agree?</u>

You intend to make changes to your management practices over the next 5 years to protect or minimise the impact of your farm business on the natural resources _____
You intend to make changes to your management practices over the next 5 years to help accommodate seasonal variability _____
You intend to make changes to your management practices over the next 5 years to be more prepared for drought _____
You intend to make changes to your management practices over the next 5 years to adjust to a longer-term climate change _____

You like to keep up to date with technology _____
You feel it is important to spend time keeping yourself informed _____
You value the views of other farmers _____
It is difficult to decide what information is relevant to the management decisions you need to make for the farm business _____
You are willing to trust the advice of 'experts' _____
Formal training is essential to your farm business _____

Your farm business is well prepared to deal with seasonal variability _____
Your farm business is well prepared to deal with drought _____
Your farm business is well prepared to deal with a longer-term climate change _____
During drought, taxpayers should pay financial assistance to farm businesses _____

Your management decisions are the main drivers that influence the farms business performance_____
Outside forces such as prices, costs and weather are the major influences on the farms business performance _____
Strategic planning is useful to your farm business _____

Seasonal variation is having a major impact on your farming operations _____
You don't believe there is a 'Climate change' happening _____
Climate change demands a 'risk management' approach to farming _____
Variable seasons demand a 'risk management' approach to farming _____

You are confident about the future of farming in your local area _____
Farming is a viable sustainable business for your successors _____
There are still plenty of opportunities available to build a successful farm business ____

DEMOGRAPHICS and FARM SITUATIONAL INFORMATION

Now we will move onto the demographics and farm situation questions.

a) Do you think you will be running your farm business in 5 years time?

1. YES   2. NO   3. UNSURE

IF NO OR UNSURE:

b) Why might you not be running your farm business in 5 years time?
1. **Retirement**
2. **Sold business to undertake another business venture**
3. **Sold business because it was no longer viable**
4. **Passed farm onto another member of the farm business**
5. **Leased farm out**
6. **Other** (please specify)_____

NOTE: prompt as to WHY they are selling the business (if they answer that they are selling business).

I am going to read a list of ages, stop me when I get to yours *(read list)*
1. **15-19 years old**
2. **20-24 years old**
3. **25-34**
4. **35-44**
5. **45-54 years old**
6. **55-64**
7. **65+**

Gender: **1. Male   2. Female**

What is your highest level of education completed? *(read list)*
1. **Junior or senior high school**
2. **TAFE certificate/diploma**
3. **University Degree**
4. **Post graduate qualification**

What is your postcode? _____

How many years have you been involved in farming, as an adult? _____

Over the past 12 months, have you been employed away from your farm?

1. YES, REGULARLY   2. YES, OCCASSIONALLY   3. NO

I am going to read out a list of income levels. Please stop me at the one that best represents your annual gross farm income, averaged over the last 5 years?
1. **Less than $50,000**
2. **$50,000 - $350,000**
3. **$350,000 - $500,000**
4. **$500,000 - $1,000,000**
5. **More than $1,000,000**

Approximately what percentage of your <u>total</u> annual income is derived from off-farm sources? ____

Are you and your business partners' off-farm assets greater than about $750,000?

1. YES   2. NO

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THANK YOU

Well, that's the end of the survey. Thank you for your time and input.

Do you have any further comments or questions?   **1. YES   2. NO**

IF YES – RECORD DETAILS

Would you be interested in some information about the Drought pilot programs?
        1. YES   2. NO

IF YES
Would you like the information to be posted or emailed to you?
RECORD POSTAL / EMAIL DETAILS ON SPREADSHEET

Would be interested in a copy of the summarised research results?   **1. YES 2. NO**

IF YES
Would you like these to be posted or emailed to you?
RECORD POSTAL / EMAIL DETAILS ON SPREADSHEET

Would you like mine or my University supervisors contact details should you want any further information?

IF YES
REBECCA HEATH
DEPARTMENT OF AGRICULTURE AND FOOD, NORTHAM
PHONE: XXXX
EMAIL: XXXX
POSTAL: XXXX

ROY MURRAY-PRIOR
CURTIN UNIVERSITY – MURESK CAMPUS
PHONE: XXXX
EMAIL: XXXX
POSTAL: XXXX

ETHICS INFORMATION IF REQUESTED:
CONTACT: HUMAN RESEARCH ETHICS COMMITTEE (SECRETARY) 9266 2784 OR
hrec@curtin.edu.au OR IN WRITING C/- OFFICE OF RESEARCH AND DEVELOPMENT, CURTIN UNIVERSITY, GPO BOX U1987, PERTH, WA 6845
        ETHICS APPROVAL NUMBER: SOM-18-11

Appendix 6.   Questionnaire (Curtin students)

Researcher ………………………………..   Survey ID No. ………………..

Hi, I am a third year Muresk students studying Agribusiness at Curtin University. As part of our course we are doing research on the workshops run to assist farmers become more resilient to drought that are currently being run across the State.

If you have not already done this survey, you can go into a draw to win a voucher for $60 at an outlet of your choice. The information you give will be kept strictly confidential and cannot be traced back to you. Would it be convenient to talk to you now for 15-20 minutes or should I make another time to talk to you?

Are you solely or jointly responsible for making decisions about managing your farming property and business?
If no ask **Can I speak to an owner or manager of the farm?**

1. **Do you have written plans for the future 5-10 years to cover**:
   a. **Production**   1. Yes   2. No
   b. **Finances**   1. Yes   2. No
   c. **Natural Resources Management**   1. Yes   2. No
   d. **Work Life Balance**   1. Yes   2. No

2. **Have you heard about:**
   a. **The Drought Pilot program**   1. Yes   2. No
   b. **Farm Business Resilience Planning workshops for farmers**   1. Yes   2. No
   c. **Building Farm Business Grants program**   1. Yes   2. No
   If <u>NO to ALL go to Resilience Questions - Section C</u>

3. **Have you or a representative of your farm participated in a 5 day training course, to develop a strategic plan as part of the Farm Business Resilience Planning Program?**
       1 YES (continue)   2 NO (<u>Go to Non-Participant Question 12</u>)

<u>**A.   Participant Questions:**</u>
4. **Where did you attend the workshops**? ………………..

5. **When did you finish the workshops**? ………………..

6. **How many members from your farming business attended the workshops? ...**

7. **Since completing the Farm Business Resilience Planning workshops, how many of your actions have you implemented in your** (read list and record comments)
   Production plan?   1 None 2. Some 3 A lot
   ……………………………………………………………………………..
   Natural Resource Management   1 None 2. Some 3 A lot
   ……………………………………………………………………………..
   Work-life balance   1 None 2. Some 3 A lot
   ……………………………………………………………………………..
   Financial Management   1 None 2. Some 3 A lot
   ……………………………………………………………………………..

8. **Are any actions implemented something new that you have not tried before?**
   1. Yes   2. No

9. **Have you updated your strategic plan since completing the workshops?**
   1. Yes   2. No

10. **Have you applied for the Building Farm Business Grants funds?**
    1. Yes   2. No If no ask **Why not?**
    …………………………………………………………………………..

    If yes ask **Was the grant the main reason why you attended**?   1. Yes   2. No

B.   Non-Participant Questions
11. **What are your views on the Farm Business Resilience Planning program?**
    …………………………………………………………………………..

12. **When you heard about the Farm Business Resilience Planning workshops did you want to attend the workshops?**   1. YES   2. NO
    If Yes ask **Why did you decide not to attend the workshops at that time?** *(DO NOT read)*

1. Timing of the workshops	2. Distance to workshop
3. Knowledge of content of workshops	4. Eligibility for the grant
5. Feedback from others that had attended	6. Don't value strategic planning
7. Ability to leave the farm in a capable persons hands	
8. Other (s*pecify*)	

13. **On a scale of 1 to 7, with <u>1 being not likely</u> and <u>7 being very likely</u>, what is the likelihood of you attending future workshops in the Farm Business Resilience Planning workshops?**
    Not at all Likely   Very Likely
                1   2   3   4   5   6   7   9 unsure
    Why?...

14. **What would entice you to attend a farm business resilience planning workshop?**
    (circle all)

1. Knowledge	2. Distance to workshop
3. Social interaction	4. Eligibility for the grant
5. Options of participation level	6.

15. **Were you aware Building Farm Business grants are only available if your businesses off farm assets are less than $750,000?**   1. Yes   2. No

16. **Does your eligibility for the Building Farm Business grant affect your decision regarding attending future workshops?**   1. Yes   2. No

C.   Resilience
I am going to read a series of statements about resilience, I'd like you to tell me how much you agree or disagree with each statement on a scale of 1 to 7 with 1 being strongly disagree and 7 being strongly agree, or you can say if you are unsure (record 9).
Strongly Disagree 1   2   3   4   5   6   7 Strongly Agree   9 Unsure

General Resilience - Acceptance of Change
25. You accept change is inevitable _____
26. Seasonal variation is having a major impact on your farming operations _____
27. Variable seasons demand a 'risk management' approach to farming _____
28. Your farm business is well prepared to deal with seasonal variability _____
29. Your farm business is well prepared to deal with drought and extreme weather events
    (if asked includes hail, frost, flood, fire, storms – strong winds)
30. You believe 'Climate change' is happening _____
31. Your farm business is well prepared to deal with climate change in the next 5-10 years_____
32. Climate change demands a 'risk management' approach to farming _____
33. During exceptional circumstances, taxpayers should pay financial assistance to farm businesses
    _____

34. Your management decisions are the main drivers that influence the farms business performance _____

35. Outside forces such as prices, costs and weather are the major influences on the farms business performance _____

General Resilience - Making Changes to Adapt
36. Strategic planning is useful to your farm business to plan the future_____
37. You are willing to experiment with new ideas _____
38. You are willing to change as new ideas become available _____
39. You are able to change to take advantage of opportunities e.g. seasonal conditions ___
40. You intend to make changes to your management practices over the next 5 years to:
    Protect or minimise the impact of your farm business on the natural resources _____
    Help accommodate seasonal variability _____
    Be more prepared for drought and extreme weather events _____
    Adjust to a climate change (next 5-10 years) _____

General Resilience – Future Confidence
41. You are confident about the future of farming in your local area _____
42. Farming is a viable sustainable business for your successors _____
43. There are still plenty of opportunities available to build a successful farm business ___

General Resilience – Keeping Informed
44. You have strong relationships with others involved in your farm business _____
45. You value the views of other farmers _____
46. You are willing to trust the advice of 'experts' _____
47. You like to keep up to date with technology _____
48. You feel it is important to invest in learning and stay informed _____
49. Formal training is essential to your farm business _____
50. It is difficult to decide what information is relevant to farm management decisions _____

Environmental/BioPhysical Resilience
51. You use integrated pest management for effective control of weeds, pests and disease _____
52. You are confident with the soil health management on your farm _____ (acidity, salinity, organic matter, ground cover, general structure-water nutrients and logging)
53. You take into account the natural environment in decision making for the farm _____

Social Resilience
54. There been discussions with others in the business about a succession plan? _____
55. You involve others in the business in setting plans for the future _____
56. You work collaboratively with others to solve problems and generate new ideas _____
    (farmers, consultants, suppliers, marketers, banks)
57. Members of the business are satisfied with the activities they carry out _____
58. You live a healthy lifestyle (are physically healthy, have regular health checks) _____
59. You spend quality time with family and friends _____
60. You are actively involved in community groups _____
61. You have varied social networks for support and ideas _____

Economic/Financial Resilience
62. You have a diverse range of enterprise mix (crops and animal types) _____
63. You rely on a large range of market channels _____
64. There is a diverse range of skills, expertise and experience in your business_____
65. You believe maintaining a low-medium debt to income ratio is important? _____
66. You believe a high percentage equity in your land is important _____
67. Your income is more stable than other farmers you know _____
68. You effectively use existing resources for new activities where possible _____
69. You avoid committing a large share of resources to one activity _____
70. You have sufficient infrastructure (roads, storage, sheds, water sources, equipment) _____
71. You commit to investments incrementally and review before investing further _____

Non Participants go to Characteristics Questions Section D

Participant Resilience after FBR Program (only ask participants)

72. The Farm Business Resilience Planning program enabled you, your family and you workers to become more resilient and able to adapt to changes _____

73. The people who ran the Farm Business Resilience Planning program within your region were there to try and help all participants equally. _____

74. The training and knowledge of staff running the seminars is appropriate _____

75. **Have you had a major change in your life since you participated in the workshops, including crop failure, management change or in your personal life ?** 1. Yes   2. No
……………………………………………………………………………………

76. If yes ask **Would you consider yourself more or less resilient than others in facing these changes or about the same as others?**
    1. More resilient   2. Less resilient   3. Same

Farm Business Resilience Planning Program Suggestions (only ask participants)

77. **Is there anything that you believe would improve the Farm Business Resilience Planning program**? …………………………………………………………………………………….

78. **Do you have any comments about:**
    Where the workshops were located? …………………………………………………..
    Content of the workshop …………………………………………………………..

D.   Characteristics

79. **Record Gender:**   1. Male   2. Female

80. **What is your postcode?** _____

81. **How many years have you been involved in farming, as an adult?** _____years

82. **What is your highest level of education completed?**
    1. Junior or senior high school   2. TAFE certificate/diploma
    3. University Degree   4. Post graduate qualification

83. **I am going to read a list of ages, stop me when I get to yours**
    1. 15-19 years   2. 20-24 years   3. 25-34 years   4. 35-44 yrs
    5. 45-54 years   6. 55-64 years   7. 65 years plus

84. **Do you think you will be running your farm business in 5 years time?**
    1. Yes   2. No   3. Unsure
    If No OR Unsure ask **Why?** (Record answer <u>unprompted</u>)
     1. Retired   2. Sold business to undertake another business venture
     3. Leased farm out   4. Sold business because it was no longer viable
     5. Passed farm onto another member of the farm business
     6. Other (please specify)_____

85. **Over the past 12 months, have you been occasionally or regularly employed away from your farm?**   1. Yes, regularly 2. Yes occasionally   3. No
    Approximately what percentage of your <u>total</u> annual income is derived from off-farm sources? _____%

86. **Are you and your business partners' off-farm assets greater than about $750 000?**
    1. Yes   2. No

Appendix 7. Secondary data used in analyses

Table A7.1: Survey questions from secondary data and data transformations used in the data analyses

Question	Source	Data transformation
I am confident about the future of farming in my local area	1a, 1b, 2, 4, 5, 7	N/A
Outside forces such as prices, costs and weather are the major influences on the farms' business performance	1a, 1b, 2, 4, 5, 7	N/A
I believe a 'climate change' is happening	1a, 1b, 2, 4, 5, 7	1b, 5 – responses inverted as question was negatively worded
My management decisions are the main drivers that influence the farm's business performance	1a, 1b, 2, 4, 5, 7	N/A
There are still plenty of opportunities available to build a successful farm business	1a, 1b, 2, 4, 5, 7	N/A
Farming is a viable sustainable business for my successors	1a, 1b, 2, 4, 5, 7	N/A
Climate change demands a 'risk management' approach to farming	1b, 2, 4, 5, 7	N/A
Variable seasons demand a 'risk management' approach to farming	1a, 1b, 2, 4, 5, 7	N/A
Strategic planning is useful to my farm business	1a, 1b, 2, 3, 4, 5, 7	1a, 2, 4, 7 – responses reduced to 5-point scale
Do you have a [production/finance/natural resource management/work-life balance] plan	1a, 1b, 2, 3, 4, 6, 7	1a, 2, 3, 4 - responses collated to 'yes/no' for having a strategic plan
Does your strategic business plan cover [production/finance/natural resource management/work-life balance]	3, 4, 6, 7	Responses collated to 'yes/no' for each component
How often do you use your strategic plan to help with decision-making	1a, 1b, 3, 4, 6, 7	1b – responses categorised as per other questionnaires
If you do not have a strategic plan, why is that	1b, 3, 4	N/A
Overall, we have adopted a more self-reliant approach to managing farm business risk since participating in the Farm Planning program	8	N/A
How effective are activities in achieving the vision and goals you set for your farm business	8	N/A
How effective are activities at improving your capacity to deal with dry seasons and market and climate variability	8	N/A
How effective are activities in achieving better management of your business	8	N/A
How effective are activities at improving your risk management	8	N/A

Table A7.1 continued

Question	Source	Data transformation
How confident are you about implementing your written strategic business plan	6, 7	N/A
Gender	1a, 1b, 2, 3, 4, 6, 7	N/A
Age	1a, 1b, 2, 3, 4, 6, 7	Younger age categories were combined (<24 yrs) to compare to state/national data
Education	1a, 1b, 2, 3, 4, 6, 7	N/A
Where did you hear about the pilot program	1b, 3, 4	N/A
What was your motivation to participate	3, 4	N/A
In the last 5 years, how often have you attended formal training related to your farm business	1b, 3, 4	N/A
Have you received any support under [government schemes]	1b, 3, 4	Responses collated as 'yes/no'

1a = primary data collection (participants)
1b = primary data collection (non-participants)
2 = Curtin student survey
3 = Department of Agriculture and Food entry questionnaire (phase 1)
4 = Department of Agriculture and Food entry questionnaire (phase 2)
5 = Curtin University start of day 1 questionnaire
6 = Department of Agriculture and Food exit questionnaire (phase 1)
7 = Department of Agriculture and Food exit questionnaire (phase 2)
8 = Department of Agriculture and Food grant completion report
Note: Transformed data were only used where comparisons were required; otherwise, untransformed data were used.

Appendix 8. Regression analyses

Table A8.1: Summary of multiple regression analysis predicting influence of demographic characteristics on attitudes toward the future of farming

Variable	B	SE_B	β	t	p
Education (TAFE)	0.05	0.32	0.02	0.17	0.87
Education (University)	-0.06	0.30	-0.02	-0.18	0.86
Education (School)	0.07	0.30	-0.04	-0.24	0.81
Age (35-44 yrs)	0.16	0.29	0.07	0.54	0.59
Age (25-34 yrs)	0.24	0.33	0.08	0.74	0.46
Age (55-64 yrs)	0.20	0.27	0.08	0.74	0.46
Age (under 24 yrs)	0.29	0.38	0.06	0.75	0.45
Age (45-54 yrs)	-0.22	0.28	-0.17	-0.81	0.42
Employed off-farm	-0.13	0.15	-0.06	-0.87	0.38
Intercept	-0.58	0.41	-	-1.40	0.16
Farming in 5 yrs (unsure)	0.42	0.23	0.16	1.85	0.06
Gender (male)	0.30	0.14	0.14	2.08	0.04
Farming in 5 yrs (yes)	0.48	0.20	0.22	2.33	0.02

$p = 0.04$
adj. $R^2 = 0.04$
$n = 264$
Education is compared to post-graduate; Age is compared to >65 years; Farming in 5 years is compared to 'no'; Gender is compared to female; Employed off-farm is compared to 'no'
B = unstandardised coefficient; SE_B = standard error of coefficient; $β$ = standardised coefficient

Table A8.2: Summary of multiple regression analysis predicting influence of demographic characteristics on attitudes toward climate

Variable	B	SE_B	β	t	p
Education (TAFE)	0.00	0.15	0.00	0.01	0.99
Education (University)	-0.02	0.14	-0.03	-0.17	0.87
Age (45-54 yrs)	0.04	0.17	0.04	0.21	0.83
Age (35-44 yrs)	-0.06	0.18	-0.06	-0.33	0.74
Age (25-34 yrs)	0.07	0.19	0.06	0.38	0.70
Farming in 5 yrs (unsure)	0.06	0.13	0.06	0.44	0.66
Age (under 24 yrs)	0.11	0.24	0.06	0.48	0.64
Age (55-64 yrs)	0.12	0.17	0.11	0.62	0.54
Education (School)	0.13	0.15	0.17	0.91	0.37
Employed off-farm	0.09	0.08	0.11	1.05	0.30
Farming in 5 yrs (yes)	0.16	0.12	0.19	1.42	0.16
Intercept	-0.36	0.23	-	-1.59	0.11
Gender (male)	-0.15	0.08	-0.18	-1.89	0.06

$p = 0.11$
adj. $R^2 = 0.05$
$n = 264$
Education is compared to post-graduate qualification; Age is compared to >65 years;
Farming in 5 years is compared to 'no'; Gender is compared to female; Employed off-farm is compared to 'no'
B = unstandardised coefficient; SE_B = standard error of the coefficient; β = standardised coefficient.

Table A8.3: Logistic regression predicting likelihood of agreement with the statement 'Strategic planning is useful to my farm business to plan for the future'

Variable	*B*	SE	Wald	*df*	*p*	Odds ratio	95% CI for odds ratio Lower	Upper
Farming in 5yrs (yes)	0.00	0.47	0.00	1	0.99	1.00	0.40	2.50
Age (25-34 yrs)	-0.14	1.49	0.01	1	0.92	.87	0.05	16.10
Farming in 5 yrs (no)	-0.18	0.64	0.08	1	0.78	.83	0.24	2.93
Age (55-64 yrs)	-0.23	0.80	0.08	1	0.77	.79	0.16	3.83
Age (35-44 yrs)	-0.38	1.18	0.10	1	0.75	.68	0.07	6.88
Age (45-54 yrs)	-0.59	0.93	0.40	1	0.53	.56	0.09	3.44
Education (School)	1.03	0.98	1.11	1	0.29	2.81	0.41	19.27
Gender (female)	0.53	0.47	1.28	1	0.26	1.70	0.68	4.27
Education (University)	1.35	0.98	1.90	1	0.17	3.85	0.56	26.28
Age (under 24 yrs)	-2.38	1.70	1.97	1	0.16	.09	0.00	2.56
Constant	2.66	1.87	2.02	1	0.16	14.30		
Education (TAFE)	1.87	1.07	2.97	1	0.08	6.33	0.78	51.61
Employed off-farm (no)	-1.89	0.66	8.19	1	0.00	.15	0.04	0.55

$\chi^2(13) = 22.287$, $p = 0.05$
Nagelkerke $R^2 = 0.13$
Model correctly classified 86% of cases
$n = 297$
Education is compared to post-graduate qualification
Age is compared to >65 years
Farming in 5 years is compared to 'unsure'
Gender is compared to male
Employed off-farm is compared to 'yes'

Table A8.4: Logistic regression predicting likelihood of people that had not participated in the Farm Planning program having a strategic plan based on age, education and gender

Variable	*B*	SE	Wald	*df*	*p*	Odds ratio	95% CI for odds ratio Lower	95% CI for odds ratio Upper
Age (25-34 yrs)	-0.04	0.30	0.02	1	0.90	0.96	0.54	1.73
Gender (Male)	0.03	0.16	0.03	1	0.86	1.03	0.76	1.40
Age (55-64 yrs)	0.07	0.28	0.06	1	0.80	1.07	0.61	1.87
Age (45-54 yrs)	-0.12	0.27	0.18	1	0.67	0.90	0.53	1.51
Age (35-44 yrs)	0.18	0.28	0.41	1	0.52	1.20	0.70	2.05
Education (TAFE)	0.30	0.32	0.85	1	0.36	1.35	0.71	2.55
Education (University)	-0.00	0.34	0.00	1	0.36	1.35	0.71	2.55
Age (24 yrs or under)	0.70	0.57	1.48	1	0.22	2.00	0.66	6.06
Constant	-1.97	1.30	2.31	1	0.13	0.14		
Education (School)	0.55	0.31	3.17	1	0.08	1.73	0.95	3.18

$p = 0.87$ (Hosmer and Lemeshow goodness of fit test)
Nagelkerke $R^2 = 0.02$
Model correctly classified 68% of cases
$n = 1123$
Education is compared to post-graduate qualification
Age is compared to >65 years
Gender is compared to female