Critical Breaking Point:

the effects of climate variability, climate change and other pressures on farm households

A Report for the Birchip Cropping Group

and the Sustainable Agriculture Initiative Platform Australia

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Foreword

It is my pleasure to present the 2012 *Critical Breaking Point* report. This highly anticipated publication is a comprehensive insight into our farming community, their private experiences, thoughts, pressures, anxieties and dreams.

Building upon previous *Critical Breaking Point* research, this report reflects farming life in early 2011, immediately following record floods which deluged the region, after ten consecutive drought affected seasons.

Having the privilege of understanding how our farmers respond to climatic challenges, how they adapt against adversity, how they celebrate community and how they continue to love rural life, is an honour.

Through *Critical Breaking Point* we are given an insight into what our farmers, our community, our region, our businesses and our families need to do to remain sustainable, viable and indeed profitable through highly challenging conditions.

I encourage you to read this report in its entirety, listen to the messages contained within and help BCG to implement projects and programs that can fulfil its recommendations.

Yours sincerely

David Chamberlin

CEO – Birchip Cropping Group

BCG

BCG (Birchip Cropping Group Inc) is a not-for-profit agricultural research and extension organisation led by farmers from the Wimmera and Mallee regions of Victoria.

BCG is recognised nationally and internationally for its innovation, enthusiasm and impact. It is widely acknowledged as a model for independent farmer-driven research and information transfer to the agricultural community. BCG's research and communication activities provide evidence, support and tools for improving farm management practices and profitability.

BCG is known and valued for its exciting, stimulating and educational communication strategies. It is highly respected by farmers, researchers, industry and government as a credible and independent organisation.

Acknowledgements

Exploratory, qualitative social research is not common in agriculture. It is inherently risky, as outcomes can be uncertain. This project would not have been possible if it were not for the open-mindedness to this form of research of all those involved. By providing a precious window into people's private experiences and thoughts, this research touches on many topics which are inherently sensitive, but also crucially important.

This project is especially indebted to the interviewees who so generously shared their time, homes, thoughts and feelings, despite the frequent logistical, emotional and relational challenges. It is an honour to have had the opportunity to speak with them and reflect on their often intense and complicated experiences and situations. To have been permitted to do this not just once, but several times, is a real privilege.

The role of the talented local interviewers was vital. The invaluable assistance of those undertaking the final round of interviews - Noreen Jones, Trish Lehmann, Sarah Barber and Nola Wright - as well as those involved in earlier stages is highly appreciated. The project benefited considerably from the personal energy and care they brought to their work. Thanks also to Margaret O'Keefe for helping set up the project and to BCG staff for their administrative support, including Harm van Rees for his detailed knowledge of farming and David Chamberlin for his intellectual input and patience. Charlotte Catmur at the University of Melbourne provided excellent organisational and analytical skills as research assistant and Lauren Hull generously contributed her editing abilities. Thanks also to RM Consulting Group for generously allowing the author to continue the work after she left.

This project would not have been possible if it were not for the commitment given to it by the ever-reliable and encouraging BCG team. I particularly thank former CEO Alexandra Gartmann, who helped to establish the partnership with the Sustainable Agriculture Initiative Platform Australia (saiplatformaust.org). This innovative and independent association operates across the agriculture, food and fibre chain with the aim of changing practices to improve sustainability outcomes in a practical way. It is a unique global initiative, founded in Europe 10 years ago by world-leading food companies with a shared belief that a common food and agricultural industry platform can promote sustainable agriculture at a global level. I wish to express my gratitude to SAI members Nestle, Goodman Fielder, Meat and Livestock Australia and Fosters Group for their funding and invaluable support at this crucial final research stage.

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Executive Summary

Introduction

Extreme climate variability over the last decade has highlighted the need to better understand how members of the farming community identify, interpret and respond to both the acute and the long-term challenges they face. With support from the Sustainable Agriculture Initiative Platform Australia, Birchip Cropping Group commissioned the following qualitative research into the experiences and perceptions of farm households in the wheat/sheep zone of the Wimmera/Southern Mallee region of northwest Victoria, Australia, during a period of striking change. In addition to non-climatic factors such as the deregulation of the Wheat Board in 2008, this change includes the dramatic shift at the end of 2010 from extended drought conditions to extreme wet and flooding, thanks to unusually late and severe rain events which for many devastated what could have been a long awaited 'bumper crop' but revitalised a sense of potential about the future.

Building on prior interviews during the drought, interviews conducted for this report occurred in the midst of the post-wet cleanup and were characterised by mixed emotions. They provide a unique window onto the multiple positive and negative effects of (excessive) water for farming communities, both personally and professionally. The report highlights the crucial importance of considering within-year climate variability and the sequencing of climatic extremes in understanding the effects of climate on households. It also highlights the way these effects interact with complex personal, familial and community factors to influence people's views of decisions about their future.

The resultant qualitative research provides a rich picture of the complex interaction of climatic and non-climatic adaptation challenges faced by a diverse group of randomly-selected farm households. Attentive to short- and long-term risks and opportunities, the work adds an important and unprecedented longitudinal empirical contribution to the growing research literatures on agricultural communities, drought and climate change.

While this Executive Summary has been written as a stand-alone document (and thus is more detailed than usual), readers are encouraged to read the report in its entirety in order to appreciate the diverse, complex and insightful perspectives of the interviewees.

The aim of this project was to better understand how farm households experience, make sense of and respond to climate variability in the context of other challenges, and to discover what influences their perceived resilience. To fulfil this, a series of 142 in-depth, face-to-face, semi-structured interviews were conducted with members of 56 farm households, involving 109 interviewees over a four-year period (see Appendix A). Interviews were conducted by trained local interviewers in February 2007 and February 2011; a subset of twenty households was interviewed in September 2007 and February 2008. A substantial report summarising the findings of the first three rounds of interviews (www.bcg.org.au/cb_pages/publications.php) was published in May 2008. The combination of breadth and depth provided by this empirical work is highly unusual and valuable.

The current report provides insight into farm households' more recent situation, drawing primarily on 42 interviews conducted with 88 individuals around February 2011 following a period of extremely wet conditions. It also comments on change over time, including the fact that most farmers had remained on their farms to the time of the final interviews, despite many having earlier indicated that they were seriously considering leaving (2007 and 2008).

The following nine key findings and sub-points emerged:

1. Between 2008 and 2010, most farm households eroded their reserves, adapted and stayed.
    - 2008 and 2009 continued the run of dry and difficult years
    - during the drought, many households began to adapt to dry conditions
    - many depleted their physical and financial assets to cope with drought
    - some people's mental health and morale were eroded
2. The rain received in 2010/11 brought great relief and promise.
    - some farmers invested heavily in 2010 in response to early rain
    - the wet conditions rejuvenated many people's hopes and some people's incomes
    - jointly facing the floods revived some people's connection with their community
3. The wet conditions brought disappointment, disruption and exhaustion.
    - for some people, the lost potential of 2010 was deeply disheartening
    - for all, the wet created a wide range of delays, disruptions and extra work
    - many did not have time away from the farm to rest, recoup and reflect
    - some drought responses inadvertently worsened the negative impacts of the wet
    - despite fluctuations, most people's financial and emotional states were similar to those of 2007
4. Exposure to climatic stressors has increased awareness of other vulnerabilities.
    - many people now have a stronger awareness of their system's vulnerabilities
    - exposure to falling terms of trade is an ongoing and serious concern
5. There exist divergent views about climate change and its drivers.
    - the extreme wet reinforced awareness of climate variability and, for some, its naturalness
    - scepticism about climate science is high, but some believe humans have influenced climate
6. In approaching 2011, people were focused on re-establishing, but in different ways.
    - people were keen to put recent difficulties behind them and get back to normal
    - some were focused on ongoing climate risk and were approaching the year conservatively
    - some were approaching the coming season "as usual"
    - some were fuelled by a strong desire to "catch up" and regain professional momentum
    - business strategies included optimisation, conservatism and a growing degree of opportunism
7. Endurance is widely valued, but is viewed critically by those who emphasise innovation
    - endurance is evident, valued and widely expected
    - some query the feasibility and rationality of persisting without changing
    - some women are ambivalent about farming life and about their personal resilience
8. Most people are open to leaving, but have strong reasons to stay and are finding ways to do so
    - many voluntary and involuntary reasons influence people's decision to stay or leave their farms
    - future and past generations are perceived as reasons to both continue and leave

- those who are leaving farming are doing so in a gradual, flexible way
- farming life is increasingly intense, stretched, mobile and personalised

9. People are connecting with the rural community in distributed, private and positive ways
    - people's engagement with the rural community is becoming less place-based
    - advisors and farmer groups are widely valued for intellectual and social support
    - there are numerous basic improvements needed to support rural communities.

For most farm households, the last few years could be described as a series of near wins that collectively created a near loss. As the drought dragged on and people increasingly craved the return of "normal life", a series of late season collapses in crop yields progressively absorbed their assets, energy, motivation and resolve. With their personal and professional reserves eroded, they began to ask serious questions about their continued presence in farming. As one farmer reflected:

> *When I signed up for the deal to be a farmer, I don't think I ever expected that we were going to go through some of this crap that we've been through in the last ... The last 10 years have been horrific, you know [...] It's been a lot harder than I ever really expected it to be [...] The worst thing is that you work your guts out and you go nowhere further forward, you know? You start to wonder [...] I think about [leaving] [...] [Farming] is something that I wouldn't walk away from, but it's bloody frustrating. It's caused us a lot of grief. It's caused me a lot of worry and I'm sure it's caused X [his wife] and Y [his kids] a lot of worry too [...] That sort of stuff becomes - it goes through your mind all the time... I don't think there'd be anyone around that probably doesn't think about it* (40a, M, 40-50).

Some families had to go to extreme lengths to get through the drought, avoiding normal expenses and taking on distant off-farm work, for example. At the time of interview, such strategies had begun to exact large tolls and many people were wondering what they would do if the drought continued.

Thus, early rain in 2010 meant that many interviewees were full of hope that the drought was about to break. The promising signs meant that many extended themselves emotionally and financially in the hope of a bumper crop and rapid recovery. Late in the season, crops were looking 'beautiful' and the increasingly familiar obstacle of failed spring rainfall seemed to have been avoided. But just as harvest began, rain arrived, intense and unrelenting. While some escaped relatively unaffected, many crops were lost or badly damaged and extensive flooding occurred in some regions, creating serious issues for many of those with livestock. The geographically patchy character of the effects and the role of management decisions about the timing of harvest or type of crop, for example, meant that some were far worse affected than others. Overall, many were devastatingly disappointed and left wondering what they could and should have done differently to reduce the losses they incurred. Some described it as the worst time they had had in farming. It was also one of the busiest. The extreme nature of the wet conditions introduced many disruptions and difficulties, from emergency flood responses and rushed harvesting, to extended clean up, repairs and months of weed control work. With many holidays cancelled, exhaustion was widespread.

But the water did offer a desperately welcome reprieve not only from drought but from the mental vision of unrelenting future dryness that had begun to haunt many. Many interviewees were also buoyed by the opportunity the subsoil moisture posed and were prepared to carry considerable

costs and risks in order to pursue it. Although tinged with anxiety, optimism bounced back quickly. Stores of creative energy pent-up during the drought were expressed in a strong desire to quickly "move on" and regain some positive momentum. Boosted by a confidence that not only had external conditions improved but that they had survived the prior poor period, some farmers gave the strong sense that they felt the farming game to be "back on" after years of stalled progress and accumulating doubts. As one young farmer said, the rain was *'hugely game changing'* (15c, M, 30-40). Some farmers described the sense of wanting to *'go in with a little bit of gusto'.* As one put it:

> *The drought changes our view a little bit and it's hard not to - it's difficult not to - scramble now and try and get money quickly, to push the farm a bit hard now that there's an opportunity to produce and try and catch up on what you've lost [...] The hardest part I reckon in our business is [that] we are risk takers at the end of the day, and if you keep losing your bet time and time again, it gets harder to bet each time [...] So, I think, while we've been resilient in the sense that we keep going, there's been a build-up to the point of almost desperation - that sort of need to feel like you're getting ahead* (26a,M,40-50).

The combination of recovery and preparatory work, exhaustion and elation, was all-consuming. Some interviewees noted that they could barely remember what it was like to be in drought. As a consequence, there was little time for critical reflection on strategic direction.

One area that requires reflection is the positives and negatives of different drought adaptations. Prior to the extreme wet, virtually all households had made efforts to adapt to the drought conditions. Some of these adaptations were incremental or "technology level" changes, such as switching to drought-resistant varieties, and others were more systemic, such as increasing the proportion of sheep in the business or buying land in a wetter zone. While many adaptations were targeted at increasing the capacity of the business to manage dryness (by reducing the business's exposure to dryness and the impacts of dry conditions on the business), some were targeted at increasing the household's general strength or resilience (e.g. expanding and diversifying the income base with off-farm income).

Across all categories, the extreme wet exposed unanticipated weaknesses or trade-offs in some of these strategies. Exacerbated in some cases by the considerable investment households had made in the adaptations, these weaknesses included the fact that many sheep became badly fly blown or short of feed in the wet, some drought-resistant crop varieties seemed especially susceptible to sprouting, some off-farm work reduced people's ability to protect their own property from flooding and was difficult to maintain when road access was reduced by flood damage, and some land purchased in wetter zones during the drought was particularly badly water damaged. In other words, the particular sequence of climatic extremes experienced by these farm households highlighted that adaptation efforts need to take into account not only extant or predicted drying but also ongoing and potentially increasing climate variability.

A broader adaptation apparent among some households is the development of more spatially distributed modes of farming and living. Accentuated but not driven solely by climatic factors, some households are accommodating their multiple priorities and pressures by moving between widely distributed farm businesses, employment and children's activities. Stretching existing categories of what it is to be a farm family, intricately orchestrated, highly personalised and long distance

movements characterise many individuals' and families' lives in the farming sector. Combined with the diversity of goals and strategic directions being applied in the farm businesses themselves, the result is that households' circumstances are highly differentiated on a daily as well as annual and inter-annual time scale. Whether as a permanent or transitory response to the possibility of leaving, many households are positioning themselves part way between staying and going, bringing into question what it means to be "in" or "out of" farming.

This new more mobile, flexible and complicated approach to farm family life includes in some cases the decoupling of farms and homes. A practical outcome is that some farmers and partners are spending much more time travelling to their properties or off-farm work. Combined with other factors stressing the need to travel (e.g. increasingly distant agribusiness, health or education services), such a strategy comes with attendant personal, financial and environmental costs. The related dependence on vehicles and road infrastructure proved to be a weakness during the extreme wet, with some roads impassable for extended periods of time. Attending to geographically-distributed responsibilities also decreases the amount of time available for other things, including being on farm attending to time-sensitive work. This increases the intensity with which such on-farm work needs to be performed when present. It also escalates the consequences of having anything go wrong. For many farmers who are simultaneously juggling the growing complexity of modern farm businesses, operating at stretched capacity in this way means that there is little room in the system for error or additional tasks, which is why disturbances (such as the extra work created by the extreme wet) can be so disruptive.

At the time of interview, the vast majority of original interviewees remained in farming. At the same time, virtually all interviewees indicated that they have actively engaged with the increasingly familiar question of whether they can or want to stay. Some women especially expressed doubts about their personal and family endurance, both as a cultural ideal and in their achievement of it. Reflecting the fact that many see farming from a more external perspective than their partners, some expressed uncertainty and concern about both their circumstances and how they and their family members were responding to them. They pointed to differences in their commitment to farm life relative to those of their husbands and the fact that such differences have been brought to the fore by the climatic challenges of recent years. As one stated about her and her husband's situation:

> *You know, realistically, it's probably 10 years to go, to pay back what we need to borrow. Yeah, so I find it a struggle at the minute [...] perhaps for myself I'm not so connected to the land. So therefore I wonder, why do it? You know, I wonder, why do it? I wonder why for ten years you look out the window and look for rain and then you get it and then look out to see if it's stopped [...] We [her husband and herself] have always had a different passion to a degree. Not that it's major but... It's not just about this year [...] There's differences of whether we should just keep pushing on. I get the fact that we need to, but it doesn't mean I deal with that very well* (11b, F, 40-50).

Many people seem increasingly unwilling to make what they see as unreasonable personal or family sacrifices. Some male farmers discussed altering their work arrangements in order to better accommodate their female partner's needs. Others with children at home indicated that they are concerned to ensure that remaining in farming benefits their children. As one woman who has had

two children since the last interviews commented, she and her husband have been asking themselves:

> *Are we making the right decisions on the farm that are going to build the life for them that we want to provide?* (26b, F, 30-40).

Her husband, a quintessential "leading" farmer, commented that, while he felt renewed enthusiasm about farming following the rain, he could see other priorities:

> *If the farm gets moved on to somebody else, it's not the end of the world. I'll be staying here as long as I can. I enjoy it, but it's not the be all and end all. I'd walk away with them tomorrow rather than them walk away from me, if you know what I mean* (26a, M, 40-50).

Some older interviewees similarly expressed an unwillingness to prioritise farming over personal or family needs, with some mentioning for example that, in reaction to the long hours and stress they have endured over recent years, they plan to work less in order to enjoy life more, illustrating further the blurred line between staying in and leaving farming.

Stage of life influences the type and degree of difficulty the recent climate extremes and other pressures have posed for farm households. Some young farmers for example pointed to the particular challenge they faced in managing ten years of drought while trying to expand and establish their businesses, as they feel they need to do in order to be viable in the long term. One explained:

> *If we want to be here 30, 40, 50 years down the track, which I do, [expansion] had to be done. So I had to try it [...] But the last 10 years has been the worst time in living memory to expand. Every business goes through business cycles [...] and if you're at that age to expand the business and you have the drive and the willingness, but get 10 years of drought, you can't become self-reliant because you can't pay the debt off ... The weather's penalised us. It's been my choice and decision to want to do it, so I've only got myself to blame, but it's been bad luck too ... It's just been terribly difficult to expand and become self-reliant then get this drought. It's impossible* (2a, M, 30-40).

These and other farmers wish to keep farming, but are questioning how they are meant to make it all work. This includes managing an uncertain climate, family needs and other elements of their systemic context, such as their reliance on financial institutions, other businesses, markets and local services. Shaken by the drought and flood-induced difficulties they have been facing, many farmers seem increasingly aware of and concerned about serious contradictions in the underlying model of contemporary farming, including the ongoing decline in their terms of trade. This greater appreciation of the strengths and weaknesses of their situation is itself an adaptation and strength.

The mood of questioning among farm households extends to queries about the conventional notion of resilience as endurance. Most interviewees interpreted resilience as a matter of persevering. While emphasising how exceptionally tough things had been for them, they represented perseverance as an essential but normal and expected attribute; one that had been vindicated by the recent positive change in conditions. However, others questioned the feasibility and rationality

of merely enduring without reassessing and altering direction. As one young farmer commented critically about his own situation:

> *We've done it [been resilient] I suppose. But [...] certainly we haven't come out of this 10 year period in flying colours, and it's pretty hard to say I've been resilient when we're on our knees [...] That may be what you call resilience: stubborn, too frightened to take another jump somewhere else. I don't know. A lot of people call it resilience because it's a positive word, I suppose* (18a, M, 30-40).

The distinction between perseverance and innovation represents one of two axes that characterise the ways different farmers are approaching coming seasons and the management of volatile (and/or unfavourable) climatic and economic conditions. The second axis is a spectrum from a profit maximisation approach at one end to an income stabilisation approach at the other, reflecting differences in whether people most want to regain a 'normal' bank balance as quickly as possible or re-establish a stable and secure approach to earning that income. The intersection of the two axes creates four hypothetical strategic ideals: an optimisation strategy (a consistent focus on profit maximisation); an opportunism strategy (a focus on profit maximisation when at all possible); a cautious of flexible opportunism approach (a careful approach interspersed with calculated risk-taking in pursuit of strong profit years when conditions seem favourable and resources can be expended) and low cost (a consistent focus on financial risk avoidance). There are signs of a shift from an optimisation strategy to both a greater degree of conservatism (towards income stabilisation and avoidance of downside risks, by choice or necessity) and opportunism (responsive to conditions in terms of pursing upside risks when feasible), thus favouring the 'flexible opportunism' approach.

People's plans for the 2011 season were predicated on a mental assessment of what sort of conditions they thought would or could emerge in the immediate and longer-term future. This was not a straightforward process: it involved reconciling their own and others' experiences, memories, and assessments of what was happening. As such, it involved engaging with the unpopular topic of human-induced climate change. Confusion and unease about the subject of climate change was exacerbated by people's acute awareness of its highly politicised nature, not just nationally but in their more immediate rural context. Some interpreted recent extreme variability as a sign that "something is going on" with the climate and were open to the idea that it is shifting longer-term. Many were nevertheless highly sceptical about its human cause. Those who did believe human actions are partly to blame defended their view on the basis of first principles, not scientific opinion. In general, there was a strong reliance on personal climate observations and knowledge, with recent extreme variability incorporated by many into their existing understanding of the unpredictability of farming conditions. In contrast to this reification of variability, there was a general sense that human-induced climate change involves an inexorably drying climate, which is why many interpreted the recent wet as evidence that climate change is not occurring.

One longer term trend not contested was the mounting challenge of maintaining rural populations, amenity and services. People were explicit about the importance of quality towns in keeping them and others in the region. As two noted:

> *Got to keep the people happy in the communities to get them to stay here* (11b, F, 30-40).

> *Just have to keep making the town attractive enough to get people to keep the schools and everything going. Every now and then it gets a bit scary, like with the schools - class numbers and that* (20b, F, 30-40).

Beyond the consideration of mere 'numbers', some interviewees discussed the importance of members of the local population being active in the community in order to 'count'. Some new entrants, for example, were not seen to effectively stem depopulation because they were too passive. A number of interviewees indicated that one thing they want to re-establish in their "post-drought lives" is more active participation in local organisations. At the same time, the issues preventing them from being more involved were recognised as more than a short-term drought-induced difficulty.

A common activity required by community members is applying for grants in order to secure necessary funding, given that *'there's not much excess money'* (30a, M, 30-40) around. Numerous interviewees noted the ineffectiveness and stressfulness of having initiatives funded only for short periods or of making small changes: continual expenditure of precious time and energy on funding applications to attain a degree of continuity or to make lasting improvements was deplored. As a couple of interviewees stated:

> *Fundraising - it would be great to be able to cut out fundraising and to get big lump sums to each club* (11b, F, 30-40).

> *From my mind, it doesn't really matter who's doing it [agricultural research], as long as there is some certainty that they will receive funding to be able to continue to do it* (18b, F, 30-40).

Another noted that complicated grant applications themselves require capacities that some people do not have: a form inequity inherent in the system:

> *I also have noticed in the past few years, there seems to be a trend towards grants for everything. The only way to get support of funding for something is to go through the grant process. It only hit me - we were actually filling out a grant, it was at a meeting – and there was another guy there who was an older farmer, sitting beside me, and he was having trouble filling it out. It just struck me then and there that the grant process disadvantages a lot of people* (18a, M, 30-40).

A wide range of basic community assets and services were mentioned by interviewees as requiring support in their community. Reflecting the deeply systemic and complex nature of the challenges they face, many interviewees struggled to isolate one or two key actions that could be taken, but specifically called for assistance to provide, improve or maintain:

- clubs and organisations, including but not limited to sports clubs
- schools, kindergartens and childcare services, including school bus services
- health services, including doctors, hospitals, aged care, social work, counselling and wellbeing based services such as men's fitness groups
- sports and recreation facilities, including swimming pools, lakeside facilities and town parks
- police (absent in many towns)
- road infrastructure and service stations

- an increased number of shearers, contractors and agricultural workers
- the Rural Financial Counselling service
- agricultural research, development and extension, (on varieties, pest management, marketing, financial management, and OH&S)
- new industries, including non-agricultural industries to "drought proof" local economies.

As a symbol of community vitality, such community-wide initiatives offer existence value to all community members as well as direct instrumental value to users. This is especially the case if the way in which they are externally supported helps to build community cohesion, capacity and morale at the same time. As one woman commented:

> *I think that if there's programs in place that actually help communities help themselves, I suppose - help them work together and bring them together and provide them with opportunities to work on things together. I think that's definitely going to be the way forward. I think one of the hardest things in a rural sense is seeing towns disintegrate because there's people moving away, had to move away, off-farm or whatever [...] some farms getting bigger at the expense of other family farms that have had to - couldn't survive. Young people moving away because they don't want to be involved in - they've got other opportunities and probably not going to come back, necessarily, or don't have any intention. That side is, I think, pretty hard. Because you can see that the community doesn't have the most ... I think having children, that's been one of the hardest things for us to look at and think, "How much future is there here for our kids?" So any programs that are in place that actually make you feel there is [a future] would be good…* (18b, F, 30-40).

Interviewees were asked specifically about the role of agricultural research, development and extension organisations such as the non-profit farming organisation Birchip Cropping Group (BCG). With the caveat that BCG is behind this research project (and thus people may have felt obliged to be positive about them), the overwhelmingly positive impression received about the organisation's work suggests that its efforts characterise the sort of externally-assisted but community-driven and practical, capacity-building initiatives people are after. Interviewees specified the importance of having locally-based, practical agricultural research to assist them in their farming decisions (about varieties, for example), and also complemented the organisation on taking seriously the broader social issues in which farming is embedded. Although numerous people mentioned the difficulty of accessing BCG activities due to time and financial constraints, many highlighted that the importance of such groups has been heightened for farmers in general by the relative absence of government in this role. More generally, the importance of credible information and trustworthy advice was highlighted in enabling farmers to effectively manage their businesses, reflecting the pace of change, complexity of farming, and risks they face. In particular, private sources of agricultural advice were frequently mentioned as an essential business asset.

The use of private advisors reflects a broader pattern of relying on private relationships such as intimate groups of friends rather than large community clusters and, in turn, the more individualised, differentiated existences some farm households are now leading, involving connections with multiple and often non-local towns. Although place-based groups are giving way to highly personalised networks of social relations, the importance of social support in helping people through difficult times such as drought and flooding was emphasised, and some commented that

they miss larger community- wide get-togethers. As emphasised in the first CBP report, it is by interacting with diverse others that people are able to gain a sense of what is happening in their community, and by extension, make better sense of what is happening in their own lives. Such interaction is also important for enabling social learning of the sort that is needed for communities to collectively adapt to emerging challenges such as climate change. Conversation is needed about what people have tried and what did and did not work. Conversation is also needed about some of the broader systemic factors that shape people's collective existence. This includes discussing the role of 'conversation and emotional norms' at work in rural communities that seems to privilege public expressions of positivity at the expense of realistic assessments of systemic threats and possible strategies for addressing them.

Experiences with the release of the first *Critical Breaking Point* suggest that some people will tend to perceive the detailed interviewee responses in this report as unrepresentatively negative. While the sample is of course limited, the randomly sampled and carefully analysed nature of this research, plus explicit comments by interviewees, suggests that in large part such views are considered unrepresentative because people are accustomed to communication with others shaped by a strong cultural norm that expects, even demands, that troubles and concerns be kept private. When given the chance to reflect, and guarded against peer recrimination by the anonymity of the interview environment, interviewees from diverse backgrounds honestly, if haltingly, expressed negative as well as positive emotions in a way that is absent from most public rural discourses, and this full range of views is represented in this report. Voluntarily repressing anxieties and concerns can be an adaptive strategy for getting through short term crisis situations. When this norm or habit becomes ingrained and involuntary, however, it can obstruct realism, sharing, learning and improvement.

Similarly, forgetting can be adaptive, but equally problematic if continual. Interviewees may themselves be surprised to read the responses they gave back in February 2011, particularly if their situation has markedly improved. To the extent that these recorded feelings point to deeper issues that remain to be addressed, it is important that, when people have the energy, they look back and deepen their understanding of their situation, of their own and others' reactions, and of how they could better position themselves for the future challenges that will inevitably and perhaps increasingly emerge. This report may help with this collective reflection process.

Recommendations

There are many positive ways in which those outside the farming community could be of assistance, if working in conjunction with farm households themselves. As seen in the report, quality of life in rural areas underpins farm household resilience. Substantial, externally-enabled, community driven initiatives in this area would help improve both farming and family outcomes and avoid some of the extreme adaptations farm families were forced to make during the drought. Overall, there are two main sorts of improvement needed, reflecting the way resilience requires attending to cross-scale and cross-sectoral linkages:

- well-funded, community-based initiatives to contribute to the long-term wellbeing and standard of living of rural people and places, including the improvement of infrastructure and basic services
- well-funded, community-led discussion about the broad issues confronting farm households, including systemic analysis of vulnerabilities, the positives and negatives of different potential adaptations (from technical developments to off-farm actions) and their performance over time under different conditions and their interaction.

Many valuable community-based ideas about where assistance is most needed were provided by interviewees. Some farming-specific areas for potential support also emerge from the overall findings described above. An incomplete list, these suggestions aim to stimulate discussion, not prescribe actions:

- systemic research into the positives and negatives of different coping and adaptation strategies and their performance and interaction over time, given the vulnerabilities introduced by some adaptations adopted by some farmers during the drought
- mechanisms for and advice on time management, given the powerful influence of time pressures on many aspects of farming individuals lives, including how to allow for a necessary degree of flexibility in response to uncertain conditions. (This could include the creation of a new profession of "Executive farmer assistants" tasked with assisting farmers to manage multiple business concerns and office-based tasks, including grain marketing)
- development of affordable time-saving devices, such as rapid fencing options, distant water-level measuring technologies, including the provision of quality roads to further address the issue of time pressures
- mechanisms for and independent (non agri-business) sources of advice on grain marketing options, including the possibility of cooperation between farmers, given that this was discussed as a significant new source of uncertainty and strain on farmers
- mechanisms for and advice on strategic directions, including analysis of the positives and negatives of different strategic approaches over time under conditions of variability, given emerging questions about what is the most appropriate approach. (This could include the possible creation of a scheme offering farmers (individually or collectively) insights from advisors, mentors or an external "board")
- facilitation of social learning between members of the farming community with forums, webinars, workshops and discussion groups tackling strategic as well as technical issues, given the fact that individuals seem more isolated professionally and personally but also in need of more insight into what others are doing and have learned about managing the new conditions
- facilitation of farmer group or local scenario planning exercises to set in motion the process of envisaging possible futures in local agriculture and to identify key factors that help people to think about the possible futures of their communities and regions to inform their individual and collective decisions
- development of accessible methods of recording, analysing and regularly reflecting on farming conditions and decisions in order to facilitate timely feedback and enhance learning and understanding, given the need for more adaptive management
- development of systems to foster the sharing of equipment and swapping of labour in order to reduce the financial pressure of investing in such assets

- provision of improved climate science information, emphasising the ongoing nature of variability, what is certain and uncertain and information about different types of uncertainty, to improve accurate understanding of climate and help people become better prepared for further inter- and intra-seasonal variability of the sort they have recently encountered
- subsidising of farmer group memberships and/or provision of long-term funding to farmer organisations to increase access to relevant research information, given the decline in government provision of such support and the growing need for it in light of the complexity of farming.

As the rollercoaster ride of climatic variability continues in the context of longer-term challenges, farm households need to simultaneously adapt to short and long-term pressures, building their specific and generic resilience as they do so. The interconnectedness of sequential climatic extremes with farming, family and rural community situations highlights the broader linkages that characterise the system of which we are all a part. Sharing experiences, perspectives and reflections are a key part of the learning that we need if we are to successfully adapt society at large to more uncertain futures.

Finally, to assist further adaptation, fruitful areas for further research include further ethnographic and longitudinal work into the cascading effects of climatic extremes on farm households in the context of other pressures. Detailed analysis of the positives, negatives and tradeoffs of different farming strategies and adaptations in light of climate variability and change is also needed, noting the diversity of farm situations. At present the adoption or success of adaptations is limited by the following, among other factors:

- adequate knowledge about the full systemic characteristics, including the near- and long-term risks, of different adaptation options and strategies. This needs to take into account how different adaptations perform in the context of interacting climatic stimuli (e.g. drought then flood) as well as in response to single climate signals (eg only dryness)
- the ability to manage the risks and financial strain that many adaptation actions involve
- time and energy for devoting to the sort of strategic planning and constant adaptive management that is needed
- insightful understanding of what climate change actually entails, including sources of uncertainty and certainty, the ongoing role of climate variability, and the critical role of non-climatic effects such as policy and social changes directed at mitigating greenhouse gas emissions.

More specifically, the value or otherwise of dampening rather than chasing variability in production (through low-input versus opportunistic strategies) has implications for the sort of enabling systems farmers need, and demands further research. The appropriateness of existing policy pressures to expand average farm sizes in the face of increasing climate risk also demands critical attention.

1 Introduction

Australian farming has long been conducted in the driest and most variable climate in the world (Howden and Stokes 2010; Kiem, Askew *et al.* 2010). The very existence of today's farm businesses indicates that they have been able to adapt and develop a certain degree of resilience to climatic and other stressors. Buys *et al.* (2011) assert: 'Adaptation defines rural Australia' (p. 11).

An ability to withstand and recover from the impact of adverse events and conditions is of increased interest and relevance in the context of projected climate change and other increasing pressures. Research is becoming progressively more focused on examining how individuals identify, interpret and feel about the acute and chronic stressors upon them, what they want to maintain and what to change, what strategies to adopt and to what effect.

This qualitative research project explores such questions through a longitudinal in-depth study of farm households' experiences during a period of pronounced climate variability (from extreme drought to extreme wet) in the wheat/sheep zone of northwest Victoria. Complementing the growing number of 'snapshot' and quantitative studies of rural communities in times of climate stress, it provides a rich picture of the complex environment and adaptation challenges faced by farm households and how they are negotiating multiple short- and long-term risks. It contributes much-needed in-depth social research into people's experiences of and approaches to adapting to climate variability, climate change and other stressors, presenting their perspective on the complex issues surrounding climate and farming. These are matters many academics and organisations are in the process of striving to better understand. The report also adds a valuable temporal dimension to the current research literature. This temporal dimension is well-suited to examining adaptation, which is usefully defined by Nelson *et al.* (2007) as:

> a continuous stream of activities, actions, decisions, and attitudes that inform decisions about all aspects of life and that reflect existing social norms and processes (p. 397).

Such a dynamic and systemic perspective of adaptation fits with the inherently temporal notion of 'resilience', a term which refers to how easily a system can absorb disturbances (such as climatic extremes) while continuing to function effectively (Walker and Salt 2006; Nelson 2011). More generally, a resilient system is a healthy, well-functioning system in tune with its environment, with capacity in reserve and the ability to develop and change as needed. At an individual level, Berry *et al.* (2011) define resilience as:

> that reservoir of personal psychological coping assets and social capital that provide(s) people with the will and mental toughness to make necessary changes in the face of severe and continuing adversity (p. 4041).

Maintaining resilience over time requires adapting to changing environmental conditions. While a business or household's presence in agriculture today means that it has survived to date, it does not mean that its trajectory over time has been or will be problem-free or positive. Moreover, as in all practice change, adaptation comes at a cost. These transaction and opportunity costs need to be taken into account. Combined with the diverse goals, perspectives, scales and stressors involved, what counts as successful and unsuccessful adaptation over time is far from clear cut.

Like others in rural communities, farm households perceive, experience, adapt to and influence external conditions in multiple and dynamic ways. We need to learn from these adaptation experiences in order to better understand the strengths and weaknesses of different strategies and the influences upon them. As the climate shifts and other changes proliferate, adaptation is of increasing relevance. It is poorly understood and requires a focus on learning. Crucial to learning is reflection; one route to enhanced reflection is formal research. As an example of the latter, this project has the high-level aim of facilitating the sort of reflection, learning and adaptation in which, increasingly, we need to engage in order to strengthen our resilience under climate change variability.

In particular, the aim of this project is to better understand how farm households are experiencing, making sense of and responding to climate variability in the context of other challenges, and what is enabling and constraining their resilience. To fulfil this, it explores the experiences, decisions, adaptation efforts, resilience and needs of farm households in the Wimmera/ Southern Mallee region.

The research is based on a series of 142 in-depth in-person semi-structured interviews with 56 farm households, involving 109 individuals over a four year period (see Appendix A for more information). In almost all cases, the interviews included multiple participants, often from more than one generation. They were conducted by trained local interviewers in February 2007 and February 2011, with a subset of twenty households also interviewed in September 2007 and February 2008. A substantial report, which summarises the findings of the first three rounds of interviews, was produced in May 2008. The current report provides insight into farm households' more recent situations, drawing primarily on 42 household interviews conducted with 88 individuals around February 2011, following a period of extremely wet conditions. It also comments on change over time.

Nine key findings from this project are presented. In summary, these are:

- between 2008 and 2010, most farm households eroded their reserves, adapted and stayed
- the rain received in 2010/11 brought great relief and promise
- the wet conditions also brought disappointment, disruption and exhaustion
- exposure to climatic stressors has increased awareness of other vulnerabilities
- there are divergent views about climate change and its drivers
- in approaching 2011, people were focused on re-establishing different things
- endurance is widely valued but viewed critically by those who emphasise innovation
- most people are open to leaving, but are finding different ways of staying
- people are connecting with the rural community in diverse and private ways

A substantial overview of other relevant research is provided in Section 2.3 below, both to help those interested in developing their understanding of the issues and to explain the significance of this research project. This outlines the main themes of the study – coping, adaptation and resilience – and briefly reviews what is known about Australian agricultural and rural communities' experiences of and responses to climate variability and climate change and to drought in particular. Necessarily interdisciplinary, this review reflects the dual interest of the project in the professional and personal aspects of agriculture. It also reflects the diversity of approaches others have taken to

examining the impact and implications of climate variability and change for Australian agriculture and rural communities, including a number of studies that share important similarities with *Critical Breaking Point.*

Firstly, some background to the project and its location are described.

2 Background

2.1 The 'Critical Breaking Point' study

This report presents the final instalment of the 'Critical Breaking Point' (CBP) study. Started in late 2006, the study has used repeated in-depth interviews with a *randomly-selected* group of farm households to develop understanding of both their situations at particular times and of their trajectories over time[1]. The combination of a longitudinal and in-depth approach is uniquely suited to examining people's experiences of climate variability and change and their decision-making and adaptation. As is discussed further in the Methodology section below, the project utilised a local interviewer approach that sought to build local research capacity in conjunction with completing the current investigation.

This report presents the findings from the final series of interviews, which were funded by the Sustainable Agriculture Initiative Platform Australia (SAI Platform Australia). These latest interviews add great value to the research project as a whole by:

- extending the time period that the research captures, during a period of intense climate variability
- significantly adding to the quantity of data collected by revisiting as many of the original 60 farm households as possible (a further 42 in-depth household interviews with 88 individuals).

Given the valuable longitudinal character of this research, the report not only provides an "update" on this group of farm households' experiences and perspectives, but also considers change over time and reflects on the project overall.

The purpose of longitudinal research is not to replace each previous set of research reflections with new ones, but to build on them. Readers are encouraged to read Report One (Birchip Cropping Group website (http://www.bcg.org.au/cb_pages/SocialResearchProjects.php) as background to this report and as an additional reference in its own right. In particular, Report One provides much more detail about individuals' and households' feelings and decisions in the context of drought. Specific key findings are listed in Appendix C.

The current report focuses on the results of the latest round of interviews conducted in 2011 and reflects on changes since 2007/2008. The timing of this research provided a natural laboratory, capturing a dramatic range of extremes. When the research began in late 2006, the aim was 'to track the experiences of farming households during a time of drought and – it was expected and hoped – a period of drought recovery' (Report One, p. 5). It is not until this last round of interviews that drought 'recovery' has become a relevant topic. At the time of interview, the end of drought was still a recent and uncertain phenomenon and recovery was an ongoing concern. Further work is needed to truly capture the recovery process (to the extent that it continues). This includes the complex interaction between the various positives and negatives of the extreme wet conditions

[1] As outlined in the Methodology section below, there were four rounds of interviews. 60 households were interviewed in February 2007, 20 of these again in September 2007 and February 2008, and 42 again in February 2011 (although 2 were later).

which signified the possible end of drought at the time and which are discussed in this report. It also includes the complex interaction with other changes. These include the deregulation of Australian wheat marketing in 2008 which greatly increased farm businesses' exposure to price risk. They also include rising evidence of, debate about, and policy action on anthropogenic climate change, which 'overlays a new set of challenges on long-standing risks inherent in the practice of agriculture' (p. 1091, (Head, Atchison *et al.* 2011)).

Two motivations drive and shape this research. Reflecting the need for research of societal relevance, it aims to provide insights of value to the local farming community. As Report One stated:

> Understanding the perspectives, concerns and decision-making of farmers and their families at a time when options are restricted by financial circumstances and when confidence has been weakened by a series of dry seasons is vital. The situation and decisions facing many farming households are complex and fraught. Yet, little is known about what exact pressures farming families perceive or how they are responding. Little is known about what their goals for the future are or what obstacles they see in the way. Thus, little is known about how they could best be assisted (p. 5).

Besides providing local value, this research more generally aims to better understand farming and rural life; how climatic extremes are experienced, perceived and responded to and what this can teach us about the challenge of adapting to climate change. Put together, these elements allow consideration of the many factors shaping the wellbeing and outlook of farming communities in the face of climate change and reflection on what enables and constrains efforts to build their resilience.

It is important to note some defining characteristics of this research. In contrast to most research in the agricultural arena, it is primarily qualitative rather than quantitative. This means that it is relatively open-ended. It takes an exploratory ethnographic approach which values people's lived experience and subjective perceptions. It allows topics and themes to emerge from the field and from the data rather than beginning with a definitive list of questions and short list of answers. This research is also somewhat unusual in attempting to combine, as do King et al (2009), an interest in both the professional and personal aspects of farm life and the interaction between these two areas of decision-making. In Australia, farm life is necessarily family-orientated, reflecting the fact that more than 98% of Australian farm businesses are family owned and operated, albeit sometimes by a single family member. Finally, many other social research studies on climate extremes and rural life are place-based (usually centred on one or more small towns) and gather the views of a cross-section of the local population (including, but not limited to farmers) (e.g. Sartore, Kelly *et al.* 2008; Caldwell and Boyd 2009; Smith and Campbell 2009; Kiem, Askew *et al.* 2010). By contrast, as was the case with Head, Atchison et al (2011), the CBP project takes a more spatially distributed but farming-specific approach.

2.2 The study area and period

2.2.1 The study area

As described further in Report One, the study area is loosely aligned with the Wimmera/Southern Mallee district in northwest Victoria. It extends across the Grampians Region (specifically the shires of West Wimmera, Hindmarsh, Yarriambiack and Northern Grampians) and Loddon Mallee Region

(specifically the shires of Buloke and Gunnawarra). The area is strongly agriculture-based; it is what Barr (2009) calls a 'production landscape'. By implication, the social and economic wellbeing of the region is shaped strongly by agriculture's fortunes and therefore by climate. These fortunes have varied significantly over history, but in recent decades have helped establish the region as one of the most productive and profitable in the country. For example, wheat production in the Wimmera is part of the 1% of the Australian landscape estimated to produce 80% of the country's agricultural value (based on 1997 prices) (Young and Hakowitz in Barr 2009: 109). At the same time, some of the shires in the area are, on a range of social indicators such as educational achievement, among the most disadvantaged in Victoria. These two characteristics point to some of the complexities of living in the area.

One of the most powerful influences on farm productivity is climate, especially rainfall. Despite technological innovations and the diversity of farmers' approaches, crop yields still roughly track growing season's rainfall. This can be seen in the following figure of wheat yields from the Mallee region plotted against rainfall at the weather station in the small Mallee town of Sea Lake (Figure 1). The recent variability in both rainfall and wheat yields is evident[2].

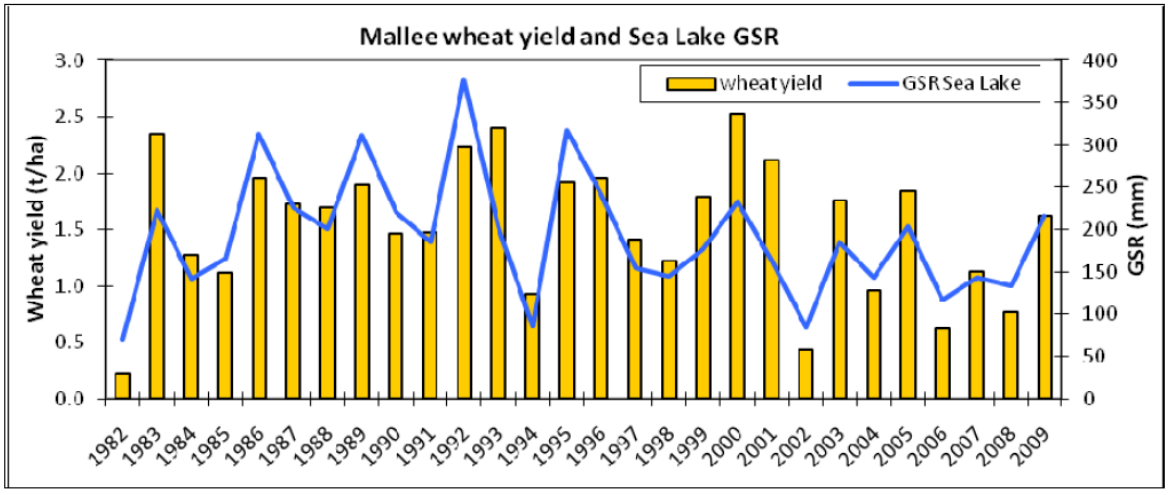

Figure 1. Correlation between wheat yields and growing season rainfall (in part of the study region (the Mallee) (Source: van Rees et al 2010).

2.2.2 Climate and the study period

While this research is concerned with far more than climate, the climate during the study period was a major motivation for and topic during this project. Over the study period of 2007 to 2011, the region experienced extreme variability. The project was conceived in 2006 when the region was in a prolonged drought phase (Figure 2). Dubbed the 'Millennium Drought' or 'Big Dry', prior to the extreme wet at the end of 2010/start of 2011, SE Australia experienced an unrelenting run of below-average rainfall years with relatively low year-to-year variability; there were no high-rainfall years to replenish subsoil moisture supplies (Kiem and Verdon-Kidd 2010; Timbal 2010). The 2006-2009

[2] For more information about farming in the area see: van Rees, H., B. White, *et al.* (2010). Farming During a Period of Extreme Climate Variability: Consequences and Lessons. Interim Report for the Developing Climate Change Resilient Cropping and Mixed Cropping/Grazing Businesses in Australia Project. Birchip, Victoria., The Birchip Cropping Group, supported by the Australian Government Climate Change Research Program.

period was characterised by a particularly strong decline in rainfall over spring (late in the growing season), continuing a decline in spring rainfall that began in 2000. This rainfall deficit exacerbated a lessening of winter rainfall which began in 1990s as well as a particularly significant decline in autumn rainfall which began the early 1970s and worsened from 1997 onwards (Timbal 2010). In addition, the decade 2000-2010 was the warmest on record, including some extremely warm years (2009) and cooler years (2010). Correlated with record high sea-surface temperature and a La Niña year, rainfall in 2010 was initially average and then spiked dramatically in the second half of the year. It became the wettest six-month period and the wettest summer on record. Extensive floods in western and north-western Victoria resulted, as well as in many other areas (Keenan and Cleugh 2011).

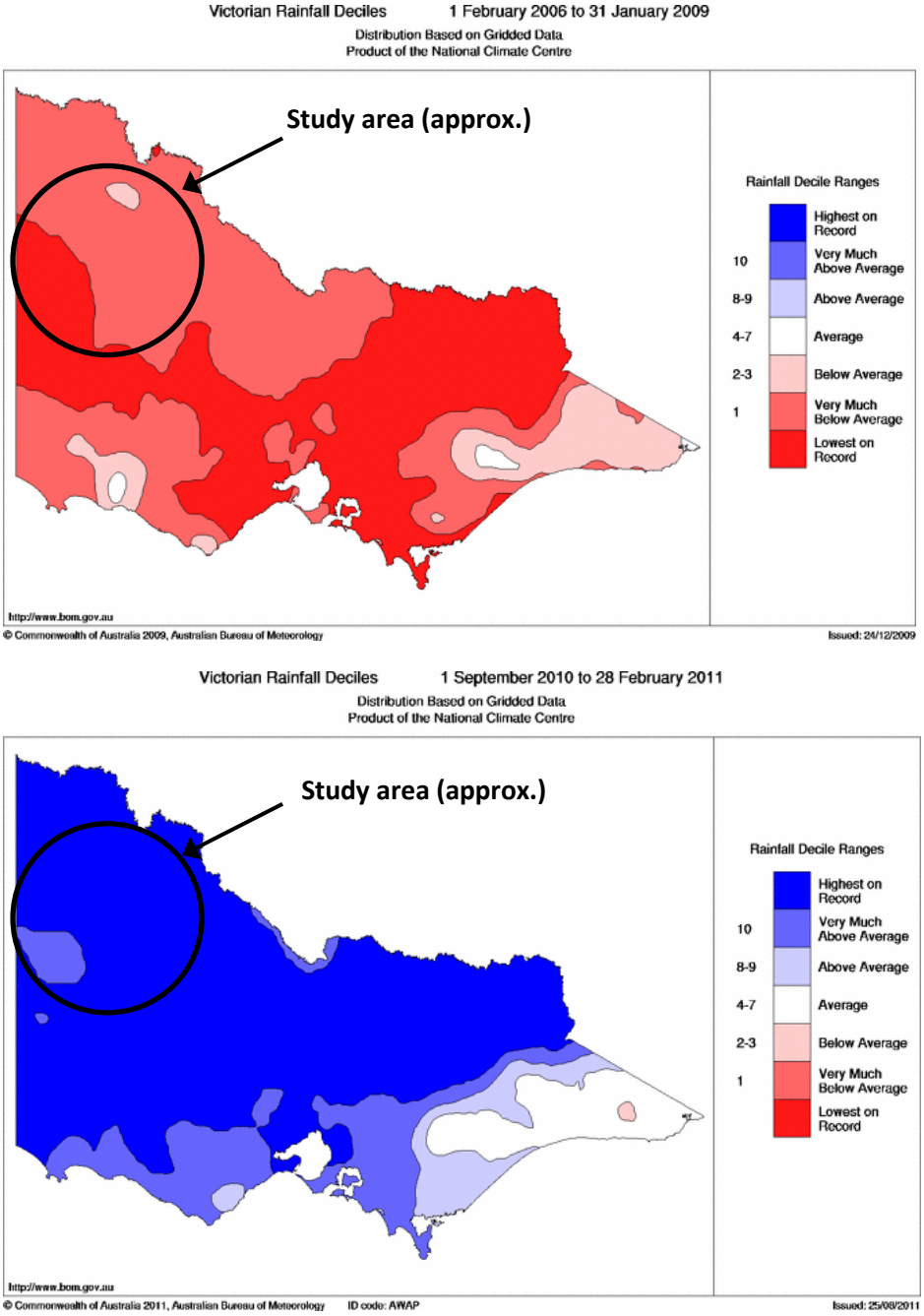

Figure 2. Rainfall decile maps for the state of Victoria, Australia from the Bureau of Meteorology. The top map represents the rainfall deficit from 2006 to 2009, captured in this project by the interviews in 2007 and 2008. The

bottom map represents the high rainfall extremes September 2010 to February 2011, captured in this project by the interviews in February 2011. The black circles indicate the general location of the study region

Given this project's interest in people's perceptions, decisions, and adaptations, the climate during the study period needs to be understood in the context of that which has past and of that which is projected. With the reality of climate change's existence (if not details of its manifestation) now unequivocal (IPCC 2007), the relationship is one in which many people are interested. The fit of recent climate into the historical context was indicated by some of the comments above about the unprecedented nature of recent events in relation to scientific records. In particular, as of 2010, the Millennium Drought was the lowest 13-year rainfall period between 1900 and 2009 (Timbal 2010). CSIRO (2010) concludes:

> The current drought is the driest period since reliable climate records have been kept. It differs from previous droughts in its extent, year-to-year rainfall variability and seasonality of the rainfall decline (p. 6).

CSIRO (2010) also notes that, unlike past major droughts such as the Federation Drought or WWII Drought, the recent drought cannot be explained by the normal dominant influences on Australia's rainfall: the El Niño-Southern Oscillation (ENSO) and the Indian-Ocean Dipole (IOD). This, despite Australia experiencing markedly more frequent El Niño events (typically dry years) and less frequent La Niña events (typically wet) since the 1970s (Power and Smith 2007). Although the direct effect of temperature on the water budget is only small compared with rainfall (Lockwood 1999), the evapo-transpirational effects of the recent drought were also worsened by the concurrent warming trend (Nicholls 2009; Verdon-Kidd and Kiem 2010).

In terms of future projections, the warming trend over the last decade is in line with model projections (Hennessy, Whetton *et al.* 2010) and with signs that climate change is already affecting temperature (Suppiah, Preston *et al.* 2006). Higher temperatures are particularly projected to occur in spring and to result in more extreme hot days (Hennessy, Fawcett *et al.* 2008). Rainfall is a far more complex phenomenon; projections remain more uncertain. Most modelling projects increasing aridity for southern Australia (Hennessy, Whetton *et al.* 2010; Dai 2011), although it is unclear how severely or rapidly this will occur. It is possible that the trend, seen over the recent drought, towards lower rainfall over the growing season (April to October) and relatively more, and more intense, rainfall over summer will continue (Gunasekera, Tulloh *et al.* 2008). Rainfall is projected to become more variable on an annual and daily time-scale and extreme weather events in general are predicted to become more frequent and intense (Hennessy, Fawcett *et al.* 2008). Frost patterns are projected to occur both earlier and later than currently experienced (van Rees, White *et al.* 2010).

The potential impacts of these climatic changes on agriculture are complex and increasingly well-documented (e.g. see Easterling, Aggarawal *et al.* 2007; Howden, Soussana *et al.* 2007; Tubiello, Soussana *et al.* 2007; Stokes and Howden 2010). Some effects may be positive, including carbon fertilisation and the possible competitive advantage of other producers' being relatively worse-affected. While Stokes and Howden (2010) warn that some positive changes will be short lived and may currently be masking other negative effects, opportunities will continue to appear and many assessments of the Australian agricultural sector's ability to adapt are very optimistic (e.g. Kingwell 2006; Pannell 2010; Steffen, Sims *et al.* 2010), as are dominant farmer views reported in various studies (e.g. Fleming 2009). It needs to be noted, however, that what counts as successful

adaptation at a sectoral level (i.e. continued productivity growth across the sector) may be in tension with successful adaptation for individual farms or communities (Rickards and Howden 2011).

2.3 The research context

2.3.1 Introduction

While this report is predominantly an empirical rather than theoretical contribution, the analysis is informed by a wide range of relevant theoretical work. There are two main, disparate literatures of relevance:

- *emerging climate change adaptation literature*, which is itself split into work on:
    - types and theories of adaptation to climate change
    - technical adaptation options for agriculture
    - the resilience of systems and role of transformational change
    - perceptions of and attitudes towards climate change
    - communities' experiences of and responses to climatic extremes, including drought vulnerability and coping strategies
- *rural geography and sociology literature* on farm families, agricultural adjustment and adaptation

This project contributes to the growing work on climate change adaptation in agriculture and to emerging empirical work on drought and other aspects of Australian farming and rural life inspired by the Millennium Drought. Before briefly reviewing this work, some key theoretical concepts from the adaptation literature are presented. It is important to note that it is beyond the scope of this report to review other work from rural and agricultural geography and sociology; this literature is instead referred to as needed in the Findings section.

2.3.2 Key theoretical concepts from the climate change adaptation literature

Key questions about responding to external change (which includes social, economic, political and cultural change as well environmental change) are:

- what potential, anticipated or observed change is the focus?
- what are the temporal, spatial and organisational scales of concern?

Answers to these questions largely determine what the goal of the response process is and the level and type of internal change that is involved. Like farmers, researchers (e.g. McGuckian and Rickards 2009; Kingwell 2011) are aware that farming is becoming increasingly complex, due to the proliferation of answers to each of the questions above: there are more changes to deal with and increased aspects of farming and farm life to manage.

All of these individual and combined aspects involve risk and risk-taking. How farmers manage risk has long been of interest to researchers (e.g. Anderson 2003; Sadras, Roget *et al.* 2003; Hardaker, Huirne *et al.* 2004). Reflecting the 'Transfer of Technology' paradigm and broader ideals around entrepreneurial business practices, much of this research has conventionally been conducted from an implicitly normative perspective that presumes farmers are risk-averse (conservative in their

decision-making) and that this is a limitation on their progress and that of and agricultural industries in general. Extension was largely created to encourage farmers to be more entrepreneurial and innovative (Rickards 2006). The legacy of such a stance is now evident in emerging work on technologies designed for climate change adaptation, notably the need to encourage farmers to use seasonal forecasting and decision support tools (Everingham, Muchow *et al.* 2002; Challinor 2009).

As indicated above, risk management responses in farming need to operate across an array of scales and foci. This is apparent in the differences between the varying levels of stress and change that farmers face. In the literature about farmers' (and others') management of climate variability and change, research tends to focus on the way in which they are (or are not):

- coping with immediate stressors or risks (including climate extremes and associated disasters)
- adapting to observed or anticipated threats or risk (notably climate change)
- building resilience to reduce, avoid and better manage risks overall.

These three areas represent different demands that need to be negotiated in farming. They can be imagined as sitting on a continuum. There is currently a limited understanding of the way in which they relate. It is clear that there are some synergies between them, but also trade-offs. There is particular interest in whether focusing on a short term 'coping strategy' is a barrier to progress on longer term adaptation or building the general resilience of the system. How a system (e.g. a farm) manages or could best manage a combination of both "short wave" (e.g. flood, input price spikes) and "long wave" (e.g. declining terms of trade, climate change) stressors is very complex. Managing short wave stressors is necessary, but not sufficient for long-term wellbeing ('resilience'). It is also difficult to distinguish between them. The need for this balance is often neglected and poorly understood. Often, short term or long-term needs within agriculture are advocated, one at the expense of the other, by competing research perspectives.

Most literature on agricultural climate change adaptation in the developed world has been focused on top down assessments, agronomic indicators and options, and the provision of climate information (Head, Atchison *et al.* 2011). By contrast, work in developing countries has long-recognised the value of bottom-up, household level studies for understanding locally contextualised vulnerability (O'Brien, Eriksen *et al.* 2007; Miller, Osbahr *et al.* 2010). In Australia, (Head, Atchison *et al.* 2011) assert that there are few 'fine grained' (household level) studies of adaptation, contributing to a perception that climate change and adaptation are distinct from, rather than a normal part of, farm households' normal lives. While this assertion is accurate, it ignores the fact that there is a long and relevant history of exploring rural households' livelihood strategies within rural studies.

This disconnect means that climate change adaptation research is open to criticism from farmers and others that climate change adaptation is merely a new theoretical term for what they already do. Work such as this report is needed to actually interrogate how the new challenge of anthropogenic climate change relates to the ongoing challenge and lived experience of adapting to climate variability and non-climatic stressors. Such research requires drawing not only on new work explicitly about "climate change adaptation" but on existing literatures about rural life in Australian and beyond in which adaptation to changing circumstances has long been an implicit concern.

This gap in climate change adaptation research is further exposed by the increasing recognition that top down assessments do not have and will not have "the answers" about what is needed (Meinke, Howden *et al.* 2009), in part due to the difficulty of 'probing the range of factors that shape vulnerability and adaptive capacity to various stresses, including climate stresses' (p. 195, Reid and Vogel 2006). Rather, innovations need to and will come from farm households themselves, sometimes with the assistance of research such as this project which seeks to represent, synthesise and learn from farm household experiences.

2.3.3 Recent experiences of drought in Australian rural communities

This project is not the only one to have been motivated by the Millennium Drought. A host of research into Australian rural communities' perceptions and experiences of drought and of climate more generally has been initiated across different disciplines.

Much of this work has been in the health and social work field where there has been a recent explosion of interest in rural issues. Here, a range of quantitative and qualitative studies, often small and conducted from a psychology perspective, has documented the mental strain and emotional distress caused or exacerbated among rural populations by drought, including the extent of clinical depression, anxiety and suicide (e.g. Stain, Kelly *et al.* ; Sartore, Kelly *et al.* 2008; Caldwell and Boyd 2009; Edwards, Gray *et al.* 2009; Greenhill, King *et al.* 2009; King, Lane *et al.* 2009). An overview by Maginness and Stephens (2008) suggests that solastalgia (the pain and distress resulting from negative changes to one's physical home environment) and demoralisation (characterised by feelings of incompetence, helplessness and hopelessness) may be more important issues for rural communities dealing with climate extremes and change than the conventional notion of clinical depression. This literature has also begun to identify the wide range of coping strategies people use to try to deal with such accumulative stress. Much of it reinforces the positive and negative influence of community factors (Maybery, Pope *et al.* 2009; Schwarz and Williams 2009; Pearce, Willis *et al.* 2010; Berry, Hogan *et al.* 2011; Hogan, Bode *et al.* 2011). It emphasises that pre-existing health strongly shapes adaptive capacity and that the latter relies strongly on the former.

Other work has focused on the financial impacts of drought on rural communities. It is well-known that drought places financial stress on farming communities and more broadly on rural communities. Edwards, Gray *et al.* (2009) used an Australia-wide quantitative phone survey of 8,000 rural and regional people in late 2007 to investigate the financial impacts of the drought at the time. Many respondents reported significant financial impacts associated with drought, particularly those involved in farming and those who perceived themselves to be currently in drought. Notably, nearly half of the farmers who reported being in drought said their properties were not viable regardless of drought. Also notable is that the research found that a household member leaving in the preceding three years was correlated with experiencing meteorological drought. By contrast, a whole household leaving an area was associated more with non-drought periods. Potential reasons for this are discussed in the main body of this report.

Among the rapid proliferation of Australian research on climate and rural communities, a number of studies especially pertinent to CBP have been published since the project began in 2007. Employing a similar household level, in-depth analysis, Head, Atchison *et al.* 2011, for example, explored households' risk management strategies in the face of drought, climate change, deregulation and

other factors. In keeping with other research on 'mainstreaming' adaptation, they found that climate change adaptation could not be separated from other farm household decisions. Kiem, Askew et al (2010) recently investigated the impact of drought of the small inland town of Donald (within the CBP study area) and inland city of Mildura (about 200km north of the CBP study area). Their research, based on 15 interviews and a workshop conducted in 2009, highlights that the difficulties faced by farming communities are not just about drought: they arise from the complex interaction of numerous factors, including fluctuating commodity prices, shifts in the farming sector (e.g. farm consolidation), and rural demographic shifts (especially around Donald, where the population is declining and ageing). Milne et al (2008) come to a similar conclusion in their 2007 study of farmers and communities in four Exceptional Circumstances declared areas, including the northern Wimmera-Mallee region. They found that the drought was perceived as the 'straw that broke the camel's back'. In a farming area of the Riverina district of NSW (about 200km northeast of the CBP study site), a small study by Caldwell and Boyd (2009) found that people were using a wide range of strategies to cope with the drought. It concluded that these strategies were shifting as the drought progressed, with optimistic appraisal and reliance on social connectedness giving way to 'denial and dissonance, social avoidance and competition' (p. 8).

King, Lane *et al.* (2009) conducted a two-year study in 2008-2009 across four drought-stricken agricultural areas of South Australia for South Australian Health. Like CBP, they investigated farm households' lived experience of drought by using repeated, semi-structured group interviews with a relatively large number of farm households (80 one hour in-person interviews in 2008, and 75 half hour phone interviews in 2009). They also ran focus groups with rural service providers and policy makers. The aim of the study was to identify the positive adaptations used by those who self-reported they were 'getting by' (achieving an adequate level of resilience) during the drought in terms of both livelihood (income and work) and mental health and wellbeing. It concluded that resilience is an emergent, ongoing process shaped by people's 'stance' in life, their 'context' (from family and farm, to community and industry, to economy, society and policy) and the 'processes' (resources and strategies) they use. Although it does not consider these components in detail and the conclusions are relatively abstract, the study provides some useful pointers as to which factors to consider in studies of drought experiences. These have been incorporated into the present project. The insights provided into the challenges the farming households of South Australia were facing at the time generally accord with those found in CBP Report One.

Focusing on a view of adaptation as adult learning, Smith and Campbell (2009) explored community responses to drought and climate change in the Wimmera Mallee region. In a collection of other regional case studies a broader project on 'learning to be drier', concluded that over the dry period leading up to 2009, considerable individual and community learning about managing dry conditions had occurred. Interviewees included farmers from the Birchip Cropping Group and Farm Management 500 groups, as well as agronomists. They reported on a range of professional development activities focused on drier conditions. The results suggest that, facilitated by experience and informal and formal social learning mechanisms, farmers have become much more aware of and active on the issue of moisture retention, although their actions are often tempered by the financial constraints dryness can impose. The authors suggest that community learning about dryness '(will) persist into the future' (p. 540).

Finally, from a humanities perspective, Anderson (2008, 2010) reports on work that both overlaps in area with this project (the Mallee) and takes a similar interest in the personal and subjective aspects of drought. Positioned within the cultural studies literature, this research emphasises the way those involved in farming draw on cultural narratives or 'cultural scripts' (Norgaard 2011) to make sense of their drought experiences and messages about the implications of climate change for rural communities. Anderson argues that drought has long played a central role in 'foundational narratives of struggle and hope' in rural Australia, and the Mallee in particular. Drawing on her interviewees' responses, Anderson suggests that, in reaction to anticipated climate change, 'a battler history of survival is being rewritten with a message of ecological enlightenment', based on a vision of a 'new generation of pioneers' learning to adapt to the new conditions, and better adapt to the existing ones, by 'pulling back' (Anderson 2010, p. 83). As with other themes mentioned above, these ideas are taken up in the Discussion section of this report.

Overall, the main messages from the above research projects are:

- drought has been a serious source of financial, emotional and social stress in rural communities
- the impacts of drought are very difficult to separate from those created by other factors such as demographic and farming shifts within rural communities
- people have been drawing on a range of both helpful and unhelpful coping strategies to deal with the net effects. Some of these strategies are likely to be difficult to maintain in the long-term and may lead to permanent changes.

3 Methodology

The methodology used in the CBP study is discussed in detail in Report One and Appendix A. Overall, it is designed to provide rich, primarily qualitative insights, give a voice to farming individuals and provide a useful analysis of the overall situation of which they are a part.

In the in the latest February 2011 round of field work, 42 in-person, semi-structured, household interviews involving 88 individuals were conducted by trained local interviewers. These were conducted with farming individuals if they lived alone and generally with family groups if they lived/worked together[3]. They were the second or fourth interviews conducted with these households. While 42 is a large sample for such in-depth work (and the aim was the original 56), this number is not large enough to meaningfully segregate the sample by farm size, enterprise type, location or some other variable. This was never the purpose. Unlike much research with the farming population, this project does not classifying individuals or farms according to predefined criteria.

The interview questions were divided into three main sections that reflected on the past (changes since the last interviews), the present (including immediate decisions to be made), and the longer-term future (including the topic of climate change). Interviewees were asked to reflect on their own professional and personal situation and to comment on what they considered to be happening in their communities and their sector more generally. Some general questions explored were:

- how are interviewees responding to and thinking about recent climate and climate in general?
- how have things changed over the last 4 years and why? What coping strategies and adaptations have interviewees been using and why? What have been the outcomes to date and to what extent are they satisfied with these approaches?
- what pressures do they feel they and their community are now under? How are they dealing with these pressures? What decisions are they contemplating? On what types of support have they drawn or would they consider to be of use?
- what are their perceptions of and feelings about the future, in the near and longer term? What are their professional and personal plans in the near and longer term?
- what do they perceive to be happening in their wider communities? What is their relationship with the local community? What types of support do they think are needed in the community?
- how is resilience understood? What do people consider contributes to their own resilience?

The interviews were transcribed, coded and analysed thematically. Previous interviews were reanalysed to explore trends, though space constraints mean mainly 2011 results are reported. All interviews are confidential and anonymous. In the text, quotes are referenced with an interviewee code (eg. '36a') which refers to the index in Appendix B that provides the household context of the interview. Gender (M or F) and age group are also provided. Quotes are lightly edited for clarity but not grammar. Unrelated tracts of text are replaced by '[...]' while natural pauses by interviewees are marked by '...' to preserve meaning.

[3] As not all interviewees live in family groups, 'farm household' is used in this report as a more inclusive term than 'farm family'. 'Farmer' refers to those who self-identify as farmers, although others engage in farm work.

4 Key Findings

4.1 Between 2008 and 2010, most farm households eroded their reserves, adapted and stayed

4.1.1 2008 and 2009 continued the run of dry and difficult years

In 2007, farm households were taken on a rollercoaster of a season. A strong autumn break meant a good start. Given the severe drought experienced in 2006 and preceding years, hopes for an end to the drought rose quickly and many farmers invested to try to increase yields. However, the rain was relatively short-lived, and both the potential for high yields and the sense of there being a start of drought recovery dropped away. The interviews of September 2007 documented people's stress and anxiety. By the end of the season, people were in a better position than they had feared in September, but a far worse position than they had aspired to in June.

This fluctuation is reflected in the Australia-wide Rabobank Rural Confidence Survey of the quarter. The survey is based on interviews with approximately 1,200 farmers about their outlook on the agricultural economy. Between September and December 2007, an index of rural confidence[4] plummeted from almost its highest point since 2001 to a generally negative outlook. It recovered almost fully by March 2008.

Individuals varied strongly in terms of how they responded to these highs and lows. The February 2008 CBP interviews found some people focused on the potential they had glimpsed with the early rain and good prices the year before. There were high hopes and optimism that climatic conditions were turning around. While some of this was based on an assessment of individual capacity to cope, no matter what conditions arose, most hopefulness was based on a belief that the conditions themselves would change and reduce the demands on their capacity. Some seemed determined not to engage with the question of whether they would cope with ongoing drought conditions: they had a sense that such worry was fruitless and debilitating at a time when they could and should instead be enjoying some emotional recovery.

Others did think about the possibility that the coming year might not be a good one and were not encouraged by what they foresaw in terms of their own capacity to cope. Some people spoke of fear and anxiety about the coming year, and the sense that while the previous season had let them off the hook, the coming one would be 'the test' (Report One, p. 139).

That 'test' did indeed eventuate. 2008 and then 2009 continued the run of poor seasons. Whether they entered 2008 with optimism and hope, pessimism and fear, or somewhere in between, virtually everyone seems to have found this period difficult. The flavour of the years is evident in BCG's Annual Reports from the period. A farmer himself, the BCG Chairman summarised 2008 as *'an extremely tough year'* (p.2). Then, in 2009, he commented on the organisation's theme for the year, 'From Surviving to Thriving':

[4] Rabobank's Rural Confidence Index is a measure of the percentage of farmers who reported that they expected the agricultural economy to improve over the next 12 months minus the percentage who expected it to worsen.

> *We certainly cannot claim that most farmers are thriving at the moment, considering the current price of grain, the several periods during the spring of extreme heat stress experienced and the below average growing season rainfall many had to cope with. Are they still surviving? We hope so.* (BCG 2009, p.1).

One primary source of the challenge posed by 2008 and, to a lesser extent, 2009, was the continuation of dry or drought conditions. As discussed in Report One, whether someone perceives him- or herself to be in drought varies according to spatial variation in rainfall, water needs at different points in time, the effect of other variables on yields, incomes and profits, and how stressful are the results. Despite this variation and subjectivity, there was a consistent sense that the ongoing dryness of 2008 and 2009 extended the period for which most people experienced drought-like conditions to approximately ten years. As one explained:

> *Our last good year was 2001, when we had good crops. So we've had basically nine, ten years of below average yields and below average rain* (21a, M, 50-60).

For some, this came on top of poor seasons extending back into the 1990s.

> *Our previous good year – what we would call average to good year – would have been '96, I reckon. Now, there's been areas of the farm that have been okay in and out, on and off, but an overall average, we'd use '96. So that puts it to more than 10, but [...] the worst of it's only been 10* (20a, M, 30-40).

> *It started to dry out in 1993 if you look at our records. But our seasons held on probably until 2001 ... We got another seven years before that dry out really started to affect us. It takes a long time for the soil to dry out like it was three, four years ago... 2001 it was pretty poor production. Then 2002 was a drought, 2003 was just a cost recovery, 2004 was a drought. I think at the end of 2004 we started to feel - financially feel - the pinch [...] Then from 2005 to 2009 was the — those were the really tough, mental challenging years really. End on end. You really thought you should be coming out of it. Every year you thought, surely we're coming out of this. We've existed long enough. It just didn't turn the corner until the 2010 season [...] the problem was that there was nothing, there was absolutely no control over anything. I had nothing to sell so I couldn't market better. I had no agronomy to do because really we were just trying to keep the crops alive through the dry and it was becoming — was probably getting to the point where they were end on end on end, those years* (26a, M, 40-50).

Another explained that it was the mismatch between the frequency of drought to which they are 'acclimatised' and the frequency of bad years they have had over the last decade that has been the difficulty:

> *It's not like we've had 10 years of continual disasters. But we're probably acclimatised to one drought every 15 years, when you've got a lot more cushioning. So when you kind of get six or seven non-profitable years out of 10, well...* (35a, M, 40-50).

In addition to the ongoing rainfall deficits, 2009 saw the emergence of other significant threats. One was the Global Financial Crisis (GFC), which is likely to have affected the large and growing number of farm households with off-farm share investments. Although not many interviewees commented on the GFC, one couple mentioned that when share prices dropped dramatically:

> *I had phone calls from Sydney saying, "Come up with the money in 24 hours" from the margin lending [...] Luckily, I still had some more shares. We just scraped through that...* (22a, M, 50-60)

As discussed below, those in farming need to manage their own superannuation: shares are a common element in this. The couple mentioned here lost a large proportion of their superannuation and with this the capacity to borrow against their shares. The result was that the bank refused them further finance. They had to sell further shares to run the farm in 2010 which contributed to the erosion of assets as discussed below. Report diagnosed the deregulation of the Australian wheat market in 2008 as contributing to individuals' sense of being exposed to the global market.

In the study region, some farms also experienced one or two severe local frost events; a larger number were rocked by the severe heat waves of 2009. In the record-breaking January-February heatwave across south-eastern Australia, the hottest temperatures were experienced in the southern Mallee. The Hopetoun temperature of 48.8^{o}C on 7 February is believed to be 'the highest ever recorded in the world so far south' (BOM 2009). The biophysical effects of the heat were exacerbated by the driest ever start to the year. In November, the whole of Victoria suffered another record breaking heat wave. Coming as it did towards the end of a grain season, this extreme was particularly devastating for some farmers. A young farming couple described the emotional cost of once again losing crops into which so much had been invested:

Husband: I've always been really enthusiastic about farming, but last year was, I don't know ... I actually believe that heatwave that we had [...] was more emotionally hard than all the droughts we've had. That really hurt me [...] I was in a pretty bad place ... It just fried it. We got hit very hard and I did too – emotionally, mentally. Mentally, I was struggling big-time (28a, M, 30-40)

Wife: Drought — you can prepare. You know it's going to be a dry year. You don't put on as much fertiliser, you don't put in as much chemical. You can prepare a bit more for a drought, and you stop your spending. But he'd spent all this money on these beautiful crops, and they were looking fabulous. Then they were just cut off (28b, F, 30-40).

Husband: We were both considering not going for it, weren't we? We spoke to the accountant even - that was pretty heartbreaking. But we decided we have to talk to him because we'd had enough really (28a, M, 30-40)

This couple was far from alone in feeling as if they had had enough by the end of 2009. Another woman described the effects of losing crops to the heat:

> *All the grain shrivelled. I can remember the lentils – X [her husband] had signed in for a contract for lentils. He looked at them, said they were magnificent [...] But after the heat hit, they all aborted. We hardly stripped anything. We had to pay that contract out ... I*

remember rounding up sheep through that paddock a few weeks later. I cried the whole time. I was sitting on the motorbike. X was just devastated. It's the first time he's been devastated with all the droughts [...] It's the first time X has ever said "Let's look at leasing out - let's look at getting out. I don't know if I can keep doing this". We felt the last, say, 15 or 16 years have been quite tough. It was a struggle whether you were going to get through each year or not [...] He just started feeling devastated, and so did I. That's the first time. Normally, if he's got down, normally I try and pick him up. But we got to the stage where we both were down, and not knowing how to pick up (31b, F, 50-60).

Despite the pain they encountered, not just in 2008 and 2009. but in the years preceding, this couple, like the one above and many others, decided to keep going. What follows explores the reality that most people do not abandon farming.

4.1.2 Most farm households remain in farming

As captured in the title of the project, when this study began, there was concern that as the drought progressed, some farm businesses or households were being pushed to the brink of collapse[5]. Combined with a serious concern for people's welfare, this vision of the future prompted apprehension about the untimely exit of "good farmers" and families from farming and rural communities, adding to the general loss of young people from the country. This concern mirrors long-standing and well-founded concerns about the demise of family farming in Australia and beyond (Vail 1982; Inwood and Sharp 2011) as the number of farmers continues to decline. The perception of a 'breaking point' mirrors rising concern about the existence of resilience 'thresholds' in agricultural and other systems that, once crossed, trigger dramatic (though not necessarily negative) transformational change (e.g. Allison and Hobbs 2004; Anderies, Ryan *et al.* 2006). For an individual farm family, exiting farming involves crossing a 'threshold' and making a transformational change. While such a move may result as a net positive for those directly involved, unless the farm is sold to new rural residents, it is likely to contribute to the de-population of rural communities (Barr 2009)[6].

[5] This concern also motivated research projects in other agricultural regions and industries, such as one on dairy in the Murray Darling Basin: Love, S., M. Sharma, *et al.* (2008). Enhancing the Resilience of Dairy Farm Businesses. Melbourne, Rural Innovation Research Group, Melbourne School of Land and Environment, University of Melbourne.

[6] Nationally, there has long been a gradual decrease in farm numbers. The farmer population is also structurally and literally ageing, with more young farmers leaving than middle-aged ones, some remaining in farming past normal retirement age and few young people entering the industry Barr, N. (2009). The House on the Hill: The transformation of Australia's farming communities. Canberra, Land and Water Australia and Halstead Press. During the drought, the trajectory in farm numbers was amplified by a significant drop in broadacre farm numbers from more than 70,000 to less than 60,000 between 2004 and 2005, and another steep decline of about 5,000 between 2006 and 2007 (Sheng et al 2011). Whether causally related to the drought or not, around the year 2007, there was a sense that large numbers of people may have been about to leave farming. This idea was reinforced by the Australian Government's introduction of an Exceptional Circumstances Exit Assistance Package in 2007, designed to assist those in drought areas who were experiencing severe financial difficulty to re-establish themselves outside farming.

Responses from members of the farming population echoed this sense that many people may soon leave the industry. However, their projections always came with the essential caveat that it would be "one more bad year" that would trigger people to leave, creating the impression that many businesses and/or families were just hanging on. In the start-of-season interviews in 2007 and 2008, for example, numerous people predicted that a further difficult season would see significant numbers leave farming, reflecting what Milne et al (2008) found in South Australia. As a farmer commented in February 2008:

> *If this is a tough year, it will probably see a lot go (Report One, p. 139).*

Since then, further tough years have indeed eventuated, as described above. And while many interviewees commented that they have had watched neighbours and peers leave, there has not been a mass exodus from the sector. Nationally, farm numbers have held relatively steady at about 55,000 since 2007 (Sheng *et.al.* 2011). The CBP cohort bears out the lack of a dramatic drop in farm numbers between 2007 and the present. One interviewed family left in order to retire but, as discussed in 4.8.3 below, did not feel forced to do so. As discussed in Appendix A, three others are known to have left and another three are believed to have also done so, but some of these were near retirement age and so are likely to have done so as a natural step.

It therefore seems that, contrary to expectations, the last few years have not prompted a large proportion of farmers to leave, either voluntarily or involuntarily. Despite wavering intentions at times, brewing plans to leave and the stretching of the farming category to incorporate more hybrid farming/non-farming lives, at the time of interview the majority of farm households remained in farming and wanted to stay that way. These results endorse observations that, despite the long history of concern about threats to family farming mentioned above, this form of business and livelihood has been able to persist (Vail 1982; Barr 2009).

Reflecting the diversity of households' situations and trajectories, various reasons for this persistence have been suggested (e.g. Barr 2009). In the language of resilience science (e.g. Walker and Salt 2006 and Appendix B), possible reasons are that:

- farm businesses' and families' exposure to stressors over recent years (including drought and the extreme wet) has been less than imagined
- farm households have a greater (and possibly increasing) adaptive capacity (that is, ability to manage and reduce difficulties) than they or others perceived
- households increased the level of stress that they were willing and able to endure (shifting the 'threshold' of the system)
- households are caught in a situation of 'negative resilience' ('lock in') in which they are unable to make the changes necessary to leave
- there is a lag effect disguising the immediate impact of the last few years; people will respond by exiting at a later date.

This study aims to explore these ideas. The section raises the issue of exposure. As described also in sections below (about the impacts of the extreme wet and systemic vulnerabilities), exposure to stressors has generally been very high. It is unlikely that an overestimation of exposure is sufficient to explain the persistence of farm businesses. Subsequent sections examine the questions of endurance, negative resilience and lag effects. Evidence suggests that these factors are very much in

play. Before looking at them in more detail, we turn to the role of farm households' adaptive capacity.

4.1.3 During the drought, many households started to adapt to dry conditions

As found in Report One, virtually all farm businesses were adapting to drier conditions in some way before the arrival of the wet at the end of 2010. While drought adaptations were not discussed at length in the interviews because of the focus on the more visceral and pressing issue of responding to the extreme wet, it was clear from interviewees' comments that most had made a range of changes to their farm businesses and other activities in order to manage the drought years.

The adaptations interviewees mentioned included a mix of practice-level, systems-level and transformational changes. That is, they ranged from changes in management to more significant systemic changes affecting many parts of the farm business (and family). The latter tended to be less easily reversed and were premised on a belief that the adaptation would be helpful over the longer term, either because it built generic resilience (discussed below) or because it was believed that the threat in question (here, dryness) would be long-lived. When the belief was that the specific threat was, rather, relatively temporary (e.g. a drought), incremental measures tended to be favoured and, depending on the severity of the situation, were often regarded as sufficient to reduce vulnerability.

All adaptations are made in response to multiple drivers. Thus, while the adaptations below are discussed in relation to dryness, they more often than not also achieve co-benefits. As with all innovations, climate-driven adaptations need to help achieve farmers' other goals (Head, Atchison *et al.* 2011) in order to be adopted - and *stay* adopted - over the longer term (Pannell, Marshall *et al.* 2006). One farmer who initially took up minimum till ('no-till') as a drought-management strategy now values the approach for its broader soil benefits and the related intellectual and emotional satisfaction it provides:

> *The motivation [for minimum till] was initially with moisture retention. And then - beginning to develop a greater interest in the health of the soil - realising just how little we know about our soils, realising that our soils are our most important asset because it's what grows the things that create the cash. So, it's a greater interest in the soils now [...] and to me, no-till is - it just feels right, feels natural. It's also given me a new renewed vigour in the game of farming. A renewed interest; I've become more passionate about it again* (2a, M, 30-40).

Adaptations vary in the ways in which they reduce vulnerability to a threat like dryness. Some are relatively specific to the threat, acting to reduce exposure and/or sensitivity to it. Others are relatively generic, concurrently reducing vulnerability to a broad range of other threats and building what is called "generic resilience" (Walker and Salt 2006). For example, actions taken to counteract the negative effects of stress fit into this category. A notable number of interviewees commented that over the drought they had realised the need to put more effort into their physical and mental health. For some, this involved taking the time to do more exercise or a hobby. Different farmers noted that they had, respectively, for example, taken up horse riding, motorbike riding, yoga, cycling and a men's exercise class.

Table 1 presents the main drought adaptations mentioned by interviewees, classified according to how they aim to reduce vulnerability and the level of change involved, drawing on (Howden,

Soussana *et al.* 2007)'s model of incremental (practice level), system level and transformational adaptation (for more discussion see (Rickards and Howden 2011)). The adaptations highlighted in blue were those most frequently mentioned.

Table 1. Overview of adaptations mentioned by interviewees, categorised by level of adaptation (incremental to transformational, from Howden et al 2007) and the dominant aim of the action. Adaptations highlighted in blue were most frequently mentioned.

		Means of reducing vulnerability		
		Building specific resilience to dryness		***Building generic resilience***
		To reduce *exposure to* dryness (including reducing dryness of soil)	**To reduce *impacts of* dryness on production**	**To increase *general adaptive capacity* (including profitability)**
Level of change involved	**Incremental adaptation**	Manage summer weeds more effectively increase on-farm water storage improve residue management extend fallows	alter planting dates and other rules to be more opportunistic grow predominantly cereal crops use new 'drought-tolerant' varieties develop opportunistic nutrient management decrease grazing intensity increase on-farm fodder storage (for sheep) increase on-farm grain storage to increase flexibility of marketing and maximise prices modify timing of sheep breeding move to more drought-tolerant sheep varieties	protect and improve own physical and mental health undertake professional learning opportunities improve grain marketing skills improve monitoring and record keeping selectively use contractors or farm labour to increase work productivity and flexibility
	System-level adaptation	adopt minimum till system to retain moisture in soil	increase role of sheep in the business switch from grain production to hay-making move out of intensive animal production (pigs)	use seasonal forecasting and decision support tools move to a low input system to reduce costs lease rather than buy land or equipment to increase flexibility

	Transformational adaptation	expand or move farm business into wetter region	expand or move farm onto different soil type(s) to diversify or reduce soil dryness	increase off-farm work within family exit farming

As indicated in the table above, the most common approach to adaptations among interviewees was to adopt a dynamic portfolio of 'incremental' or practice-level changes. Many farmers indicated that they considered this sufficient and appropriate for temporary periods of dryness. As one farmer commented:

> *I think most people have adapted pretty well with the drought. Like, everyone - or the majority - has made the most of their agronomy by summer spraying and trying to preserve every bit of moisture they have. That sort of showed us how little rainfall you could still produce a crop on, if you got them planted right at the right time and whatever* (21a, M, 40-50).

Some farmers had undertaken more systems-level drought adaptations. For example, direct drilling was frequently mentioned as a significant change targeted at reducing moisture losses (in addition to other co-benefits). Increasing the role of sheep in the farm business was also mentioned. As discussed in detail in Report One, although drought often requires destocking, sheep are commonly kept on as a form of income insurance in the face of possible crop failure, increasing their prominence among the enterprises.

Another systems-level drought adaptation is a shift from grain production to hay. One family, for example, discussed how they invested in hay-making equipment on the basis that hay production is favoured in dry years. In an example of a more transformational (radical) level adaptation, another family bought a property in a region much further south on the basis that the wetter average conditions there will buffer them from the impacts of drought. This family moved to a large regional centre further south to be closer to their second property, adding to the profound effect of the purchase on their lives.

As discussed below, while these two examples of adaptation are likely to prove valuable in the future, they involve significant transaction costs and have proven vulnerable to extremely wet conditions.

4.1.4 Many depleted their physical and financial assets to cope during the drought

Many of the adaptations discussed above are adopted as a potentially permanent shift, integrated into the farm business, accumulatively altering the "way of doing things". By contrast, 'coping strategies' are in theory adopted as reactive, stop-gap measures. While the distinction between them and adaptations is blurry, and dependent in part on how conditions pan out, coping strategies are generally somewhat involuntary and intended to be reversible. They often involve trade-offs that are both painful in the short term and unsustainable in the long-term.

Many interviewees mentioned having to take such measures to cope with reduced income over the drought period. Two general strategies were used: reducing spending and seeking other sources of funds. The latter included taking on (more) debt, selling off-farm assets or turning to off-farm work.

The first well-known strategy — 'tightening the belt'— was adopted by many households and businesses, with spending cuts instigated in family and/or farm realms. In terms of family spending foregone, mention was made of delaying university (to allow the school leaver to work for a year and qualify for Youth Allowance), the delayed return of the younger generation to the farm (as the farm business could not support two families at the time), as well as postponed or cancelled holidays and renovations. One woman discussed how she now grows her own vegetables to reduce the supermarket bill and others mentioned that they started more carefully selecting where they shop on the basis of cost. More generally, many mentioned reducing or delaying their off-farm investments. As two explained:

> *We were meant to put money aside, 'cause that was our general thought when we were having our children: "We'll put x amount aside for their education". But we just haven't been able to. It's just taken everything to survive and to keep everything else going* (36b, F, 30-40).

> *You don't put away investments and all that kind of stuff* (22b, F, 50-60).

Reducing costs in the farm realm was a strong focus. The three main tactics employed were to cut back inputs, postpone equipment maintenance and upgrades and delay or abandon plans for expansion. As discussed in Report One and Section 4.4.2 below, many farmers are concerned about the high and increasing cost of inputs, from pesticides and fertilisers to stock feed and brokers, agronomists and leasing land. A number mentioned trying to better monitor and moderate the quantity and cost of what they use, such as applying fertiliser on a more opportunistic rather than scheduled basis. It is important to note that while a reduced use of inorganic fertilisers can carry environmental benefits, if it is not accompanied by a concomitant reduction in cropping intensity, it can result in a depletion of soil fertility. A couple of farmers indicated that they thought this was probably the case on their farms; it was an issue they would like to address in the near future.

Numerous interviewees mentioned that during the drought they stopped servicing or upgrading equipment to save costs. As four commented:

> *We really haven't bought a new machine for 10 years. So all our infrastructure is getting old. I'm just hanging onto the old machines* (1a, M, 50-60)

> *We've got two headers and they used to be semi-state-of-the-art. But now they're getting old. So you have that added frustration of problems of things breaking down* (1b, F, 50-60).

> *We can't afford to justify a truck. We can't justify a header. I mean, even contractors are getting to the point where they can't justify new machinery* (36a, M, 30-40).

> *Machinery's getting older and older and should be replaced* (35b, F, 40-50).

Maintaining machinery and using a certain level of inputs are normal practice for most farmers and are seen by some as unavoidable or unnegotiable costs (noting that maintaining machinery includes purchasing new machinery, as the cost of repairs has increased with reduced mechanic availability). By contrast, buying new land is seen as an optional cost to take on, if and when the time is right. This optional cost was avoided by many during the drought, in the light of the financial constraints under which they were suffering. While a few mentioned purchasing extra land over the last decade,

most gave the impression of "sitting still": of not selling land themselves, but also of not purchasing it as they would ultimately like to do.

For many, the overall feeling was that during the drought:

> *You were just treading water - getting enough to sow the crop every year and that was about all. You weren't making any money. You didn't have money to put away for anything. You were just happy that you had enough to sow - happy to still be farming after those years. [...] It always takes years to recover from a drought* (9a, M, 40-50).

The extended length of the drought means that this sense of stalled progress has left a strong imprint on many farmers' careers. As one young farmer reflected:

> *You sort of have a 25 year period probably - and a bit more if you're lucky - fit and able to farm if you want it. If you don't get the right 25 years - if you get 15 dry ones out of 25 - then you're just going to exist through it. If you get 15 or 17 good ones, then you're going to walk away with a big packet [...] so we've just had 10 or so poor years and I'm starting to think that I might not get to the point of owning a whole farm and passing it on to somebody. I might not be in that position unless I get incredibly lucky in the next 10 or 12 years* (26a, M, 40-50).

This forty-year-old farmer was in the process of taking over management of the farm from his father. While this is not particularly young to do so, many others do not start "properly" farming as chief decision-makers until even later (Barr 2009). Combined with the physical health limitations that pose a natural end point to many farming careers, the increasingly common "late start" to farming careers condenses the period that farmers have to "get ahead". In this context, the mere longevity of a ten year drought (irrespective of its intensity) poses a business development challenge to those seeking to expand.

Beyond a concern with sitting still, the drought raised concerns about slipping backwards. Here, debt was another prominent theme in many interviewees' comments. Many farm households indicated that they have taken on debt anew, or in an increased fashion, to help manage the income lows created by drought. Most who did, did so in order to finance operational expenses, not new land or equipment. As discussed in Report One, one of the challenges of cropping is that there are large up-front costs at the start of every season. Simply "putting a crop in" is a relatively expensive business. Other enterprises such as finishing fat lambs can also require substantial upfront costs. If previous seasons have left a business with a cash flow deficit, then outside finance is one way in which they can "gear up" to continue farming. As five farmers explained:

> *It was a real worry because we always had to borrow so much money to put the next crop in* (32a, M, 60-70).

> *The thing was, you'd spent $100,000 to put the crop in, or $200,000, and then make nothing. It was going backwards every time* (38a, M, 50-60).

> *Our debt was increasing up until last year. You know you look at all the opportunities or things you couldn't do because of the money restrictions. Well it's restricted things a fair bit* (22a, M, 50-60).

> *Basically we've actually gone backwards since 2007. 'Cause yeah it's like the farm's just getting more and more in debt* (35b, F, 40-50).
>
> *Financially, it's depleted all the way through - you can see it going down ... I don't know how many years ago it was that we were in credit with the bank. Every year we've just been getting deeper in* (30a, M, 50-60)

As the reference to "getting deeper in" emphasises, the legacy of taking on debt can last many years. The cost of immediate access to credit is interest payments, which themselves can become a significant cost burden. As a form of risk taking, borrowing money on the proviso of paying more for it later puts pressure on the creation of income, adding to the total costs that need to be met and exceeded if a profit is to be made in any given season. The popular goal of "moving onto the next step of the business" can be delayed by the enduring effect of using debt as a coping strategy in a period of financial difficulty. As another farmer explained:

> *Because you've been put that many years behind over the years, it's going to take that many years to catch up - to get the payments back under control - so you can move onto the next step of the business.* (20a, M, 30-40).

While a few older interviewees mentioned that they have a policy of never carrying any debt or buying anything on credit, this strategy is unlikely to be available to all. The extended period of reduced income that many have encountered has combined with the growing expense of farming and the normalisation of being in debt throughout society (Mackay 2010). Among this research sample, more farmers seem to be in debt than those who are not. This finding is supported by other work indicating that debt has re-emerged as a significant problem in the Australian farming population.

Associated with the issue of farm equity is the question of off-farm assets. Again, a significant proportion of interviewees mentioned using this coping strategy over the previous period. For some this was represented as an alternative to taking on debt. As seen in the anecdote above about the farmer who had to quickly sell shares during the GFC, this may be in part because a lack of off-farm assets can reduce one's ability to receive outside finance. For others, selling off-farm assets seemed to be a parallel strategy to increasing debt. There was variation in whether this was perceived as an action of last resort, or as a choice to reinvest in the farm. One woman explained that her husband had chosen to sacrifice off-farm assets to invest in the farm, leaving her with a feeling of vulnerability:

> *That's the significant change over the last few years is off-farm - in terms of the shares and we had a couple of units in X [regional centre] - well, that's now right reduced down, no shares and one unit ... So, I would say that our off-farm strengths and our off-farm assets are nearly non-existent now [...] So that's been a choice of X's [her husband's] - to develop his machinery and things on the land. Yeah and you know, that could be a good choice ... It's just that perhaps this year, it's bowled us over a bit ... But yeah, but you know, that's fine - that's what's happened, so ...* (11b, F, 40-50).

Another older woman represented her family's liquidation of off-farm assets as more of an involuntary choice. She indicated that it was a highly costly strategy to them personally, explaining they had drawn on the funds they had put aside for their retirement and to help finance succession:

> *We just sold off all our assets to keep going. That was what affected our business - our assets disappeared. Anything that we had put away for our super or our retirement or to make life a little bit easier down the track - so if X [her husband] wants Y [her son] to take over the farm eventually, we had something to us e... That all was sold off to help us keep going* (31b, F, 50-60)

Others similarly commented on eroding their superannuation, discounting the future in order to finance farming.

> *We had to sell a lot of the off-farm income - or off-farm investments, super - to get the farm going* (24a, M, 30-40).

> *It's eaten a lot into our superannuation* (22b, F, 50-60).

All of the above measures are short term strategies that are predicated on the belief that the costs or trade-offs they involved will be able to be addressed at a later date. How much later is a key question. Milne *et al* (2008) found, for example, that farm households usually draw on stored capital to cope with disruptions of one to two years, after which time accumulation can resume. The dry/drought conditions and low income period reported by most interviewees in the present study, however, far exceeded this timeframe.

The extended length of the period of acute stress experienced by many interviewees increased the costs of using short-term coping strategies at the same time as escalating the need for such measures. It is this linkage between coping strategies and their erosive effect that can cause households to slip down the 'coping cascade' (see Appendix B). As vulnerabilities are exacerbated and new problems triggered, a significant accumulative deficit in adaptive capacity can be created. The result is that the level of change (the 'size of the win') required to regain a resilient status can become exceedingly large.

How different farm households responded to this pressure is examined in subsequent sections. In the following section, we consider how many people became more concerned about the position they were in as the drought continued.

4.1.5 Some people's mental health and morale were also eroded

The apparent breaking of the drought allowed interviewees to reflect on the drought period with a sense of hindsight. For those involved, the process of beginning to put together a narrative about what happened and how they responded is central to their making sense of and deriving lessons from the drought, including its ongoing implications. This process of making sense of the drought includes reflection on how it impacted, or continues to impact, on people's mental health or emotional wellbeing. Reduced bank balances and ageing equipment were not the only outcomes of the extended dry period.

In thinking about how they coped mentally during the drought, some people expressed a sense of realisation and even surprise at how stressful it had been. As two commented:

> *I would say it's pushed us to our absolute limits, the stress and anxiety. You don't like to look back on it too much, but now, when you start to recall, yes, it pushed me to depression and a lot of anxiety* (5a, M, 30-40).

X [her husband] didn't know how bad he is unless he could step away, until that burden's been lifted. Me either I suppose. You look back and you think: "Hell, was I really like that?" It was shocking. I think you get a better perspective in hindsight – which hopefully will come now (38a,M,50-60).

This sense of realisation suggests that some people had had limited opportunity or perhaps inclination to reflect on the drought since its recent end; an idea borne out by the discussion below about how busy people were as a result of the extreme wet conditions, and about how keen they are to put the drought behind them and move on. The latter also reinforces the finding in Report One that most people utilise problem solving ("getting on with it") rather than emotion-centred coping strategies, which tend to limit awareness of one's emotional state[7].

A couple of people discussed suffering from acute clinical depression and nervous breakdowns. For this group, awareness of their mental state was forced upon them at some stage during the drought due to things reaching a critical point at which they could no longer function normally. One farmer was very candid about his experience:

I went through a bloody huge depression over the last years [...] I got to the point where I couldn't go and open the gate and repair things like that. I ran into real strife [...] You can only cop so much shit before it starts to have an impact on you, I think [...] It's like a black dog chasing you, you know? That's what I liken it to. It was just like he was just there all the time and if you made a slip, he'd eat you. That's what it was like. You'd take a step forward and two back. When you go to do something on the farm and you get there and you can't do it, you go, "Eh?"... You wonder why the hell you do it, you know, because that's not what you're about [...] I was walking around all night, you know. I'd be up all night and the next day I'd be shithouse through it, really tired and felt really, really ordinary. That just builds up and builds up and it's just a snowballing effect where you just can't survive. You can't survive with no sleep. It got really hard. [...] But my real issue was that I thought I was just letting the kids down (40a,M,40-50).

For most people, the main mental toll of the drought was not a dramatic breakdown, but a more subtle and insidious erosion of their morale. Many interviewees discussed feeling frustrated, unenthusiastic and uncertain about their capacity or willingness to continue farming during the drought. As some explained:

We lost confidence more than anything. We actually lost confidence in our ability to make the right decision, because everything we seemed to do was wrong [...] in the end it didn't matter what we seemed to be doing. We'd say 'are we making the right decision here?' We just lost confidence (31b, F, 50-60).

[7] As discussed in Report One, problem-solving coping strategies are those that focus on solving the source of the problem, while emotion-centered coping strategies notice, and address as a barrier to effective action, the negative emotional effects the problem creates (i.e. they involve working to get into a better frame of mind before tackling the core problem).

I suppose I got pretty disillusioned after the 2006 drought. It just seemed to change my whole outlook. I was fairly enthusiastic and looked forward to a few extra years, but the last two or three - it's been a mental struggle [...] just to keep motivated (37a, M, 60-70).

It grinds you down [...] You sort of you feel like giving up (32a, M, 60-70).

To be fair, we started to lose faith in it for a while ... Sometimes we think, "Bloody hell, I don't [know] why we are doing this for" - whether we should be going and doing something else (21a, M, 40-50).

We did question why we were here. But, anyway, you hang on and hopefully it's turned around now (21b, F, 40-50).

Probably the last three, four years have been worse because it just piles on top of each other. It gets to you. I probably haven't been entirely fair to family at home (2a, M, 30-40).

The above comments indicate the work involved for interviewees in identifying and articulating how they felt or continue to feel. Beyond the terms 'depression' and 'anxiety', which refer to quite particular psychological conditions and also continue to carry a degree of social stigma, there is not an obvious vocabulary available for people to describe the way the drought has "ground them down" and made them feel depressed at times while not necessarily creating clinical depression. It is here that X's term 'demoralisation', with its focus on morale rather than cognition, seems to be a more useful term to describe the general effect of the drought on the farming community.

While many interviewees were quite philosophical about the drought and reflected on it as a relatively closed period, some people indicated that the stress they experienced during the drought continues to affect them. Complicated by the psychological effects of the more recent extreme wet – which are likely to have tempered the negative impacts of drought for some and worsened them for others – some described continuing to feel worried. One farmer for example mentioned having trouble sleeping:

I suppose it's a combination of the dry and the drought and everything. It gets me. You can be sound asleep, then you'll wake up thinking about something or other. So your mind must be ticking all the time (30a, M, 50-60).

More generally, the interviews give the sense that at the time people were feeling much better for having come out of drought, but were nevertheless still somewhat depleted and weary. This is seen in the way that some interviewees slipped between using past and present tense in the quotes above as they discuss the drought's impacts.

Climate is of course only one influence on people's wellbeing. While many people, as one farmer described it, 'ride the rain' emotionally (26a, M, 40-50), the relationship between people's reported business difficulties and emotional wellbeing is not as linear as that between climatic conditions and mental outlook. As found in Report One, some of those who reported the greatest farm challenges were among those who seemed least perturbed, and some of those who reported being in relatively strong financial positions admitted to feeling highly stressed.

This relationship is further complicated by differences between partners. Couples often characterised each other as normally a worrier or steadier within their relationship, irrespective of how the farm was going. How these roles were distributed across the genders varied. For example, some males (all of whom were farmers) were represented as inherently philosophical and easy-going, but others were represented as apprehensive and grumpy. As seen in some of the quotes above, it was a change in demeanour from unflappable to anxious or deflated that alerted some interviewees to the impact the drought was having on themselves or their partners. This shift is all the more significant when it is considered how strong the norms of mental toughness and optimism generally are within the farming community (discussed in Report One and Section 4.7.1). As now discussed, many people's demeanour and optimism bounced back rapidly as landscapes and livelihoods were revived with the rain.

4.2 The water received in 2010/2011 brought great relief and promise

4.2.1 Some farmers invested heavily in 2010 in response to the early rain

Substantial rain fell over the study region in 2010 and early 2011. While the rain in early 2010 was far less than that in the second half of the year, and was not sufficiently substantial to induce a widespread sense that "the drought was over", it nevertheless engendered a degree of hopefulness and excitement. Sowing conditions were promising: some farmers were inspired to go relatively 'hard' (i.e. farm relatively intensively) in order to try to capitalise on the apparent production opportunity and kick-start their drought recovery. While some encountered problems with locusts and had to delay or repeat sowing, the 2010 season progressed promisingly. Some took the opportunity to add more inputs to further boost yields. The investments and care taken across the board were rewarded with strong-looking crops emerging across the region.

By the second half of spring, most crops were looking bountiful, not only in relation to the previous drought years but in comparison to average years. A truly 'bumper year' beckoned and people's hopes began to soar. Although threatened by heavy rains in September, as harvest began in November, things were still looking exceptionally promising. One farmer described the joy he gained from just two days of harvesting a 'beautiful' crop. Although after this period he, like virtually all others, was halted in his tracks by further heavy rains – substantially tarnishing the financial and mental benefits of the record breaking yields achieved – there was a small window of time in which he and others experienced a much-missed degree of professional satisfaction.

> *This time last year [the start of 2010] I was struggling. I just didn't feel very motivated about it at all. On edge and tight and worried about locusts, and worried about the next thing that was going to come all the time. I was just tense all year. [...] then I had two days of harvesting lentils: number one lentils. They were beautiful. They were going two and a half to three tonnes to the hectare and it was just magnificent. I had two days of just absolute "Ah! This is great! This is what farming's all about!" I just loved it. Then it rained [laughter]. Anyway, I had two days... It was just a notable difference that I actually felt good for two days - and this is what I do it for. Things were great. Then it rained [...] it would have been great if we had that whole harvest like that, but anyway...* (28a, M, 30-40).

As another farmer commented, referring not just to the significant quantity of rain he received but its role as a turning point in his professional life:

It was very, very significant rain ... I've been waiting for that rain for a very long time ... It was hugely game changing for us (26b, F, 30-40)

The boost in spirits described by these farmers was apparent in a more general sense within the community. It was a boost that sustained many through the subsequent disappointments.

4.2.2 The wet conditions rejuvenated many people's hopes and some people's incomes

Although in the end many people were negatively affected in some way by the timing and excessiveness of the water received (discussed below), for the vast majority its arrival by sky or creek was initially a source of excitement and relief. It was taken as a sign that good farming and living conditions had finally returned, or were about to do so.

In general, the wet conditions over 2010 engendered an overwhelmingly positive response among interviewees, despite also introducing significant problems. People's embrace of the wet conditions, difficulties and all, points to the many positive roles water plays in a drought-stricken farming environment. The water brought personal joy and professional rewards, instant relief and future promise. It vindicated optimism and commitment demonstrated during the drought, about climate but also about farming and rural life more generally. Many people noted that their whole outlook has shifted as a result of "seeing it could rain again". People indicated that they were allowing themselves to think and talk longer-term again. One farmer mentioned, for example, that he was excited about building up his family's farm for his children after seeing that "it really will rain again after a drought, and you can keep going" (15d, F, 30-40).

In terms of immediate outcomes, for most interviewees 2010 was a significant improvement on the production of previous years. While it was also perceived as something of a false start to a proper financial recovery, many were simply relieved that they had not had another negative income year. Although many expressed disappointment that their bank balances had not improved as much as they had hoped, the emphasis was on the fact that they had finally stopped declining. As one woman put it:

This year came just in time [...] Things are now much better but not good. We are on our way back but have a long way to still go (21b, F, 40-50).

A few did report reaping the benefits of the rain in the short term. They achieved substantial yields and – thanks to simultaneously strong prices – exceptional incomes for 2010. These fortunate few experienced the rapid recovery year that all had dreamed of. They expressed the joy that can come from long-awaited professional reward and the satisfaction of having their faith in farming vindicated, especially in the face of others' doubts:

2010 was a magnificent year. It was one of the best crops I've ever had [...] It was hard work - real hard work. But 2010 was an amazing year for us [...] And we needed it for a long, long time. I've always told me kids, but they'd say: "Why do you do it all, Dad? Why do it all Dad?" And I'd say: "One year, everything's going to come right and I'm going to be a millionaire!" [Laughs] And this year would have gone as close as you could get to! I reckon it's a great time to be farming (27a,M,50-60)

> *X [his wife] often used to sa,y "Why don't you just chuck it in? Sell it and get out of it?" Well, last year we came up with a massive year! And this year we might be coming up with another one*. (5a, M, 30-40).

> *The canola crop virtually cleared our debt. Just one crop! Amazing!* (14a, M, 60-70).

These quotes make clear the connection between success in the present and optimism about the future. Although at the time of interview these farmers were uncommon in feeling that 2010 was such a clear-cut success, they were far from alone in feeling that optimism about the future was warranted. Virtually all interviewees were strongly focused on the delayed positive effects they expected to flow from the recent wet conditions. There was acute belief that some of the water received, while of little immediate benefit, would be carried over into the next growing season(s) as sub-soil moisture and on-farm water storage. It was also the source of great optimism about the near-term future. As discussed further below, virtually all farmers were planning on trying to capitalise on the production opportunity it presented.

Besides the production outcomes that the wet conditions delivered or promised, the water ushered in a more general sense of possibility and hopefulness: its symbolic value extended far beyond its role in crop physiology. Some interviewees expressed a general optimism that their lives had turned around and their future had opened up. There was a sense that if it could rain and even flood again, then perhaps other almost-forgotten positives could re-emerge also. As one farmer commented:

> *To see an event like that - just a complete flip of weather patterns - sort of restores your faith in our chaotic business that we have. So for me it was quite positive even though there were some economic problems at harvest and that sort of thing.* (26a, M, 40-50)

Many commented on the excitement that was generated by seeing something new and perceiving their environment in a new light. As one noted:

> *I think there's a lot more confidence around now that it's rained. There's actually water in dams and swamps and things around the place. It's interesting - you know there was a whole group - up to 18 and 20 year olds - seeing stuff that they've never seen before this year* (35a, M, 40-50).

The unusual amount of water brought with it a sense of previously unimagined potential, exceeding people's living memory of what was possible. Some interviewees spoke with awe and wonder at the flood waters they had witnessed. One commented:

> *It was amazing to see - the water running in places that nobody contemplated here. Water running across the road between here and our barn which my father told me could happen but I didn't believe him... If you didn't have economics in it, it was just amazing to see.... You virtually wouldn't have believed it if anyone told you, just wouldn't believe it* (26b, F, 30-40).

Associated with the physical spectacle of the water was the life it brought back to the natural environment. Numerous interviewees expressed exhilaration at the greenery that rapidly sprang up around them in a dramatic manifestation of the boom-and-bust cycling for which the Australian landscape is renowned, or infamous (Wahlquist 2008). A number expressed pleasure in the bird life that had emerged on their farms and another was excited at having rare butterflies around. One

farmer commented that a positive of having his back paddock flooded was that it was now full of swans. Another said:

> *The birdlife that's moved in the area - the wetlands - stuff we haven't seen here for years have come back, and stuff you'd rarely ever see [...] There's lots in there now - rare stuff* (5a, M, 30-40).

For some, the farm environment includes precious gardens and natural areas they and others have nurtured over the years. As three interviewees commented:

> *We identified wetlands when we arrived here and fenced all them out and they've stayed that way - but unfortunately not as wet as we would like. Fenced out the river and tried to make that a feature and all that sort of thing. [...] We went out [...] and took some photos this morning – just of the fact that all those areas are really benefiting from this, like all the Bulokes, the Melaleucas and all those sorts of things are flowering profusely... The swamps and the frogs, and the birds - just everything. It's just beautiful out there this morning. The swamps up the back are just a picture, which we haven't seen it like that and there's kangaroos [...] And just driving from Ballarat, every town is just beautiful, the flowers are just - there was roses and everything looks beautifu. [...] It's an absolute picture. Whereas 12 months ago, this time last year, well, it was so depressing.* (38b, F, 50-60).

> *One big plus out of all this rain is the rejuvenation of the landscape [...] over the last few years, we've been watching the timber out there [an area of natural habitat] gradually attenuate and then suffering and suffering and suffering. The timber was unrecognisable. Because it was so slow, we sort of didn't realise. [...] It's just amazing what the rain has done now.* (1b, F, 50-60)

> *Yeah, I don't know - just when the birds are singing and the weather's nice and the grass is growing and the trees have got new growth on them, you just feel happier within yourself* (33b, F, 30-40).

The reinvigoration of the environment that the wet conditions catalysed is of symbolic as well as aesthetic value for residents. Witnessing the power of rejuvenation in the landscape seemed to give some interviewees hope that they too could bounce back as vigorously.

Overall, from a farming perspective, the wet conditions played a multifaceted role in people's lives. In contrast to the more uniformly negative impacts of water deficit, an overabundance of water mixes good with bad. The extent to which people perceived the water as problematic depends in part on how the vagaries of its spatial distribution affected them. It also depended on the extent to which they viewed it as the arrival of an additional problem, as opposed to perceiving it as an end to the problem of drought. Most indicated that, compared with the painfulness of drought, overabundant moisture is a relatively pleasant problem to have to deal with:

> *A bad harvest due to rain is much more positive, psychologically, than bad harvest due to drought* (1b, F, 50-60).

> *My preference would be for extreme wet. There's money in mud. There's no money in dust, none at all.* (6a, M, 50-60)

Money in mud, there's money in mud. It's an old saying, there's money in mud. You lose a crab hole and you make up for it in the bank. In the drought you lose everything. (32b, F, 60-70)

Well there's a light at the end of the tunnel at wet. [...] If it's wet it's going to - a wet is going to hold it through for a few years to come. But a dry - there's no benefits in a dry. The only thing is that God says the ground has got to have a spell. We've just been flogging the ground and flogging the ground too hard and He said "Come on, this ground has got to have a spell". But the spell was a bit long! [Laughs] (27a, M, 50-60)

I'd much rather see water running across the paddock than poor old crops dying, even though you do lose ou. [...] It's so much better having a wet year than a dry year (28a, M, 30-40)

We've got a block [...] that got flooded out - so a hell of a lot of work there to re-fence it. The positive side of it is the rest of the farm was good. I'd rather see wet seasons than dry seasons (28a,M,30-40).

Overall, while both drought and flood are extremes and thus disrupt the normal pattern of farming and living, drought involves the absence of a multipurpose resource. This can quickly push human and natural systems below a critical threshold. Drought cuts off the hydrological cycle and with it, management and survival options. Flood and extreme rain events, on the other hand, involve an excess of a resource for which maximum limits are less clear cut. Quicker to emerge and dissipate, excess water can be devastating but brings also a sense of drama, abundance and possibility.

4.2.3 Jointly facing the floods revived some people's connection with their community

In a number of ways, positives emerged from the wet conditions beyond the farm scale. Some interviewees noted that the flood crises led to cooperation and community spirit in their local community. While a couple of people commented that they were left to battle the floods alone on their farm, the collective effort directed at saving local towns was energising for others. As one commented:

The way the community worked together to protect the town and the community. That was pretty amazing. Yes. Just seeing the dedication and commitment by everyone doing it, that was good [...] I think that was probably the biggest positive that came out of it really (13b, F, 60-70).

The community spirit that emerged during the floods was particularly pleasing for some people because it gave them a more positive perspective on others in their community; a place which, as discussed in a separate section below, is undergoing substantial changes. As the woman above and her husband continued:

Husband: *Yes, they put in some long hours, some of them, especially some of the young ones as well. It was good to see really - the young ones helping out*. (13a, M, 60-70)

Wife: *Yes, they were very involved, a lot of the young people. So that was reassuring, I suppose, with the young people and their commitment and what they can do.*

They've done a few silly things in the past but X [her husband] reckoned that they've redeemed themselves. (5b, F, 30-40)

A further way in which the wet conditions enhanced community connectedness was by providing a place for recreation and relaxation. The study area features many shallow lakes which, before the drought, were an important focus for water sports, fishing, picnicking and camping. When they dried up with the drought, so too did the chance for such social activities[8]. Numerous interviewees mentioned that the associated social interaction and economic benefits to neighbouring towns had been missed, and that their recent return was much appreciated. Many people were now experiencing a more relaxed feeling because of the perceived boost to their farming future. Combined with this, some commented positively on the opportunity of re-establishing a bit of work/life balance themselves, while noting their pleasure in seeing others come back to the area to enjoy the lakes.

Over the holidays, there was a lot of friends and family relatives camping at the lake - bringing all their families home and all (5b, F, 30-40).

We can go out to the lake now if we want to with the caravan and I can just come home and do the work like I used to 30 years ago. Or if we want, we can spend the weekend away (32a, M, 60-70).

Having people around them feel more positively is itself a positive for others. Interviewees spoke of how much they enjoyed lift in the whole demeanour of people in their town. As one woman commented:

You know, when the drought sort of broke, if it has broken as such, the difference in people's faces - the lines have disappeared and their eyes were brighter and people had a bit more bounce in their step. Working in town you see that all the time, you see the change and you see the difference, the tone in people's voices. It's certainly been a very, very positive thing. Even the kids were feeling it. I think they were picking [up] on the vibes as well (6b, F, 50-60).

Further, there were signs that the boost in morale and the reminder of long-past flood events had germinated dormant hopes about the future. By reminding people of the heyday agriculture had once enjoyed in the region, the wet conditions also seem to have replanted a vision of thriving farming businesses and prospering rural communities. As another farmer commented:

People now think, well, maybe there is a future here (1a, M, 50-60).

By reconnecting people with past times, the re-emergence of wet climatic conditions seems to have allowed them to revive a sense of continuity previously threatened by the way drought ground activities, plans and relationships to a halt. Such a sense of continuity helps give our lives coherence and meaning, which in turn is associated with psychological resilience. Recent work in psychology also suggests that nostalgia for the past is often based on memories of times of strong social connectedness. These memories can in themselves enhance people's sense of wellbeing and lead to their seeking greater social connectedness in the present (Routledge, Arndt *et al.* 2011). In these

[8] The effect of the floods is tempered by the fact that before the floods many lakes had been filled with water from the Wimmera-Mallee pipeline. This investment of water reinforces the message that the lakes are valued by the community.

different ways, the benefits of the water flowed through the community. Yet, as the mention of crisis above indicates, the rain and floods were not without their costs. As now discussed, for some people, the timing and manner in which the water arrived left little time or inclination for social interaction, relaxation or reflection.

4.3 The wet conditions also brought disappointment, disruption and exhaustion

4.3.1 For some people, the lost potential of 2010 was deeply disheartening

Growing good crops is a slow, difficult, expensive and risky business. It begins long before the seeds are sown in April/May; nurturing a crop through to harvest involves a complex series of tasks. Young crops are monitored and managed carefully. Within the constraints of competing demands, much intellectual and physical effort is expended in ensuring that their development is optimal. The weather, which can foster or hinder the growth being nurtured, is the most powerful influence shaping farmers' management decisions. Each week alters the imagined trajectory of the season as the weather conditions required at each stage are mentally ticked off or passed with trepidation. As the process continues, so too does the sense of build-up. Investment and anticipation grow with the yield, culminating with the harvest and inauguration of grain sales in November/December. Over all hover the quantity, quality and price of the final product, acting as an arbiter on the success of the year. In turn, the options of many businesses and households for the years ahead are determined.

In 2010, as described above, many farm businesses and households began the year in a relatively precarious position. The financial and mental risks inevitably involved in gearing up for the season were accentuated by the financial and mental strain under which many were already labouring. As the season unfolded, their commitment began to be rewarded. Conditions were favourable: more favourable than they had been for a very long time. Hopes began to gather as rain fell in an uncommonly abundant and timely fashion. Many read the signs and decided to go for it, inputting more into the crops. Problems appeared in the form of locusts, young ones proliferating among the plentiful foliage and spreading down through the Mallee into the Wimmera. For most, disaster was averted as farmers responded aggressively, investing weeks and considerable resources into monitoring and spraying the locusts as they appeared. For most, a bumper harvest – a *record-breaking* harvest – continued to beckon. So too did a bumper income. Although the dollar was strong, prices were, unusually, on their side and began to soar. People began to allow themselves rough mental calculations of the financial recovery they would enjoy, tempered by the substantial amount many had invested throughout the year. All that was needed for them *to cash in* was for the heavy mature grain heads to ripen ready for harvest. A stretch of warm, dry weather of the sort so regularly experienced in previous years was required.

What arrived instead was rain: lots and lots of rain. Grain quality deteriorated rapidly as a series of heavy rainfall events occurred across the region. Some farmers responded by beginning harvest, doing their best among the difficult wet conditions, stopping and starting as conditions fluctuated. Others decided to wait for the crops to dry out, desperate to be rewarded for the top quality product they had grown and perhaps disbelieving that such unusual rain would occur again. It seemed to work and drying began, but further rain then fell. Increasing numbers of farmers decided

to harvest immediately to save what they could. But the conditions for harvest deteriorated together with the grain quality. Contactors were quickly booked out and neighbours helped each other as people worked day and night, fighting equipment failures caused by the wet and waiting impatiently in long queues at the local silos to unload each truck.

As the water accumulated, many of the huge crops sitting out in the paddocks simply became unharvestable and large areas of pasture were also ruined. This was especially the case for those who copped not only the local rainfall, but the results of the unprecedented falls further north. Any farmers near (or even not so near) water courses – including old water courses barely noticed or forgotten for years – found themselves fighting the more immediate challenge of flood waters spilling out of their local area and/or broader catchment. Roads were cut off and harvesting equipment, trucks, houses and stock stranded.

So too were vast areas of promising crops. Over the following weeks, Sitting in or surrounded by water, the crops many had admired as 'beautiful' began to grow mouldy and reshoot, particularly the low dormancy, newer varieties in which some farmers had invested. At the same time, a second generation of plague locusts threatened to band; farmers were urged to include locust spraying in their long list of pressing jobs. Christmas and New Year came and went, bringing many holiday cancellations and more rain. Extensive flooding in some areas caught out some of those who had gone away for a break. Flood waters remained on the flat, sodden soil and crept away only slowly over the following weeks and months. Among those farmers still trying to salvage crops, harvest continued for weeks and months longer than normal, yet still necessitated the abandonment of some last paddocks. Some of the damaged grain was sold for stock feed, despite low prices. Some was put away to allow people to work out what to do with it as they began the slow process of tackling the long list of secondary problems that emerged: treating flyblown sheep, re-fencing paddocks and finding feed for stock.

In the aftermath, some people were shell-shocked by the magnitude of the losses they had suffered and the strange timing and manner in which they had occurred. As noted earlier, many recovered, buoyed by the potential they had seen, the rewards they had salvaged and the thought of a bumper year the next season. At the time of interview, some had started to put it all behind them, focused on getting organised for the 2011 season. In a demonstration of the sort of mental resilience many value in farming (discussed below), some interviewees described how they are trying to move on and look to the future:

> *I was - I was very disappointed when the rains were ... yeah, you could see the crops deteriorating and the potential ... All the plans you have [...] Thinking, well, it's not going to happen this year. Yeah, it was disappointing for sure [...] but we're looking forward to the potential of the next year. We just hope the same thing doesn't happen next year, because we just hope we get that dry finish. We're always complaining that we've got no rain, but you need it at the right time don't you?* (24b, F, 30-40)

> *That whole lot - it was 500 acres - the whole lot of it just went under water, plus 200 acres worth of barley crop. It was an okay barley crop, too, but that's all gone ... We had bought a couple of things with John Deere Credit but we phoned them up and they've agreed to postpone it for 12 months* (11a, M, 40-50).

> *Look, we've had our days [of feeling down] ... realising the loss we will have to our income. You know, that was a third of our crop and it was our best ever crop. So that side was fairly, you know ... But we have just had to deal with that and make some decisions.* (10b, F, 30-40)

> *With the wet, it caught me right in the end [...] the day we carted the first load away it was about 11 o'clock at night, around Christmas time. [...] I done the rest, left it and sold it the other day on the highest price [...] it's the highest it's ever been. I'm pretty proud of that. So there is a change. Don't have to worry about borrowing money this year, I don't think at this point in time* (32a, M, 60-70).

However, for many the disappointment and stress took its toll. Many interviewees were still coming to terms with the change in their circumstances. Financially, as seen above, some received a boost to their income, even if less than was first thought. Most were unsure of the total financial implications of the wet, in part due to the ongoing nature of the costs involved. A few reported that they had definitely had another negative income year. For one family, this was because they had invested in upgrading machinery on the potential the year posed:

> *This year, you know, this year, we will be set back probably more than any of the drought years we've been set back. Would that be a fair assessment? Yeah, so this year, financially, will set us back more than the ten years of drought because we made some investments on the strength of good season ... You know, the end of the drought years, machinery needed to be upgraded or things needed to happen, which the drought probably hadn't allowed us to do at a level that we probably needed to do before. So everything was banked on this year* (11b, F, 40-50).

The strangeness of the end of year rain and flood, on top of the prior drought and heat and other problems, created a sense of being hit from all sides. The farmer married to the woman quoted above, for example, explained:

> *We've just never had this sort of thing before. Looking at photos there - one on the screensaver there, on the computer there – you see we had some beautiful hay crops [...] It was a beautiful green colour, standing up nicely and beautiful windrows. It was cutting not too bad and you know, we had a few hassles, but it was all there - a heap of stuff was there. The crops were good. Now there's all this rain on the hay and that - it's in square bales so a lot of it will get, be ruined probably. So it just - well I don't know about giving up, but what was going to be such a good year turning out to be such a bad year ... We've got to try and work our way to be able to continue on. I wouldn't want it to happen again. I only hope it's once in a life-time thing [...] I mean, who would have thought that we'd get another nine inches of rain, you know, fair in the middle of harvest? [...] We had flood water coming through from the Avoca system plus a lot of it is local water come off the hills and that. Yeah, so the two sort of hit us on two different fronts* (11a, M, 40-50).

Other interviewees similarly commented on the unusualness of the conditions:

> *We got a once in a lifetime frost, a once in a lifetime heat wave, and now once in a lifetime - hopefully – flood* (31b, F, 50-60).

You've got to try and stay positive all the time. Sometimes it's hard to. There's always something to test you. We had the heat of 2009. Then we had the extra water that we didn't need in 2010. There's always one element that you can't control (28b, F, 30-40).

The above use of word 'always' points to the concurrent sense of *déjà vu* that accompanied people's shock at the conditions. The pain of losing a crop was exacerbated by its very familiarity. For many, it was not the change in circumstances that was painful as much as the longer term *lack* of change in circumstances that the lost potential represented. From a farming perspective, there is fatigue at having effort again squandered. An older farmer, who had, like the one quoted above, been tempted to invest in new equipment, was held back by the memory of past unexpected twists to the season finish:

Things looked terrific back in September. But they always do, and I think we're getting used to the fact that we know that something is going to happen. "It's too good to be true" and all that sort of thing [...] I remember sitting down in August or September and doing a bit of a financial plan of where we could be at, looking at the way the crops, their potential and the prices that were sort of around at that stage. I thought "Hell, this is fantastic! We could knock $300,000 off our loans and we could buy a new this and that". Then you think "No, I won't go and order a couple silos and I won't order the new tractor or I won't do this or I won't do that". Because last year we were in a similar situation – then we had two weeks of hot weather - so, goodness knows, I thought something will happen and it won't eventuate ... Lo and behold, we had two or three or four inches of rain or whatever it was and we didn't get harvesting until just before Christmas or something. It was ridiculous (38a, M, 50-60).

The main emotional impact was disappointment and demotivation. As some interviewees described:

I think everyone just got so optimistic after so many bad years and thought this is going to be the one, this is going to be the one and then at the end ... it just wasn't what we thought it was going to be (34a, M, 40-50).

It was devastating. It was the worst time I think we've ever had on the farm in over 20 years [...] To have such beautiful crops out there and then within a week it's all taken away (21b, F, 40-50)

One woman who watched her farm's potential profit plummet over a period of weeks described the frustration:

I think the level of disappointment this year has been very, very debilitating. Psychologically, it has been. [...] I'd just love to be able to say "We've had a fantastic year". Or a good year. We'd like to be able to say, "We've had a good year". Some people have [...] I'm sick of being the one to whom everybody says, "I'm so sorry". That's what my friend said to me this morning. He said, "X [her name], I'm so sorry. But you must be sick of people saying that to you". I said, "Well, no, I'm not really sick of people saying "I'm sorry". But I am very sick of being the one for whom people feel sorry. I'm sick of it." (1b, F, 50-60).

Frustrated at having only a further tale of woe to recount to friends and family, this woman did not call some of her family members over the Christmas and New Year period as she normally would, instead withdrawing. She explained:

> *That's why I don't want to ring up [my family] and grizzle and moan and say, "Yes, it's bad again. Yes, we've had seven inches. Yes, the crops are shot. No, we won't be able to harvest them. Yes, we've only got another quarter of an income [...] when we were going to have a good year". I don't want to keep on saying it [...] The reason I hadn't been ringing [them] was that I am just sick of telling everybody it's bad again* (1b, F, 50-60).

This story illustrates the way farming circumstances shape the social interactions that farming individuals experience. It endorses the observations in Report One, when the extremity of the drought in 2007 intensified the social surveillance were under which farming individuals felt themselves to be. The circumstances of a farm can position its owners within social interactions in ways that are often unwanted and beyond their control. This includes being seen as an object of concern, pity or bemusement.

The wet conditions in 2010/2011 especially lent themselves to processes of social positioning because the effects were far more spatially and temporally variable than those of drought. This was not only because of the patchy way in which rain and runoff were distributed across the landscape compared with the relative uniformity of their earlier absence, but because of the significant role played by management decisions in the impacts experienced. From the type and variety of crops being grown, the amount of inputs vested into them over the year, the number of sheep kept, the extent and location of off-farm work, the timing of harvest, the employment of contractors, the purchase of grain storage, and the method of marketing, dozens of earlier and reactive decisions contributed to the different outcomes farmers experienced. One woman commented that over harvest:

> *People would sit on their header and know the rain's going to come again and wonder how they'll manage. And then they'll look over the fence and someone's brought in a tribe of contractors and got their crop off ... So then it's "should we be doing that?" you know? [...] So there's certainly a degree of, "Well, others have managed things better or different"... I mean, you make what decisions you make at the time. We certainly can't regret what we make. We make them for good reasons and then you move on. But yeah, it's interesting* (11b, F, 40-50).

Along with a sense of unfairness at the impacts experienced, therefore, some also had a keen sense of self-scrutiny and, in some cases, blame.

For the woman quoted above about not wanting to be in a position where others felt sorry for her, frustration was exacerbated by the feeling that her advice about how to respond to the rains – by quickly hiring contractors to get the crops harvested - had gone unheeded by her husband, the dominant decision-maker on farming matters. As discussed further below, the situation exposed the gendered division of decision-making control between them.

> *There have been lots of little things that we can look back on now and say, if that hadn't happened it would have been so much better. [...] I don't blame him. [...] But what frustrates me is that I'm not sure that my telling [him to get contractors in] made any difference to him. [...] I don't know that he takes any notice of it [...] I mean, I said it and said it and said it. I*

was pretty sure I was right. But it didn't matter that I said it, because he wasn't going to do it unless it was right for him. [...] But it's always been like that. (1b, F, 50-60)

At the time of interview, her husband was responding by focusing even more intently on the farm, trying hard to rectify some of the difficulties they faced. While some interpreted his state as depressed, he explained he saw it more as being locked in battle:

I've just been focusing on trying to do the job. I've been obsessively trying to do it. Now, that's different from being depressed. That's just being determined that I'm not going to let this year beat me. It's about "Get it done - I'll feel a lot better". (1a, M, 50-60)

The above quote points to the recognised importance of trying to re-establish some sense of psychological security in dealing with disasters (Citraningtryas 2010). For some farm households, the extreme wet was a disaster.

As described below, a sense of crisis was most acute for the minority who were badly flooded. For those who were not in this category, appreciating that they had "escaped" a worse outcome was a common coping strategy. As found also in Caldwell and Boyd's study of a drought-affected farming community (2009), this technique of emphasising one's 'comparative advantage' in a situation inverts the process of being socially positioned as an object of pity. Numerous interviewees qualified their losses in terms of what could have happened but didn't, pointing to those more severely impacted within the region or interstate. For example:

X [her husband] has a few times - probably not such in the last few weeks, because the last few weeks has knocked us – but earlier you've made a few comments that we're not the worst off and there's certainly others going through it, haven't you? Perhaps we've held on to that a bit (11b, F, 40-50).

My dad said that we got the cake but we didn't get the icing. That's probably a good way of putting it ... We've got to be thankful that we got that, because there's a hell of a lot of people up north, in New South Wales and stuff that just lost the lot (28a, M, 30-40).

Many thus identified themselves as unlucky, but lucky, contributing to the positive outlook most managed to adopt following their initial shock and disappointment at how 2010 turned out.

4.3.2 For all, the wet created a wide range of delays, disruptions and extra work

Regardless of whether they were badly flooded, and regardless of whether they were focused on their recent losses or gains, all farmers faced considerable extra work as a result of the wet. The farmer quoted above about 'obsessively trying' to do the job described the tasks he faced:

It's going to be a really long autumn, getting the crop off and spraying the weeds [...] All this new work's been created, spraying weeds, chasing flies ... Waiting for it to dry out and going backwards. Almost doing things which you should never really do, like pulling a ute and tractor out of the bog ... some of the paddocks are so wet that you can't even imagine putting in a crop this year [...] Yeah, you wonder how you're going to get through (1a, M, 50-60)

His wife outlined the plan and intended outcome:

First of all, we'll deal with the flyblown sheep. Then we'll deal with whether we can get a bit more wheat off. Then we'll deal with whether or not we're going to strip the barley, and then we'll think about weeds ... And one day he'll wake up and he won't feel as bad as he's feeling now (1b, F, 50-60)

The quotes above suggest just some of the many extra jobs the wet conditions created. While having water in the farming system leads to positive flow-on effects like the stored soil moisture described above, it can have a range of negative side-effects as well. Unfortunately, for many of the farm households interviewed, some of the major possible side-effects were eventuating.

The difficulties were created by the six extra or unwanted demands on their time and energy:

- emergency flood response
- crisis harvesting
- delayed and disrupted harvesting
- repairs to equipment, fences and land
- flow-on management issues
- extra/more difficult road travel.

These are discussed in turn below.

First, extra work was created by the crisis response some needed to minimise flood damage to their properties or local towns. While only one family's house actually flooded, many others had to fight off the water, and other buildings and equipment were flooded. As some explained:

Well there's been a fair bit of damage [...] Not in the house - we sandbagged the house - but in the sheds and roads and everything else. [...] we had two days without power. [...] so it sort of - because you had to have the generator going for your fridge - so you had to get up during the night and - not that that's that big of a hassle - put fuel in it and then try and keep things cool. [...] you've got water's never been around the house and around the workshop what it was before. [...] It was just amazing the amount of water that was around [...] So it's been a fair bit of extra work involved fixing that up (13a,M,60-70).

It flooded all our country down here, sheds included. We had to sandbag our house or else it would have gone under as well [...] there's a lake on the property and it hasn't been filled for 40 years. It's got 8.2 metres of water in it [...] Around here, there was four front end loaders and two Hi Macs and forklifts and they were able to move 10,000 sand bags to where they were needed [...] We were shut off, we had no phone for three weeks and no power for five days (14a,M,60-70).

X [her husband], he worked - I don't know - 36 hours straight trying to stop the water coming over the road. But it ended up coming in from the side. So I think that was fairly physically and emotionally draining (13b, F, 60-70).

When we got that six inches of rain in 12 hours - about nine, nine-and-a-half inches for the week - that's when the major floods came through. We went down to one paddock the day before and our header and our truck and field bins and the tractor was still okay - out of water there. But I went down the next morning, because I heard that there was a breakout of the floodway somewhere [...] and the header would have been in about a foot-and-a-half of

water. It was all over the paddock [...] we were able to get the comb off the header. We dragged the comb home on the comb trailer. We dragged the truck home - with four wheel drive tractors - and were able to pop the header up onto a dam bank and keep it up high and dry so, we really got out of that alright, but it was close (11a, M, 40-50).

Some suffered a sense of wasted effort. The house of the previous interviewee was subsequently flooded. For others, there was the frustration of having to repeat the flooding and recovery process:

When it first rained in September it absolutely, completely flooded our farm ... Then that recovered and then we got flooded again (31b, F, 50-60).

For some, the impact of flooding was extended by their involvement in helping to assist their local communities. One family close to a town that was seriously threatened by the floods was involved in the local effort to divert the waters around the town perimeter. As the wife explained:

X [her husband] is a river warden [...] and they found out [about the flood] just before the river started to rise. He and two other wardens had to manage the flood here. They spent a week of not much sleep dealing with it. So it was sort of like a week out of ... you know, everything sort of stopped except for that. Same for everyone in the flood situation. But they ended up saving Y [the town] so that was the benefit (4c, M, 20-30).

Another woman who works for her local council was extensively involved in the crisis management in the area. Her description gives a sense of the devastation some people faced and the work involved in the immediate recovery process.

From a different perspective for me with my work, I sort of saw it all [the flooding] from a different side. I do work for council and was in the control centre [...] we had people who lost houses and everything, absolutely everything. It was just devastating. [...] For 10 days I hardly saw X and Y [her husband and child]. I just came and went. [...] You organise a grader or you organise a chopper with food and water, that sort of stuff. So I wasn't actually on the ground but I did do some time in the relief centre and it was just devastating to go down there and see people. [...] We're still in the recovery process and we're still trying to get people back into their homes and farmers back onto their land [...] We even had some of our employees who were just wiped out, completely wiped out – families. It's awful and they're still being billeted out. There are still lots and lots of people living with other people. Of course now they're running into the problem of the mould and the moisture. It's going to go on for months and months and months [...] I have to say, after sort of working nearly two weeks straight, 18, 20 hours days, I have to say I think I coped fairly well with it reall. [...] I guess that's exactly what you do. I think I - I mean I was tired afterwards, probably more emotionally than anything, because we did put in some big days and it's full on. You just don't ever get a lull. It's just this continuous sort of request for help (6b, F, 50-60).

Secondly, some farmers undertook a very rushed 'emergency' harvest effort. While not an extra task in the sense that harvesting is a regular job, a amount of work was compressed into a small amount of time to try to avoid the rain. As one described:

We worked all Christmas Day and New Year's Day, the whole lot, because that was before that big rain came, so we were going flat out then ... [The family] wanted me to knock off for

New Year's Eve, so I came home at half past 11:00 at night ... I would have been out there until four o'clock if I had my way (9A, M, 40-50).

For some, achieving a speedy harvest also involved extra steps: hiring contractors, borrowing or leasing equipment, storing the grain in bags or other temporary on-farm storages to save having to regularly interrupt harvesting to deliver the grain to a silo.

Thirdly, for virtually all farm households, the above frenetic activities were followed by the more common and drawn-out experience of a disjointed, delayed and difficult harvest and, for some, shearing. Quite a number of interviewees indicated that they were still looking to complete harvest at the time of interview in February, due to the many delays they had encountered: rain, flood waters, wet crops and ground, bogging and equipment failure. Comments by farmers describe the disrupted harvests they had had:

We had terrific crops out there and you could see all the potential out there ... But it didn't stop raining. It got to when we should have started harvest and it was - the moisture was too high - and you'd do a bit and you'd get a rain and all this time you're sitting there going: "I need to be out there!" [...] It was just such a big relief to actually finally get the harvest off (6a, M, 50-60).

With harvest, you just couldn't get there and get on with it and get it done. There were always stops and starts and other jobs that got brought in. It just complicated it full stop (33a, M, 30-40).

Every time we went to start harvest, the crops were flooded in. So we were in a position then where we couldn't get a header in the paddock, we couldn't get trucks near the paddock. Couldn't drive the ute in the paddocks, let alone get the header and truck in there. It was very, very frustrating ... When we got the harvester in it was so slow, just crawling (40a, M, 40-50).

The following exchange between another couple further illustrates the work and frustration involved:

Husband: *We've got a couple of silos with grain in them that went under. We're not sure how we're going to deal with that but we can't get to them yet with the trucks. Next week we'll work on that [...] there's another couple of blocks we thought we may get back on, but then it rained and they've had bad floods so those blocks have gone under and I think we've lost it all ... But a lot of people didn't get this far. It has just been a pretty stressful harvest because we had to sit around and sit around* (4a, M, 60-70).

Wife: *It really makes him cranky* (4b, F, 60-70).

Husband: *It makes* her *cranky* (4a M, 60-70).

A key disruption was bogging and equipment breakdown. A lot of machinery came to a halt as a result of operating through water, mud and thick weeds. As some farmers described, once they were able to start harvest:

*We got out there but we got bogged with the header ... There wouldn't be a person around here that hasn't been bogged with a header, I don't think. [...] And we've had more breakdowns than ever with the header. Like, you just cannot believe the breakdowns everyone's had because of the green. You know, we're carting off milk thistles that are probably as big as your finger. They are four foot higher than the crops, you know. [...] A bloke the other day said "Oh, do you reckon that's bad?" He said "We've got paddy melons laying on top of our wheat!" [...] Everyone's had about 10 or 12 breakdowns - like enough to stop you for a day or two (*33b, F, 30-40).

It has been an appalling harvest in terms of getting bogged and that sort of thin.[...] oh, and hogweed [...] the hogweed is unbelievable [...] It's just this matt of like wire ... I don't know how we're going to do it (28a, M, 30-40).

An exchange between another couple about breakdowns experienced during spraying out some of the summer weeds that proliferated in the moist conditions points to the frustration of breakdowns:

Husband: *You get the boom spray going out in the paddock and you're spraying it, you're in a straight line, and you're spraying 250 acres an hour. But then it breaks down and you can be messing around for two hours, three hours, four hours, fixing something. Then you look at the amount of acres that you haven't done...* (33a, M, 30-40).

Wife: *You can always tell when there's been lots of breakdowns because he comes home and he's selling and we're going* (33b, F, 30-40).

Fourthly, adding to both the delays in normal work tasks and the amount of work confronting farmers was an array of repairs required in the wake of the wet. These repairs were due not only to the breakdowns mentioned above, but to flood damage to fences, roads and other infrastructure. One older farmer discussed the mental challenge of repairing his workshop:

But I'm not interested in getting into the workshop as much as I used to be. I didn't sort of mind working there. But probably not now it's all ... We've got a lot of things now that's at my brother's place and we haven't worried about bringing them back. [...] Well, I'll probably get back into it one day. But I'm not that interested at the present time. So it probably has affected me that way, I'd say ... You know, I'm probably at the age where I'm sick of farming. But you add that [flooding] on top of it ... (13a, M, 60-70).

Re-fencing was frequently mentioned as a major and often unpopular post-flooding job. It was one made more urgent by the need to contain livestock, which otherwise would wander and create the further chore of having to retrieve one's own stock or return those belonging to others.

The negative is fencing. I've lost probably about 15K of fencing, could be more and that's the negative [...] Probably a bit frustrating - you get other people's sheep because all the fences are down [...] That many people put sheep in paddocks, they think it's okay, and next minute you've got 50 odd of someone else's sheep in your mob – and their lice (29a, M, 20-30).

We've lost all the fences on the mountain creek, all on the flood zone, every fence. They're not even there, they're gone (3b, F, 60-70).

> *We've lost about 10kms of fencing. It was interesting - talking to my neighbour - who said "Look, I'm 65, I've got the farm fenced just the way I want it". And he said "Now, I've lost half of the fences". He said "I don't want to do it again". He said "I've had enough". I think that reflects my attitude as well* (38a, M, 50-60).

Many paddocks were also damaged by wheel ruts and bogging caused by operating in the wet. As one explained:

> *It's created massive problems with wheel marks and ruts in the paddock. That's just another job to do - to try and fill them in or level them out.* (28a, M, 30-40).

Pastures for sheep were also ruined by the standing water in some areas. Thus, while the general area was green, some farmers found they actually had to purchase feed. One commented:

> *Where the flood's gone over, it's ruined all the feed. That's the depressing thing - depressing and frustrating. I don't get depressed, but it's one of these frustrating bits* (29a, M, 20-30).

Fifthly, a disheartening array of flow-on management issues was catalysed by the wet conditions as not only desirable, but undesirable, elements of nature rapidly regenerated. These included a proliferation of the summer and heliotrope weeds mentioned above, and a range of species making the most of the lush conditions, including flies, locusts and mice. Some also mentioned a spike in the number of snakes encountered and thick clouds of mosquitoes bothering stock and humans alike. For many farmers, dealing with these species required considerable effort and expenditure in terms of the extra inputs (herbicides, pesticides, sheep dip and mouse bait) and time needed to deal with others involved (including government). Treatments had to be repeatedly reapplied. One commented on the cost:

> *Believe it or not, even this year we had to [borrow money] ... with the grasshopper stuff and what have you* (32a, M, 60-70).

Others emphasised the time involved. For example:

> *The weed burden in the paddocks was just phenomenal and sheep with flies ... The extra work it caused was just unbelievable* (6a, M, 50-60).

> *Flies are the problem. Because I've got between two and two and a half thousand sheep, so I've got flies. I do a lot of treatment with them but you've still got to go round them every few days. It's time consuming* (29a, M, 20-30).

One response to flystrike is to shear the sheep. However, as described in more detail in Section 4.4.1, some farmers faced the conundrum that the wet conditions simultaneously introduced obstacles to shearing, including the fact that many shearers refuse to shear wet or flyblown sheep.

Sixthly, the wet also affected the working and living conditions of a wide range of people. It created the need for extra road travel while simultaneously making them less passable. Most members of farm households need to drive into town or elsewhere for off-farm work and for a myriad of other reasons. Although the worst floods occurred during the school holidays, minimising the impact on school attendance, it didn't end there. Some farm women recounted the long roundabout trips to their off-farm work and other commitments. The impact of closed roads was exacerbated by its

coincidence with harvest, a time of greatly increased road traffic in cropping areas, including heavy trucks that further damaged the roads. As a farmer explained:

> *It's turned out worse because [...] once the B-doubles and that started going through, well they just tore the road to pieces then [...] It's a lot further to go now. So it has impacted on us pretty badly really. [...] That's why some of the paddocks have got so wild - because we haven't been able to get the tractor home. We've been hanging off and hanging off, hoping we'd be able to get through* (13a, M, 60-70).

The floods increased the need for road traffic by causing equipment breakdowns on farms, which required mechanics and others to travel to them to repair them. As discussed below, for those farmers who had also taken on contract harvesting or other off-farm work themselves to supplement their income, road closures were especially disruptive. Others mentioned that when some roads reopened, water-damage reduced the load limit and speed zones, reducing the pace at which transportation of grain and other goods could occur and further slowing progress.

4.3.3 Many have not had time away from the farm to rest, regroup and reflect

The above discussion highlights that the effects of the extremity and timing of the rain and flood waters were not only positive for farm households. Many further costs, including those created by preparing to capitalise on the positive potential, were incurred. People described how continuously they worked and how drained they felt.

> *We haven't been even able to take a day off. Seven days a week, 12 hours a day. I get up at six every morning and X [his wife] has got to yell out to me at half past ten or eleven o'clock at night to come inside* (27a, M, 50-60).

> *Drained. Yep had it, yep, yep. At this stage I'm totally exhausted. We really, really need a break* (27a, M, 50-60).

One farmer reported having had nervous breakdowns due to the pressure of work:

> *I've had sort of two minor, three minor, nervous breakdowns this year, just through not knowing how I'm going to do it all ... I've had to get that stress out of my system ... I just lie down and sleep. It's all I can do until it goes out of me. It doesn't matter how busy you are – how many ... Isn't it strange that when it grabs you, there seems to be 2,000 sheep out there that are fly-blown and there seems to be that much – everybody wants you, everybody wants you to do something for them. Everything seems to be fifty times bigger and you're saying "Arghhh". You hope that somebody will help you get out of it. God, it's enormous* (27a, M, 50-60).

Despite the reported exhaustion, many farmers and some families cancelled or substantially reduced their end-of-year holidays in order to keep working through the tasks that needed to be done.

The level of importance placed on holidays varies between individuals and families. Some noted that they try hard never to miss a holiday and took one over the 2010/2011 summer because they felt they needed to have the break to get through the coming year. As one farmer stated,

I went on holiday because I said I needed a break. I was getting annoyed and so I still took my week holiday [...] I knew I still had some things to do and I should have been at home finishing that off, but you've got to take a holiday sometime (29a, M, 20-30).

Others with sheep noted that they always find it hard to get away over summer because of the constant management they require. As one commented:

We run about 800 ewes. I think as you get older, it's not as easy and also it's constant … It's nice to be able to just sort of get the crop in and knock off, but with sheep you can't. There's always something to do. But then, they've been good to us over the years and I don't think we'd be where we are without them, so we persist (38a, M, 50-60).

Despite this variation, sacrificing expected break time was widespread among interviewees. This decision was reinforced by the difficulty of getting farm help, particularly for short periods of time. As one farmer described:

Probably worse than anything is just seeing how much work I've got to get through. Emotionally, that's probably on my mind at the present - because of how much work you can see. I can't get away. I've got to do the fences, but I've got to do this and that, I'm trying to sell something, and I need to go and get gypsum but it's too wet ... I've got that many things ... I could have another two blokes working for me just to catch up for a month, but no one wants to do that. No one wants to just [...] come in and help me for a month. No one wants to do that (29a, M, 20-30).

People also stayed home, not only because of existing work pressure, but because of the concern that further flooding would occur and require an immediate emergency response. As one woman explained:

No, we couldn't get away. We actually had a booking to go to X [holiday destination] ... And we got down there for two days. Then we turned around and came back. We like to be around at the moment when it rains because of the damage it does in the sheds and around the house (31b, F, 50-60).

For some, the cost of a holiday was also a disincentive, given their financial stress:

We had a week booked with all of X's [her husband's] family [...] towards the end of December, January. Well, we cancelled that probably earlier December, seeing the writing on the wall ... That was possibly a time decision more than a financial decision. But then as the weeks have gone on, we actually also had a month booked to go away in July, camping with other families. But we've cancelled that as a time and a money decision (11b, F, 40-50).

For all these reasons, buying oneself more time by reducing or cancelling holidays was a common coping strategy. While useful in the short term, this tactic is also likely to have longer-term repercussions.

In part, these repercussions reflect that fact that all cases of 'work-to-life interference' (ref – J. Sociology) (subsidising one's work life with one's home life) carry both immediate and delayed costs.

It is also important to understand the *particular* significance of end-of-year holidays for farm families, particularly for those in cropping. There is of course the issue of physical rest. Some farmers commented that usually when they finish harvest they sleep for days. Post-harvest is normally a time of letting go, physically and mentally. Many older farmers in particular mentioned feeling very tired and having trouble motivating themselves to deal with the extra work created by the wet conditions. As one commented:

> *But I think out of all this, this whole thing, I think the major issue has been with this thing now - it's so bloody tiring. You get older all the time and you get tired as hell*. (40a, M, 40-50)

Holidays away are often a rare opportunity to physically leave the farmers' workplace – and thus leave behind the constant visual reminders of what tasks need to be done - for a substantial period of time. Many commented on how important holidays are for their families as well. While farmers are typically consumed by work during the harvest period, this absence from home is normally then balanced by an intensive period of family time. But during the 2010/2011 summer, the latter was impossible for most families. As one interviewee commented:

> *He [her husband] is working, working, working ... Okay, he's on the farm, but he's not at home. We just sort of lost that bit of having him home for a couple of weeks. But, yeah, you've just got to deal with it* (33b, F, 30-40).

Some partners and children missed holidays to stay home with the farmer, while others went on holiday without them. As one farmer explained:

> *There were a lot of harvest widows having caravans towed over and dropped off and the ute roared off. Wife and kids had been left behind.* (15c, M, 30-40)

Some couples commented that they needed time away together to check in with each other. Holidays can also be a time for connecting with wider family and friends in a way that is normally difficult due to farm households' relative geographic isolation. More generally, an end-of-year/end-of-season holiday is important in farming individuals' and families' lives for punctuating the seasons, creating a valuable sense of closure. Facilitated by physical distance from the farm, holidays can be an essential time not only for relaxation, but for conscious or unconscious reflection, critical appraisal and planning and significant family conversations and decisions.

For these reasons, a loss of holiday time is more than a trivial or hedonistic consideration. Some interviewees indicated that the long harvest, extra work and greater than normal focus on the coming season had blurred the usual division between one season and the next and left them feeling rather disoriented. As the 2010 season ran straight into the 2011 season, the resultant lack of reflection time was especially significant, given what the farm households had recently gone through. Not only did they need to make sense of the past strange and stressful year and the new position in which they now found themselves. It was important to make sense of the preceding drought and where that had had left them. There was much to think about and absorb; significant decisions were to be made about the future, both in terms of the coming year and in the longer term. In other words, at a time when rest, reflection, learning and careful planning was especially needed, the usual window of opportunity for such activity was narrowed, which may possibly have longer-term implications.

An overview of the situation is provided by the following exchange between a couple who had experienced problems: with delays, attempts to work up wet ground, lack of time to plan for the coming season and accumulative tiredness:

Husband: *We're not doing too bad as far as floods; we haven't got a lot of damage to fix. But we're just a little bit behind, that's the negative. We're just probably a month or three weeks behind where we normally are [...] we haven't done any spraying. We do a bit of cultivating, so we still need to finish that. I just have to sort out another thousand hectares … the crop there hasn't been washed out* [...] *I'm just about to get the shed back into order again [...] we're a bit behind in the planning too because we missed our holiday .... we usually have a think about it when we're on holiday and come back and formulate a bit of a plan* (4a, M, 60-70).

Wife: *The back creek comes through and runs through all the paddocks that he's trying to work up, so he can't get through. He [her husband] just had a very long ride home saying a lot of rude words about the back creek. You need a break. The harvest was really full on, then it was the floods and then it was - it's all this extra work ... He's been just so busy, busy, busy since. Full on all day. Night as well ... So it is - we're really due for a holiday* (4b, F, 60-70).

In these many ways, the wet conditions introduced a range of challenges for farm households quite separate from the positives of underpinning strong crop growth in 2010 (albeit unrealised to a large extent) and, it is hoped, in 2011. As discussed below in terms of climate adaptations, the task of repairing or building flood defences for future wet conditions was also reported by some interviewees as an area of work they faced.

4.3.4 Some drought responses inadvertently worsened the negative impacts of the wet

One of the unavoidable risks of working to build resilience against a specific or targeted threat like dryness or drought is that it can limit the capacity to respond to other, unforeseen disturbances (Walker and Salt 2006). In part, this is because finite resources mean that working on one type of specific resilience reduces the resources available to think about and work on other specific types. For example, the strong focus on drought and dryness may have combined with expectations about how seasons normally progress to mean that farm households were caught unawares by the extreme wet. Although it could have been expected, it was notable that no interviewees took anticipatory measures to prepare for heavy rain events or flood over harvest. Adapting to a specific threat like drought can also introduce risk if the actual measures involved directly increase one's exposure and sensitivity to other subsequent threats. This is especially the case when the other threat is an exact inverse of the original threat, as in the case of flood following drought.

A number of characteristics of the extreme rainfall events and of the flooding experienced by interviewees in 2010/2011 rapidly exposed and created vulnerabilities among farm households. These vulnerabilities appeared not only among those who seemed to be coping poorly with drought but also, and in some cases especially, amongst those who seemed to have most actively and successfully adapted to drought. To illustrate this point, four characteristics of the wet conditions are here described.

The first is that the impacts of the excess water emerged out of their interaction with the type of enterprises, crops and varieties used on any given farm. Some of the options perceived to offer significant adaptive benefit under drought performed poorly in the presence of excess water. For example, while sheep generally perform well over a wide range of rainfall levels, including very low rainfall, the discussion in Section 4.3.2 indicates that they can incur heavy costs in very wet situations. By destroying fences and feed and leading to conditions conducive to flystrike (with attendant difficulties around shearing), the floods and rain revealed some real weaknesses in the sheep strategy. As one family found, this included the difficulty of coordinating disrupted cropping and grazing schedules:

> *The problem this year is that we had them [the sheep] in a paddock that ran out of feed. But we didn't have a paddock stripped for them to go into* (31b, F, 50-60).

Crop type was another area in which weaknesses were revealed in a drought adaptation strategy. More specifically, a couple of farmers who had turned to hay production found their hay crops coped badly with the rains, while at the same time the broad geographic extent of the rains meant that pasture feed was plentiful in areas usually in need of hay. Among grain crops, some farmers suggested that the new varieties (bred in part for their drought resistance) were more susceptible to sprouting following the rains, pointing to a further possible risk created by a turn-around in climatic conditions across a season.

The second characteristic of the rain and floods to note is the speed which the conditions developed, and the dramatic way in which the trajectory and pace of the season consequently changed. Not only did this mean that some crisis-type responses were required in the short term, but in the medium term people needed to be able to alter their plans and rearrange their schedules. Those who had taken on a large amount of off-farm work in a temporary or permanent response to the income impacts of drought and other pressures experienced difficulty in achieving this necessary flexibility. In particular, the couple of interviewees who contract harvested to earn supplementary income noted that their ability to respond to the needs of their own farm and family during the extreme wet was limited by their commitment to being elsewhere. The wet also created problems for carrying out their contract jobs. As one farmer explained:

> *We have been doing contract harvesting as well as our own and we were hoping to scale it back to concentrate more on farming, but it has been most important [...] over the drought we probably have had to actually expand it further to keep the farm viable or top the farm income up, I suppose you would say [...] so we were up in Queensland when it rained. It meant we never got the amount of work done that we normally would. We spent a lot of down time with wet weather [...] we had a heap of rain and I had fellas employed and everyone sitting around [...] at the moment, the people we are working for, they are still pretty frustrated and that's because we haven't finished harvest. I can see those people have lost a lot of crop too [...] So it's dragged the job out a lot and we have had to neglect some of our own farm work* (21a, M, 40-50).

Given that the wet conditions required people to absorb a large amount of extra work and stress, it was more difficult for those who were already feeling depleted in terms of their physical and mental health and relationships. While multi-factorial, such vulnerability can be related in part to the

(maladaptive) coping strategies some people adopted over the course of the drought (e.g. working harder, skipping holidays, reducing exercise, eating and drinking poorly).

The third characteristic to note was that the floods had an immediate negative impact on some public infrastructure, notably roads. This meant that those with off-farm work commitments were hindered by the resultant difficulty in moving between their farm and other areas. It was noted in Section 4.3.2 above that some people had to drive much further — on what were often damaged roads — in order to get to their off-farm jobs. The same trade-off also applies to those who had taken on other types of off-farm activities (e.g. participation in an exercise group) as part of a general drought response.

The final characteristic of the excess water is that its impacts were determined in part by land type and thus location. In general, the dryness of the study region meant that the land was more than capable of absorbing moisture. In more southern, wetter regions, there was less absorptive capacity as well as possibly a higher absolute level of rain received. In sum, this meant that some such areas were especially badly affected by the widespread wet conditions. Thus, those who had purchased land in southern areas as part of a general adaptation to drier conditions found they had inadvertently increased their exposure to the risk of increases in rainfall. One family in this situation found that the normal relative performance of their northern and southern properties was reversed:

> *When it first rained in September it absolutely completely flooded our farm at X [south of the original property]. X, during the droughts, has been our saviour because it was producing while it was too dry up here - but the last two years down there it hasn't. The year before it was washed out, and last year it was absolutely flooded out. Then that recovered and then we got flooded again. We stripped very little down there. We got some wheat - about eight bags an acre I think - whereas it was going at, say, 20, 25 years before that. I think X [her husband] spent the whole day and he stripped less than a truck load of beans [...] and the canola was just so flooded out. Now there's nothing there. He was going to patch it out, until that big rain came in January. That was it. That was the end; so virtually nothing from down there* (31b, F, 50-60).

Another family who bought a second property further south to spread their risk in the face of what they saw as a long-term drying trend were also affected by especially poor conditions in the southern region. For them, this disappointment was made more acute by the fact that they had to take on a considerable financial risk to implement the adaptation in the first place:

> *We decided to try and mix the risk a little bit, in terms of rainfall, because I believe the climate is changing, getting drier. So we bought some ground at X [an area further south] to have a spread of risk. [...]overall, the theory, I think, has worked, in terms of having a more level cash flow, because it's either been good down here and very poor up at Y [an area in the study region). But in this year's case, it's been very good up at Y and very poor down here. It's had a serious impact down here. It was just too wet [...] so that's been hard. And the issue is the level of debt that it's taken to do it originally. It's difficult to get that paid off. So whether it's been the right thing in terms of the business, because of the debt I've had to take out to be able to do it, I don't know* (2a, M, 30-40).

Like this family, others who made substantial investments in the process of adapting to dry or drought conditions were also more sensitive to the negative impacts of very wet conditions, due to the financial risk they had taken on. In other words, some drought adaptations increased people's susceptibility to the impacts of the wet (e.g. reduced income) simply because they necessitated a short-term reduction in general resilience (e.g. increased debt in order to finance the capital expenditure of the adaptation). For example, the following couple invested in a hay baler and were now facing the double financial impact of having sold their off-farm assets to finance the purchase while also receiving little hay income.

Wife: *We bought our own baler and part of his [her husband's] decision on that was to reduce that risk of the drought, because you don't need those finishing rains. So for a few - two or three - years the hay served us really well and probably sustained us because we didn't need that finishing rain. So that was a really good risk management on X's [her husband's] behalf* (11b, F, 40-50).

Husband: *Yeah, so we've sort of gone into hay production. The idea of that is to hopefully get some income over all our country because hay doesn't take so much moisture. And then also, after the hay, you might be able to sow a reasonable crop of grain - wheat or barley. So that's for the dry years. Now obviously this year has turned out a wet year... So this year wasn't, it didn't work out... Anyway, as I said, we were trying to adapt to the drier seasons and I suppose that's one of the major things we've sort of got into now – we've got the equipment now to do hay* (11a, M, 40-50)

Wife: *So this year, we've lost the hay [...] and as I said, to buy the baler we have gone and depleted our off-farm assets. And in my signing the dotted line, obviously I agreed to it to a level ... But then we don't have the buffer [...] and now, although the drought is over, you'd have to say, in terms of money, we're still in probably a worse position than the drought years* (11b,F,40-50).

The farmer above who bought a second property to diversify rainfall mix also used hay production in the strategies he used to manage dry conditions. While he did not have trouble with hay yields as had the couple above, he found the price was too low to consider selling. In order to try to capitalise on its value, he decided to use it to fatten sheep. This would provide a diversification benefit but also introduce complications for his time and land management. As he explained:

> *I cut a lot of hay last year and the hay market collapsed. So I've still got a '*ton' *of hay sitting on the farm. So I'm going back into sheep again this year to feed them this large amount of hay that I've got. [...] but having the time to look after sheep has been an issue for me. [During the drought] I didn't have the time to have any because work's so busy. That's still going to be the case now. But there's no point putting a match to an asset in hay. I need to use it. So I'll just have to work around that* (2a, M, 30-40)

We start to see here the strongly interconnected nature of farm management decisions, including those involving adaptation options. In the case of the current farmer, further flow-on effects included his possible decision to take on one or more employees. This would not only help satisfy the labour needed to manage the sheep, but allow him to do some off-farm work to better service

the debt incurred as a result of expanding further south (albeit with the risk that his responsiveness to his own farm may have diminished, as suggested in the discussion above). However, taking on employees introduces a whole suite of other skills and issues, which he had tried in the past.

> *When I did have employees, I don't think I handled that well. Never had prior experience or training in that field, so that's another difficulty as a small business owner, I suppose. A lot of farmers, we're just not trained in how to deal with those things. So, I've made a lot of mistakes and learnt the hard way [...] You need to keep a hand's length away from employees and I tried to be their friend as well and I just don't think that's worked [...] Then of course there's paying for somebody. To do this, I'm making cutbacks [...] but the question is, do we go that extra further step and employ somebody? The cash flow's not really there to be employing somebody full-time again at the moment. But the thing that could possibly be holding me back now is that labour ... I'm also wondering whether I need to so some other work to generate that extra income for debt repayment ... that would mean employees again too* (2a,M,30-40).

The point of emphasising this case is to highlight the risks and flow-on effects that adaptation strategies can involve. While threat-specific adaptations are important and laudable, the main question to be asked of such options is whether they are effective in reducing vulnerability to that threat. However, it is now apparent that a broader set of questions needs to be asked about how they perform and what side-effects they create under other possible conditions. The ultimate effectiveness of any adaptation strategy depends on the balance of conditions over longer time scales. To track, with complete accuracy, climate conditions as variable as those recently experienced is impossible. Thus some costs have to be expected, as many interviewees themselves emphasise (discussed further below). The ultimate success or suitability of any adaptation option also depends on the vulnerability of a farm business at the time, which is a partial function of other systemic conditions, such as the current and increasing orientation of the farming industry towards "get big or get out". The ultimate effect of these systemic factors on the resilience of farm households (as much as the farming industry) demands attention.

We now turn to consider how farm households are increasingly aware of the role of these systemic vulnerabilities. First, though, we briefly summarise the picture at the time of interview.

4.3.5 Most people indicated that on balance their financial and emotional state is similar to that in 2007

On balance, the positives and negatives of the wet conditions, combined with the highs and lows of previous seasons, meant that, relative to 2007, most were feeling about the same. However, some interviewees felt they were financially and/or emotionally better off; a smaller group felt they were worse off (Figure 3 below)[9]. Most people's emotional and estimated financial state was relatively

[9] This assessment of change is very broad brush only. It is in part based on interviewees' perception of the change in 2011. This may not accurately reflect how things have actually changed: our memories are often unreliable as we forget or reinterpret situations. Nevertheless the perception of change is itself important. The assessment was based also on a re-reading of all February 2007 interviews, and the difference between what was expressed at that time and in 2011. Finally, it is important to note that what is represented is 'change over time', not absolutes. For example, someone who feels better in 2011 may still feel very flat, while someone who is worse off financially may still be doing quite well emotionally.

coupled (in sync). This is likely to be coloured by the fact that both 'states' are subjectively estimated and so reflect an individual's general attitude at a particular time. Others, though, estimated that their emotional state had improved, despite a lack of improvement or even a fall in their perceived financial security. Another group felt that their perceived emotional state lagged behind a stated improvement in their financial status, failing to rise despite financial gain. In each of these latter cases, the role of other positive and negative non-financial aspects of the wet conditions and their implications for people's perceptions of their future is likely to have been significant.

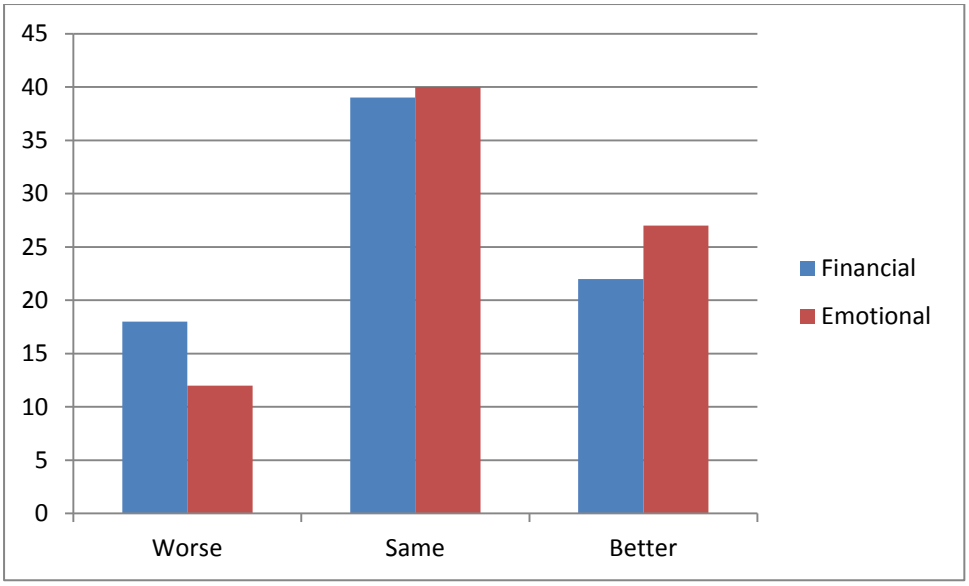

Figure 3. Broad pattern of change in interviewees' implied financial situation and emotional conditions between February 2007 and February 2011

4.4 Exposure to climatic stressors has led to increased awareness of other vulnerabilities

4.4.1 Many people now have a stronger understanding of their system's vulnerabilities

> *One thing I think that's happened to me over these last few years is self-awareness: working out all our strengths and weaknesses* (1b, F, 50-60).

Numerous interviewees commented that the challenges of recent years have taught them about themselves and their systems, creating a new degree of self-awareness that is itself an adaptation and strength. While the specificity of people's situations at any particular time means that they will not face exactly the same scenario again, the recent challenges have highlighted to some people how generally exposed and sensitive they, their family, their farm, the sector and the region are to various threats.

In a key sign of adaptation, they have also gained insight into what helps and hinders their ability to respond positively. Overall, this knowledge represents a stronger understanding of their vulnerability in relation to the sequence of threats recently experienced and of their position within broader environmental, social, economic and political systems. As discussed further in Section 4.7.2

on how resilience is interpreted, it reflects a general mood of questioning evident among many individuals.

Various sources of vulnerability were identified by interviewees. Some people were focused on the threat posed by particular climatic conditions. We saw in Section 4.2.2 the astonishment some people felt when the floods provided a new perspective on their landscape by demonstrating where water could run on their farms and in their local area. Those inundated by overflow from water courses received a particular wake-up call about their flooding risk. In contrast to those reliant on irrigation from distant water catchments, people in dry-land areas (as in this project) are not accustomed to considering climate in distant locales as a potential direct impact on themselves; this perspective is precisely what the river-based flooding demanded that they develop. A positive to emerge from this new sense of hydrological linkage was a sense of socio-psychological connection with others similarly flooded. While the camaraderie created by severe flooding was limited within the farming community due to the patchy distribution of the floods, some flooded interviewees emphasised that their situation was shared by numerous non-locals (including those upstream, downstream and interstate).

The types of vulnerabilities brought home to farm households were not just climatic. Equally important were elements of their systemic context, which created flow-on impacts or barriers to their capacity to adapt. For example, a previously unrecognised vulnerability exposed by the wet conditions was that crop insurance can expire before harvest is completed. As one farmer explained:

> *The insurance stopped for the crop on 28th of Jan. But I've still got 20 acres left to harvest ... That means the insurance is over if I get a hail storm. But I mean, you just can't think about them [sic] things. It's never happened before that I'm harvesting in February. It's never ever happened* (32A, M, 60-70).

Various interviewees indicated a new awareness of the weaknesses of, and threats posed by, some of the infrastructure, and the commercial and social systems on which they rely. For example, with everyone under pressure over the wet period, some farmers came into conflict with others over the use of shared resources like labour, silos and roads. As discussed below, some farm businesses are moving to an increased use of contract labour (including shearers) as part of a conscious adaptation strategy. However, the flexibility for which this labour strategy is valued was also revealed to be a weakness during the rush of work created by the wet conditions. Particularly for those who chose to use contractors as a last minute crisis response (e.g. to accelerate harvest), the difficulty in finding a contractor available and the uncertain timing of their arrival meant that, for some farmers at least, the outsourcing proved to be quite difficult and risky. Contract harvesters' schedules, especially, fluctuated as different areas dried or were rained on again. The slow harvest meant that contractors overall were behind in their timetable and so were often not available when a farmer had a dry window of opportunity. Contract labour therefore often did not serve as the emergency response some farmers had hoped it could be if time pressure got too much.

These difficulties with contractor availability point to farmers' position within a broader business and social setting in which they are in competition with other farmers for scarce labour resources. Some contractors are themselves competing farmers who need to respond to their own farm's needs

whilst servicing others. These challenges extend to employment of more permanent (though perhaps still short-term) high-quality farm labour. A number of interviewees mentioned how difficult it is to find anyone to work for them (at the prices they are willing to pay). One commented for example that when someone moved into his community he had to 'snap him up' before 'anyone else got him' (7a, M, 40-50).

Farmers' collective dependence on local silos was also demonstrated to be a potential source of vulnerability. With limited harvest opportunities, demand on the local silos was acute. Many farmers described the frustration of having to queue at the silos. For most farmers, the delivery process had to be repeated numerous times; they had limited on-farm storage and the grain had to be delivered to free up the harvest equipment for the next area of crop. It was an unwelcome interruption and one made worse by the simultaneous delivery needs of others in the area. When local silos reached capacity (or were closed, as on New Year's Day) those still with grain to deliver faced seemingly endless waiting or long trips to other silos.

Getting truckloads of grain to and from silos was dependent on road access. Shared use of roads was exacerbated in a new way by the wet conditions. A number of interviewees expressed frustration that heavy trucks were badly damaging their local roads. This tension between the needs of croppers and other users extended to sheep farmers. One family with badly fly-blown sheep wanted to shear them as quickly as possible while they were waiting for their ground to dry out sufficiently to begin harvest (and nervously watching the local silos fill with other farmers' grain before they had a chance to deliver theirs). To bring their sheep in to be shorn, they had to walk the flock along a local road, preferably without stopping so as not to bog their motorbikes in the mud on the side of the road and preferably without getting the sheep wet, as wet sheep cannot be shorn. At the same time, however, others in the area were quickly trying to harvest and were using the road to move headers and trucks full of grain. As some of them rushed to get past, sheep were knocked into the water and tensions flared.

Husband: *Before we sheared [sic], we had huge trouble [...] the sheep were just dying. We probably lost 50 ewes and lambs. Because we were a bit late with our shearing, the fly strike was just unbelievable and unrelenting. [...] we were catching 10 or 20 [flyblown sheep] a day. In fact, we got to the point where X [his daughter] and I were out catching flyblown sheep all day when we should have been harvesting – the grain was accumulating. [...] And it was a half-day job to get them home. [...] We couldn't go the short cut; we couldn't avoid it, because the creek was in flood. We had to go the long way around on the road with the sheep. Christ, you've got no idea ... It just was impossible [...] anyway, when we were finally bringing our sheep in to shear these other groups were trying to get along the road. They were rushing through and putting them [the sheep] all in the water [...] they knocked ewes over through hustling them through the water [...] then another bloke came along on a truck [...] and he just kept driving too. [...]anyway, my temperament doesn't lend itself to that sort of thing. [...] I got pretty savage about it.* (40a, M, 40-50).

Wife: *People normally stop. I'm sure they were more impatient this year. They were more desperate to get their grain in and it's like "Oh damn - sheep on the road - too bad".* (33b, F, 30-40)

Husband: *People are desperate. They've had so much dry weather and no crops and all of a sudden it looked like everything was good, and they were desperate to get the grain done - you know, get the harvest done.* (40a, M, 40-50)

This family had not come into conflict with others over road use before. Instead, the pressures created by the exceptionally wet conditions, including the issue of flystrike, created a new situation: one in which reliance on social protocols over road use for stock movement was revealed to them as a possible weakness when there was simultaneous pressure on croppers.

Besides shared use of resources, another type of vulnerability mentioned by some interviewees was their reliance on others' skills, good will and integrity. The above family with the sheep, for example, were reminded of their reliance on others' decisions when they dealt with their contracted shearers. Flystrike creates such a mess (in which maggots infest and decompose the sheep's flesh), that shearers often refuse to touch flyblown sheep. But shearing is also needed to stop the problem of flystrike getting worse. Luckily for this family, the shearers involved understood the predicament they were in and agreed to shear the sheep anyway.

> *We were lucky. They said "Look, we don't care". Normally shearers don't like shearing flyblown sheep. They said "Look, everyone's the same this year". So they were just shearing through them, thank Christ* (40a, M, 40-50).

The possibility that shearers might refuse to shear flyblown sheep at a time those sheep especially needed shearing was revealed to this family as a vulnerability they had not previously encountered. In addition to the challenge of finding shearers who would reliably turn up at the right time (so as not to necessitate more moving of the sheep flock), this family's response to the issue of flystrike was reliant on others' discretion.

Others similarly pointed to their reliance on others and their sense that with this reliance come vulnerabilities. This may be in the form of availability or costs. For example, one farmer discussed that he did not have the time to repair increasingly complicated machinery himself, but that at the same time mechanics were increasingly scarce or simply too difficult to afford.

> *I don't like fixing the engines myself because it's a time management thing. [...] I'll bring a mechanic in [...] If you can get these people. Like, it's pretty hard getting mechanics. [...] They want about $100 an hour now - charge of travelling, charge of this and that [...] It's like if the mechanics come out to fix up my header, they come here for two or three days, and it's a $10,000 bill... It used to be only two or three [thousand] five or six years ago [...] There's a lot more new machinery being bought than I thought there would be because of the cost of repairing the old machinery [...] It's become a lot more of a factor in farming* (9a,M,40-50).

Most farmers rely on others' advice in some way. Some believe that the risk of doing so has proven to be not only the availability or cost of that service, but its reliability as well. In the volatile farming conditions of the previous year, some advice received by farmers had been fallible. For example, while using private agronomists is normal business practice for many farmers (as discussed in Section 4.9.2), one family lamented taking their agronomist's particular advice to delay harvest in order to spray a crop one more time; in the interim, the rains arrived and their crops were badly damaged. As found with marketing advice heeded in 2007 and 2008 (Report One), expert advice was

proven to be an unreliable form of risk management. Using a private advisor is also a risk in the sense that it involves financial cost. Because many farm households were in a more financially sensitive position during the drought, some were especially critical of the perceived financial value of the advice and assistance they purchased from others. One farmer commented about his sheep marketing agent:

> *I took my agent out of the system, he was ripping us off [...] We try and keep all the experts out of the system. [...] He's had his day, as far as I'm concerned. Just another bloody parasite on the arse of progress, that's all it boils down to... They keep you broke* (40a, M, 40-50).

This ambivalence about experts mirrors the "can't live with them, can't live without them" attitude found among wool growers by (Jackson, Quaddus *et al.* 2009).

As noted in Report One and other studies (e.g. Smith and Campbell 2009), there is a further question about the reliability of farmers' relationship with agronomists and others such as direct sellers who facilitate their use of inputs. Are other parties, quietly trying to increase farmers' purchase and use, doing so for their own commercial gain? Even corporate sponsorship of agricultural research was queried by one farmer, pointing towards scepticism about science discussed further in Section 4.5.2.

> *How much gets manipulated, I don't know. You get the advertising bodies that say, "Right, here's some money, but make sure this here's done, and make sure this outcome comes at the bottom, and make sure our name's up the top there as supplying the money. There's a lot of that going on too and you don't really know what the true outcome is because of that* (SB7a).

This question brings us to a final vulnerability raised by some interviewees: their business's reliance on inorganic chemicals. As widely noted in other quarters, use of inorganic chemicals involves environmental, human health and financial trade-offs. One woman, critical of the amount of spraying she now sees her husband undertaking, raised questions about its long-term health effects on him. Another farmer mentioned being sick for a few days after being covered with spray, while a third pointed out that each of the secondary issues created by the wet conditions (notably weeds, locusts, mice, lost fertiliser) required chemical applications. As he reflected:

> *Our reliance on chemicals always has bothered me and it seems to be going up and up and up. Every solution on the farm seems to be a chemical one - mice, grasshoppers, every weed. The industry's solution is to sell us an expensive crop that can stand a different chemical. So it tends to be - it tends to revolve around chemicals. That doesn't sit that well with me. I feel like we're fighting against nature all the time. We're either trying to kill an animal or a weed or something just so we can produce our grain* (26a, M, 40-50)

We now discuss the ways in which the heavy use of inorganic chemicals involves financial risk for farm businesses. The vulnerability of many farmers to input and commodity prices beyond their control has been highlighted and exacerbated by the climatic challenges they have faced.

4.4.2 Exposure to falling terms of trade is a growing concern, but options for managing it are perceived to be limited

A major vulnerability brought home to many farm households over recent years is their exposure to volatile global markets, both in selling their goods and purchasing inputs. Australian agriculture is characterised by a high degree of exposure to the risks inherent in international markets (Pritchard *et al.* 2011). It has experienced a long period of declining terms of trade, with the ratio of the commodity price farmers received to the input prices they paid falling approximately 50% between 1970 and 2000 (ABARE 2008). Although this challenge is old news, its prioritisation by interviewees points to the way the exposure is perceived to have worsened following the deregulation of the wheat industry. Grain marketing is a new, complicated and risky aspect of business management to which farmers are still becoming accustomed. As one farmer explained:

> *There's a lot more pressures now on price and competition and marketing your grain. There's a lot of pressure there [...] Now you don't know how much you're going to get from one season to the next. You don't know what price you're going to get one month to the next. [...] I don't like it at all. You're putting farmer against farmer in marketing. We're accepting prices, and we haven't got the marketing skills of the people from GrainCorp or from Elders. They know what's going on and we don't know. Yep, so that's where farming is a lot harder. You've got the pressure on you to make the decision on what you're going to do if you - all these different alternatives. [...] There's a lot more on our mind. It's more mentally stressful than what it was* (9a ,M, 40-50)

Input prices are another issue. In Report One, it was suggested that some farmers were feeling angry with input providers because of the massive price hikes they faced in 2008. High input prices were mentioned in the 2011 interviews as an enduring concern. Some interviewees commented on how this had been worsened by poor climatic conditions; others noted that it was a more significant and/or persistent risk for them than climatic factors. As two farmers put it:

> *Sure, when it gets way too wet, work gets hard and you probably don't make as much. But prices have a lot more to do with it. I stripped some barley last year that went, you know, nearly 20 bags. But I could only sell it for $110 a tonne, and because I'd spent however much on it, that meant I had a loss* (18a, M, 30-40).

> *I'd love to be able to throw away the chemical cart, but I don't think I will be able to anytime soon. Especially now, with more water in the soil, we just need to put more on [...] It's a massive - it just increases your risk, the risk we have out there in the paddock [...] any business has that but you feel a little bit like you haven't got much control to pass it on. You can't build it into your price* (26a, M, 40-50)

Another couple discussed their growing awareness of croppers' sensitivity to high input prices:

Husband: *You've got to be really wary, I think. I think that's the biggest downfall with the farming job now [...] with the grain growing, the biggest problem is that your input costs have just got out of control. I mean, any machinery has just got way too expensive to buy. The fertilizer, chemical and any of those inputs like that have just got completely out of control* (40a, M, 40-50).

Wife: *If you'd sprayed everything that they said - you should spray all the time - I mean, it's ridiculous ... If you all wanted to be perfect farmers and do every last thing that you could possibly do for every grain that you grew, you could, but you wouldn't make any money out of it* (33b, F,3 0-40).

Husband: *The farming industry has gone through hell and back and I suppose it's made us much more aware of what's going on* (40a, M, 40-50).

In keeping with critiques of the neoliberal paradigm in Australian farming that has transferred power and advantage from farmers to multinational corporations and global markets (e.g. Gray and Lawrence 2001; Argent 2005; Dibden *et al.* 2009), lack of control was a consistent theme in interviewees' comments about prices. They also indicated that they feel increasingly aware of this vulnerability and their broader situation. This may itself be a step towards regaining a greater degree of control.

While costs were the (financial) risk most commonly emphasised by interviewees, their counterpart – commodity prices – was also discussed. Here, price hikes of the sort experienced were advantageous to farmers. This was seen in marketing the 2010 season produce, when many farmers received better than average prices for worse than average grain quality. Wool and lamb prices were also strong, tempering the negative effects of the wet conditions. Farmers are under no illusion, however, that their luck in encountering such strong prices is a reliable route to profitability. While some outlined optimistic visions of prices consistently climbing over the long-term in line with global population growth, most characterised commodity prices as an unstable and unpredictable variable in their farming business, especially now that the grains and wool industries are deregulated. As one explained:

> *With the breakup of the Wheat Board and that sort of thing, marketing has become a much bigger, more difficult side of the business, something you've got to focus on a lot harder. We've made a couple of blues that have probably cost us - the money that we probably banked on having - just by hanging onto it for a bit long. By the stroke of a pen export markets change and all our stored wheat drops $50 per ton. Those sorts of things are hard to deal with, hard to swallow, when you've finally got something to sell. That is very frustrating* (18a, M, 30-40).

One risk management tool promoted as a partial solution to the commodity price volatility to which Australian (and New Zealand) farmers are especially exposed is forward and futures contracts. A forward contract is:

> a binding contract specifying the price (or price formula), quality and quantity of a product to be delivered at some specified date. The quantity may be expressed in units of output or as the production from a specified area. The contract usually specifies penalties to be exacted from each party for particular kinds of non-fulfilment (Jackson, Quaddus *et al.* 2009).

Futures contracts involve a similar but more complex arrangement involving currency values. The benefit of both these arrangements for producers is that they can reduce price uncertainty (given the inherent volatility of the market over short time periods) and so help stabilise income and

facilitate forward planning. But, as with contract farming more generally (Buttell 1996, in Pritchard, Burch *et al.* 2007), they also introduce risks for producers, namely:

- being unable to fulfil the contract due to poor yields (e.g. caused by drought) and so having to pay it out
- missing the opportunity to capitalise on higher prices if they eventuate, which is made more likely by forward contracts always being set at somewhat low prices as compensation for the security they provide.

As described in Report One, both types of risk materialised in 2007/2008 for many of the producers who adopted this marketing technique in the wake of the Wheat Board deregulation. The legacy of this negative experience seems to be powerful and widespread. In the 2011 interviews, virtually no farmers spoke positively about forward or futures contracts or indicated that they planned to use them in the coming year or beyond. Instead, there seems to be a general, implicit agreement among farmers that hedging is too risky, despite its being touted as a risk reducing mechanism. As one put it when describing lessons he learnt from the drought:

> *Don't forward contract to any grower - don't sell it until you have actually got it. That caused a lot of heartache and a lot of trouble* (21a, M, 40-50)

Such a finding is consistent with that of Jackson, Quaddus *et al.* (2009) in the Western Australian wool industry, where hedging was perceived by producers as complex, lacking in transparency and 'unfriendly', relative to the conventional wool auctioning system. However, in the current study, it was the experience with hedging of only a relatively small proportion of farmers that seems to have discredited the approach among the remaining majority of farmers. This finding also supports research on the way that 'small scale interactions' among relatively few farmers can lead to a large-scale pattern, in this case further reinforcing individual farmers' avoidance behaviours (e.g. (Granovetter 1973; Carolan 2006; Sligo and Massey 2007)). It is important to note that the apparent social consensus among farmers — that hedging is irrational — increases the professional risks for any farmers thinking of using the mechanism, as any (publically known) losses they might incur in so doing are likely to trigger disparagement by peers.

Overall, declining terms of trade are perceived increasingly by farmers as a problem, and one that is growing. The long-term nature of the trend raises the question in their minds: will the trajectory ever reverse and what will it mean for them and their industry if it doesn't? Some interviewees indicated that they have come to the conclusion that the direction of terms of trade means the future is relatively bleak. As two commented:

> *You need to monitor what you're doing so you don't just keep paying out these huge bills and not having much coming in at the other end, or you're down the gurgler* [...] *It's these outside issues that are going to can us ... It's a shame because it had been a good lifestyle* (33a, M, 30-40).

> *Regardless of weather, it's getting to be impossible cost-wise. If I had a son, I wouldn't want him to be a farmer* (26a, M, 40-50).

Younger farmers attracted into the industry by the positive farming experiences of their parents and grandparents have been made aware of the economic challenge they face when they compare their own farming situation with that of earlier generations. A number described how the economic arena in which they are now farming is very different from previously. As one put it:

> *I'm probably less worried about climate variability than I am worried about - I don't know what word you'd use - what one tonne of wheat could buy in 1950 compared to what one tonne of wheat can buy now. If that trend keeps going, that's going to sink us well before it dries. We just can't keep up. Our terms of trade - that's the word I think they use - our terms of trade are diminishing. I worked out now for us to make a profit, cash profit, our wheat has to roughly - we have to get nearly $180 a tonne on farm [...] Now I know what a yield's going to swing. I'm not worried about getting my average yield because I know what that is. But the price [...] our prices aren't staying up [...] All this rain, all these good crops, we'd still be behind at $170. So that's much more of a concern to me than rain. Yeah, drought's hard. It's hard to go through dry periods. But they've happened before and my grandfather went through it. Dad went through wet, and obviously I went through dry. So it all goes around. But the thing is that they've always had good prices. I mean - a bale of wool - you could buy a car. I just don't know what's going to happen now* (18a, M, 30-40).

We see here how the multigenerational character of farming provides the opportunity for current farmers to make sense of their current economic situation by viewing it in a personalised historical perspective, much as they do with climate (described below). To the extent that the comparison highlights the unfavourable changes that have occurred over time, this reflection may serve to temper the self-blame some young farmers seem to feel about the difficulties they have been encountering. We see in the above that climate variability as a whole is seen as a 'constant' that all generations of farmers have faced, – and with which the current generation is probably best equipped to deal. Nevertheless, the long-term trend perceived as distinguishing the current cohort of farmers from earlier ones is declining terms of trade.

The point this and other farmers made is that the vulnerability of farm households to high profile risks like drought, flood and climate change can be understood only in the context of the other systemic risks they face. Resilience to climate variability is of increasing importance, not only because agriculture is exposed to increasingly frequent and severe climate extremes under long-term climate change, but because its long-term exposure to worsening economic conditions means it is already vulnerable to financial shocks.

As is the case with climate, these other risks consist of long- and short-wave processes (Table 2). How these various processes intersect at any one time is unpredictable. Nevertheless, the strong role of seemingly linear trends, such as declining terms of trade and, as discussed below, global climate change and rural decline, means that over time the scale of the farm business challenge is growing. As a result, remaining viable after a negative climate 'event' is becoming increasingly difficult. While a climatic extreme may slow or stop production, the cost/price squeeze continues. Thus, those farmers who experienced the recent decade of dry and drought conditions as a period of "sitting still" (Section 4.1.4), to the extent that their profitability needed to increase over that time to counteract declining terms of trade, are likely to have "slipped backwards".

Table 2. Some key long-term and shorter term pressures on farmers

Long-term (seemingly linear) pressures on farmers	Shorter term (generally fluctuating) pressures on farmers
declining terms of trade pressure to increase farm size declining agricultural labour availability long-term climate change trends	climate variability and extremes market prices

We come then to a final systemic factor that Australian farmers need to negotiate: Australia's policy of largely countering the effects of declining terms of trade through an ongoing growth in average farm size (Argent 2000; Barr 2000; Barr 2009; Gray and Lawrence 2001). Many farmers in the current study indicated strong awareness of the resultant pressure upon them to expand their businesses. This trajectory requires that they not only avoid income lows but achieve great highs. It also often requires that they negotiate climatic and market fluctuations while suffering the effects of the more constant and accumulative pressure of debt.

As a fixed and often growing cost, debt greatly increases the vulnerability of a business and associated family to any unfavourable climatic or economic conditions. As we saw in Section 4.1.4, it is because of the tradeoffs associated with debt that it is often used as a 'coping strategy': a tool of last resort. But it is not used only in this way. It is a strategy as well as tactic, embedded within the expansionist paradigm that characterises the Australian farming industry. For farmers who are, as they are expected to, seeking to increase their land and capital assets in order to improve their long-term viability, debt is a strongly normalised business strategy. Indeed, the central role of the Interest Rate Subsidy within the recently-discontinued Exceptional Circumstances clause of the National Drought Policy indicates that, at least until recently, debt was presumed to be a reliable way of accessing and assisting farm businesses, and/or that it identified businesses being run in a laudably entrepreneurial way. But even if routine, debt taken on to fuel "voluntary" farm expansion is no less risky than that taken on as a crisis response to an unfavourable turn of events. Indeed, it greatly increases the likelihood that the latter crisis response will be needed.

While the government has removed its explicit encouragement of farm business debt, first by discontinuing its direct provision of credit to farmers (Argent 2000) and now by discontinuing the Interest Rate Subsidy, the underlying driver of an expansionist paradigm has not been questioned. Indeed, the policy shift strengthens this paradigm by reducing government intervention in order to further expose farm businesses to the forces of the free market (including commercial interest rates). This shift has continued the 'dramatic u-turn in the assumed political relationship between family farms and the nation state' created by Australia's move from a form of 'country mindedness' to neo-liberal agricultural policies (Pritchard *et al.* 2007). p. 79) Implicit in these is the belief that there are currently more farmers than the system needs, which in turn means that 'displacement of farmers from farming, in effect, is an indicator of the system's success' (Lobao and Meyer 2001, p. 103). Expressed also through the widespread deregulation of the industry, this u-turn has instigated policies 'largely disinterested in the fate of the farm families affected by these changes'. (Pritchard *et al.* 2007, p. 79).

A farm household's vulnerability and opportunities vary over time, not only because of the constantly changing intersection of the processes listed in Table 2, but because their own capacities, needs and goals shift as they enter different stages of life and business growth (Inwood and Sharp 2011). Those most likely to want and need to fund business expansion and to have to do so using external credit are young farm households. During the resultant period of vulnerability (which may continue beyond the period of their youth), they are especially so to unfavourable external conditions. This has been the experience of many of the young families and individuals interviewed in this study. Not only has the recent decade of difficult conditions especially affected their farming lives simply because they have had fewer other years to mentally and financially balance its effects (as discussed in Section 4.1.4), but it has especially been of significance to them to the extent that they are trying to rapidly advance their businesses and careers at the same time.

One young farmer who expanded and diversified his properties about five years ago explained that while he felt compelled and motivated to do so for the sake of long-term viability, the intersection of this business stage with drought has made things exceptionally difficult for him and his family:

> *If we want to be here 30, 40, 50 years down the track, which I do, [expansion] had to be done. So I had to try it [...] But the last 10 years has been the worst time in living memory to expand. Every business goes through business cycles [...] and if you're at that age to expand the business and you have the drive and the willingness, but get 10 years of drought, you can't become self-reliant because you can't pay the debt off ... The weather's penalised us. It's been my choice and decision to want to do it, so I've only got myself to blame, but it's been bad luck too ... It's just been terribly difficult to expand and become self-reliant then get this drought. It's impossible* (2a, M, 30-40).

This farmer's reference to luck points to the unpredictability of climate conditions. The effect of these uncontrollable conditions on his business is shaped by the fact that it has caught him at a vulnerable stage of his 50 year business plan. Although unmentioned, it is also shaped by other longer-term processes, including the one normalising the idea of business expansion in the Australian farming environment to the point that it, and the associated debt load, feels less like a voluntary choice and more like an externally-imposed necessity.

Prompted by recent climatic challenges, farmers are increasingly thinking about features of their farming environment. While few explicitly criticised the powerful underlying influence of Australian agricultural policy, as seen in the quote above, some farmers seem to be feeling increasingly uneasy and bewildered about how they are meant to make it all work.

Added to the mix is of course the question of climate change, whether viewed as an annoyance, a symbol of lack of urban interest in rural experience, or as a serious long-term influence on current and future weather conditions. The way different people in which are reconciling recent climate experiences, climate change discourses and perspectives on the future is what we now discuss.

4.5 There are divergent views about climate change, its drivers and its implications

4.5.1 The extreme wet reinforced awareness of climate variability and, for some, its naturalness

We make sense of climate by relating it to our past experience. For those in farming, the reference range at their disposal tends to be longer than that of members of the general public. Not only do they tend to take much more notice of climate, they tend to include earlier farming generations' experiences as part of their own. Crucially, this broadens the degree of variability that they then understand as "normal". It is therefore unsurprising that many interviewees (nearly half) indicated that they believe recent patterns of climate have been, and future climate will be, wholly continuous with those of the past[10] (Figure 4).

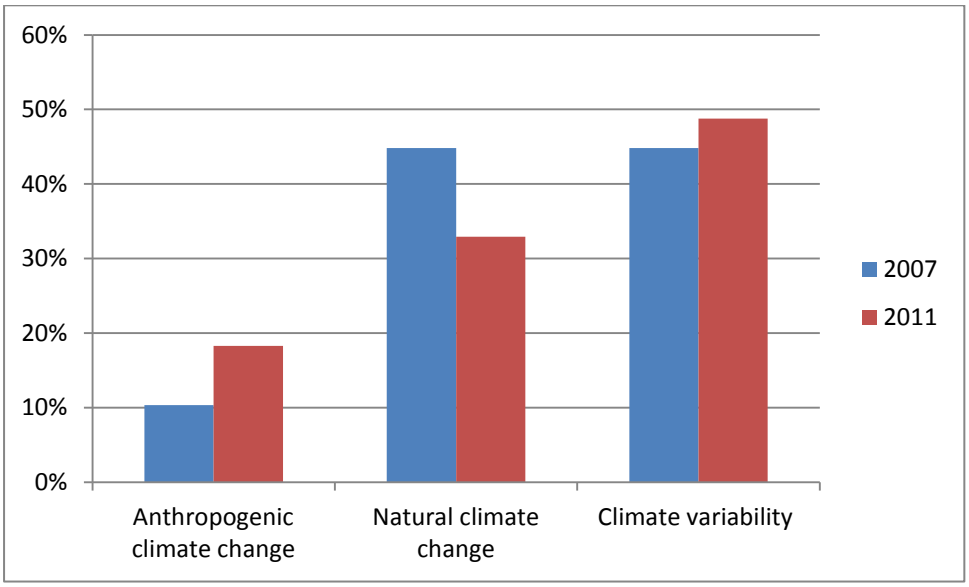

Figure 4. Overview of interviewees' interpretations of what is happening with the climate

It can be seen from the graph above that the proportion of people believing that current and future climate are characterised solely by natural climate variability has increased since 2007. While this is perhaps due in part to the politicisation of climate science and debate over this time in Australia, some described how the "return of rain" had revitalised their belief in this position. As some stated:

> *I imagined that we would be drier and drier and then all of a sudden it just turns around and you think "Oh, it's just the climate changing - not necessarily one way or the other". That's what I think* (4a, M, 60-70).

> *[The wet] has been a nightmare. It's been a horrific situation in a lot of ways. But in the end, it's green and it's raining and all these experts that tell you - these bloody Ross Garnauts and morons like that Tim Flannery - that tell you that it's never going to rain again - well they've been proven wrong. This has happened millions time over and it's been wet before and dry before, and it'll continue to do that, I suppose* (40a, M, 40-50).

[10] Climate change was discussed to different extents in different interviews. Hence, not all aspects of the topic were covered in all interviews. This section provides a broad impression of different issues, not a definitive survey of the group's perspectives on climate change; numbers should be viewed as indicative only.

While the continuity of variability was emphasised, so too was its extent. An awareness of the sometimes extreme variability of climate was represented as a key tenet of farming and local knowledge:

> *We just live in a variable climate. No two years are ever the same. I haven't seen two years the same ever since I started farming* (9a, M, 40-50).

> *It's just the history of this area that there's extreme 'drys' and there's extreme 'wets' and there's not really that much in the middle* (33b, F, 30-40).

> *We've had 100 years of extremes. There's no such thing as average. It would be a nice thing if it was.*

> *I don't think you can say we've got an average rainfall. You know, rainfall is somewhere between eight inches and 24 inches a year. So that's all you can say about our rainfall. You can't say our average rainfall is 15 inches* (4a, M, 60-70).

> *We need to accept that the climate a constantly changing thing, including an element of cycles. Historical climate data is proven to be important and I think the world is getting more knowledge about how the weather is working. I think it's an acceptance of constant change. Every year's always different* (2a, M, 30-40).

> *Every year's different. I mean, that's the mystery about farming, you know? Just when you think you've got it all worked out, something else bobs up and what you learnt last year - or when you just became an expert last year - this year it's not worth anything. It's a totally different situation again... You have to cop it. That's farming, for God's sake* (40a, M, 40-50).

Even among some of those who felt that current shifts were highly unusual and worrying, there was ambivalence about whether these events were unprecedented and a signal of a profound change.

> *Well this one [year] has been one out of the box, this one, I suppose. But I don't know. [...] Records haven't been going long enough to convince me that it's anything different* (13a, M, 60-70).

> *When I first came out to the farm - I came out here in '95 – X [her husband] said usually he had one bad year in seven. Since '95 we've had so many bad years - so many dry years, and different sort of years - that it's a bit... It's so inconsistent. It's hard to say it's going to be okay. I'm concerned we're in a stage of inconsistent weather [...] But I think it's just part of what our continent does. [...] Over a hundred years ago they had a drought that went from the '90s into the turn of the century - on and off for a long time. Then they had very, very wet years as well. So I just think it's part of the cycle that we probably haven't got any history of* (31b, F, 50-60).

The extremity of recent conditions means that identifying continuity between recent and past conditions requires people to look a long way back into the past, perhaps longer than historic records allow. This emphasis on the past meant that many interviewees stressed the importance of recognising historical knowledge of the sort with which they are familiar. At the same time, they demonstrated a psychological adaptation of their own by stretching the timescale over which they

see natural climate variability as occurring. As the last quote illustrates, this broadening of the category of natural climate variability emphasises that how climate manifests at any particular time is unpredictable as opposed to neatly cyclical.

Over half of interviewees indicated that they do think the climate is moving or will move into unchartered territory. This acceptance of an unprecedented "climate *change*" is in many ways only semantically separated from natural climate variability. The difference is the extent to which current and future climate is considered to be consistent or inconsistent with past conditions, and whether emerging conditions are part of a longer term pattern or a short-term anomaly. More of those who accept climate change believe it to be naturally caused rather than human-induced. However the number of people accepting human-induced climate change has grown since 2007. At that time, the "hybrid" category of natural climate change was more popular among interviewees than in 2011, pointing to a subsequent polarisation of opinion among interviewees which may reflect broader public debate about "natural climate variability" versus "anthropogenic climate change".

The existence of a message about "natural climate variability" as being in competition with "anthropogenic climate change" is reflected by the way in which many of the interviewees who accept climate change (of either cause) felt the need to point out that they *also* believe in both past, current and future climate variability. This seems to be motivated by a desire to counter what are perceived to be two public misconceptions about climate. That:

- before anthropogenic climate change, climate was stable (and thus relatively easy for farmers to manage), or that
- after anthropogenic climate change, the climate will simply descend into warmer, drier weather.

As some interviewees emphasised, climate change is *additional to* and not a *replacement of* finer scale climate variability: they have always had to manage variability and always will.

> *Yeah, there's got to be something going on, but there's still weather patterns as well* (34a, M, 40-50).
>
> *I'm not a denier, but I just think it's more cycles. Too much is unknown* (22a, M, 50-60).
>
> *There is something in climate change, but a lot of what we've got now I think is just climate variability* (8a, M, 60-70).

As seen in these quotes, the stress was that at present natural climate variability remains the dominant factor.

One of the benefits of focusing on climate variability is that it is not only a management challenge but a source of hope. This is not in the sense of variability being a rejection of the reality of climate change, but that in practice it offers a source of opportunity, the chance of good (wet) years as well as bad. As one farmer described:

> *Climate change is going to give us more variability, but that also gives you an opportunity to do things like store more moisture* (1a, M, 50-60).

Emphasising that variability offers opportunity is also a way of countering what many indicated that they see as overly and insensitively negative messages about the future of farming under anthropogenic climate change. While some accept the reality of anthropogenic climate change, virtually all reject the implication that the future for farming is hopelessly bleak and simplistically dry. A focus on variability offers a way of addressing the dissonance between these views, with pessimistic messages about the end of farming on the one hand, and the conventional optimistic attitude of farming culture on the other. As one young farmer (who accepts anthropogenic climate change) commented:

> *[The wet] is a positive that comes after all the negative press or media on climate change - the concern about the effect of climate change on our property: "Is it ever going to be able to produce anything again?", that sort of thing. [...] We were getting a lot of information on one side saying "It's never coming back, you need to live like this - this is how you need to live and you've got to deal with this". On the other side you have the history of farming, and people saying "Just stay in, it will be okay, it's a long game". Those things were sort of smashing into each other a little bit* (26a, M, 40-50).

Overall, climate variability is central to the worldview and concerns of all, regardless of acceptance or otherwise of whether the climate is changing or will change. For those who consider present and future climate to be characterised only by natural variability, the imagined range and timescale of this variability seems to have extended to incorporate recent climate fluctuations. Those who think that longer-term change is occurring incorporate climate variability into their understanding of what climate change entails. It is perceived as the dominant influence, at least for now, providing challenges but also offering more hope than a sudden switch to an unrelenting dryness.

4.5.2 Scepticism about climate science is high but some believe there is a human influence on climate

Most interviewees dismissed or reserved judgment about the debate over the degree to which human activities are affecting the climate (now or in the future). Others expressed a mix of internally inconsistent views, reflecting the difficulty of coming to a clear position on the complex, uncertain and contested topics. A small proportion indicated that they accept that climate change is partially human-induced. In doing so, they also indicated their awareness that this is a minority view in their social context. This was implied by the defensive way in which many of the interviewees who accept human-induced climate change presented their opinion, suggesting that they expected to be ridiculed.

> *Yeah, I've certainly seen something. Something is going on. [...] You can sneer at me if you like, but that's what I think [...] You can't have so many people generating so much, all over the world, so much air pollution and stuff, without it sort of affecting somewhere* (22b, F, 50-60).

> *I think climate change is a real issue. People say it's not, but I think it is* (24b, F, 30-40).

> *Well, I believe it is [happening]. I know my view's not shared by everyone [...] but I think when you've got world population expanding and carbon building up in the atmosphere and what have you [...] I just think that we're fooling ourselves if we think it doesn't make a*

difference, because I think it's got to make a difference. [...] we're fooling ourselves if we think that we can go on polluting the earth without some diabolical repercussions and I think we're starting to see it (37a, M, 60-70).

I guess we're having some effect on it - the amount of fuels that are being burnt and all that type of thing. Though others aren't so sure (17b, F, 70-80).

A striking characteristic of these and other affirmative statements about the human cause of climate change is how first principles and personal observations, rather than scientific knowledge, were often used to justify the position. Some interviewees avoided referring to scientific authority and instead presented their case for human-induced climate change as common sense. They expressed the human contribution to climate change as a case of a cause-and-effect relationship in natural systems: the unquestionable logic that adding a large input to a system will eventually change that system in some way. In doing so, they distanced themselves from the controversial and politicised arena of climate science while also appealing (intentionally or unintentionally) to the sort of systems thinking that is likely to resonate among farming people.

I can't understand how anyone would think that seven billion people can't affect the planet. I just think it's silly to think that you're not affecting the planet. [...] We've got to be affecting the planet - belching out - using up the country the way we do (26a, M, 40-50).

I just think we all consume way too much and too many black balloons go up (38a, M, 50-60).

Beyond not referring explicitly to science in justifying their acceptance of human-induced climate change, some interviewees explicitly distanced themselves from it by combining their case for the reality of human induced climate change with stated ambivalence about some perceived messages from climate science. This included disputing apparent claims that recent climate events could be attributed to anthropogenic climate change. Although this is perfectly consistent with climate science, numerous interviewees presented them as a partial rejection of scientific opinion, indicating the way such science is misinterpreted as claiming that the climate has now completely changed and/or that climate change involves a new stable state.

I think a lot of it is cyclic. I'm sure a lot of it's cyclic, in spite of what the scientists tell us (17b, F, 70-80).

I personally think there is climate change, but I wouldn't like to say that the reasons are all what the scientists are saying. I think that some of it could be climatic patterns that perhaps have happened for a long time (35a, M, 40-50).

In a kind of inverse of "natural climate change", one interviewee indicated acceptance of a human effect on the climate but a rejection that such change had yet occurred:

I go to Melbourne and I go to Adelaide and I see that smog and I think "Yeah, it's not good". It must do something up there. But I think they [scientists] get a bit carried away in their own little [world] - I think they overdo it [...] we've had these rains that we've just had before. I've had them here. We've had seven inches overnight. Our bottom paddock was under water [...] so that's nothing new. Climate change didn't do that. It's just one of those things.

> *There's something there, but they [the scientists] go to the extreme. That's my theory* (32a, M, 60-70).

Personal observations and theories are a key part of trying to come to an understanding on the many questions the climate change issue raises. But the scientific and politicised nature of the debate means that such personal knowledge and experience are not the only things that inform people's views. Underlining the deeply social character of people's position on climate change (Whitmarsh 2011), individuals' views are constructed in relation to what they believe others believe or are saying. Some of these others act as an attractor for their views, and others as a repellent.

It is notable that farming individuals often constructed their personal opinion in *opposition* to, climate scientists, even when the content of their opinion was consistent with the science. As seen in the quote above, climate scientists' messages are seen by some as an "extreme" view. Partly, this is because what scientists are saying is being misconstrued (perhaps due to the media). Partly, it is because the "entirety" of the anthropogenic climate change message (that anthropogenic climate change is definitely happening, that it will involve significant and frightening changes, that it is already beginning to emerge, and that it is partly due to human cause) is multifaceted such that people can choose to agree with just some rather than all of the package of messages. Scientists' views also seem to be perceived as "extreme" in the sense of lacking objectivity, as somehow self-interested. For example, a couple of interviewees talked about climate scientists promoting the issue in order to drum up funding for further research. As one farmer who indicated an acceptance of anthropogenic climate change put it:

> *There was so much thrown at us about climate change when the droughts were on. We got so sick of it - the politicians telling us it was changing and changing and not going back to where it used to be and we had to get used to this. Now it's flooded, and we've had 20 inches of rain in three months and there's not one word coming out of the politicians and the scientists, saying that it's climate. It's climate change for the better now. Back then it was climate change for the worse. The climate's always changing [...] There's some man-made climate change and there's natural climate change. It's always changing. [...] But there's scaremongering from people, from the politicians and scientists. I just think that the scientists need to have something to alarm people about, so they can get some funding to keep researching it. It keeps paying for their research - paying for their job. They've got a vested interest to find something that could be a problem* (5a, M, 30-40).

This scepticism about the scientific enterprise reflects research on farmers' attitudes to climate change in Western Australia (Gray 2009) as well as to what some commentators claim is a general rising disillusionment with science in society (e.g. (Nowotny, Scott *et al.* 2001; Nowotny, Pestre *et al.* 2005)). In this project, while some interviewees expressed acceptance of and interest in climate science, scepticism about science was voiced more consistently than actual scepticism about the climate changing (albeit understood mostly as a natural phenomenon). What this suggests is that the topic and messenger are becoming disconnected on the issue of climate change and that a non-specific disregard for science could be growing. If this is the case, it could have repercussions for other areas of science-based agricultural research, development and extension. Likewise, it could reflect prior negative experiences with such scientific information.

4.6 People were approaching the 2011 season in varied ways as they sought to re-establish different things

4.6.1 People were keen to put the past difficulties behind them and get back to normal

Irrespective of what people considered the near- and long-term future would bring, they all indicated a strong *desire* to get back to normal life. In keeping with research about how victims of disasters respond, interviewees consistently expressed a strong desire to re-establish a sense of normality, stability and control. What this normalcy looked like differed across interviewees.

A strong theme was the idea of regaining momentum. Despite understanding variability as normal, most people implicitly used a pre-drought baseline when they discussed farming "as normal" in 2011. One of the main ways people interpreted the extended dry/drought period was as "lost time". Associated with the notion of loss is grief: grief for what the period may otherwise have been. As one farmer commented:

> *You sort of say "Well, that's 10 years that could have been - not just economic years but 10 years' worth of more exciting things in life". On the other hand, you say, "Well, you choose to be here and that's part of the process"* (1a, M, 50-60).

The second sentence here indicates that alongside grief, this farmer was able to derive meaning from the "loss" of the previous decade by philosophically positioning it as part of the larger scale process of Australian farming in which he actively chooses to be involved. The sense of responsibility and passing time he expresses echoes the accepting attitude of many other farmers. Associated with this was a keen desire to "move on". Reflective of the dominance of problem-solving coping strategies (which focus on the present and future), many people expressed a degree of impatience about wanting to put the previous period behind them and get going again.

This impatience was legitimised by the interpretation of stored moisture as a sign that in 2011 they would be able to get back to "normal" and "proper" pre-drought farming and living, free from the immediate worries and distractions of drought. For some, the emphasis was on re-establishing a certain pattern of daily life or way of feeling. Here, it was the small things that marked the difference between being in or out of drought. For example, comments by a young couple indicated the value of simply being able to farm and live without the constant distractions and worries of dry conditions.

Husband: *During the drought, your emotions probably went up and down with the rain, whereas possibly you're not looking at the sky quite as much right now...* (26a, M, 40-50).

Wife: *For our family it's nicer to have a positive husband around and a father-in-law that's here every day to be more positive. So that certainly impacts our life - just to have them come in and enjoy their lunch and talk about the kids or something rather than the devastation outside* (26b, F, 30-40).

We see here that living with drought entailed a certain focus on constantly shifting and uncertain weather conditions. Simply being able to live without this distraction was of value to family life. More specifically, living without the worry and negative mood that drought induced also created more space for them to relax and focus on the children.

Implied in the above and discussed more explicitly by others was the perceived capacity to stop worrying so much about their financial situation. A number of interviewees expressed hope that they would be able to pay out bank loans and reduce their reliance on their bank managers.

> *This year [2010] should have been the year to ... We should have recovered from it this year, if we hadn't had weather damage and the grain had been - if we'd been able to deliver it for what it should have been delivered for. It would have made a lot of difference financially. But hopefully after this year ... hopefully, financially, it will be a good profitable year and we'll be able to tick off a few boxes and pay out a few bank manager[s] so we don't have to be so friendly to them* (21a, M, 40-50).

> *I can see the money for the mortgage out there - it's just a matter of getting it in* (5a, M, 30-40).

> *Next year and this year, the goal is just to get rid of a bit of debt which hopefully we should be able to do* (32a, M, 60-70).

While normalised, debt has symbolic as well as business implications, and some were strongly focused on re-establishing or achieving for the first time a neutral bank balance as a demonstration of an enhanced degree of control over their own lives. Others were focused on re-building their on- and off-farm assets and getting back on their desired trajectory of farm consolidation or expansion.

People's plans for the 2011 season were predicated on a mental assessment of what sort of conditions they thought would or could emerge. This was not a straightforward process: it involved wading through and reconciling their own and others' experiences, memories, and assessments. For some, the apparent security of subsoil moisture meant that they considered climatic conditions in 2011 to be less relevant than usual. As one stated:

> *It's going to be a normal year regardless because we've got all the moisture there* (6a, M, 50-60)

While others were also relatively confident that the coming season would be 'wet enough' to allow the sub-soil moisture to play its insurance effect on plant growth, most people were also very engaged in the question of what the climate would do next.

Experiencing something unusual or even outside our referential range of experience can force us to reflect on what we usually expect, on what we consider to be "normal" (Weick, Sutcliffe *et al.* 2005). For most interviewees, the length of the drought, the unexpected extremity and timing of the rain and floods and the unusual fluctuations in conditions within recent seasons, have jolted them to reconsider their local climate and its intersection with contested narratives of global climate change. In addressing the question of whether the 2011 season could or would be average, dry, or wet, they faced complex considerations about the unusualness, permanence and cause of multiple elements of recent climate. Entwined with these considerations were their emotional responses to past and possible climatic conditions, their sense of their current and future adaptive capacity and their hopes and fears.

4.6.2 Some were approaching the year conservatively

Although people strongly hoped that 2011 would provide a year of both psychological and financial recovery, some were concerned that what they would get was further extreme variability. In talking about the coming seasons, many stressed the unpredictability and openness of the future: a sense that 'anything could happen'. This emphasis reflects the heightened awareness of climatic variability discussed in Section 4.5.1 above. It also reflects how sensitive are some individuals and households to the possible consequences of future climatic extremes, given their perceived depleted ability to cope with them.

In terms of specific climatic extremes, some were most concerned about further wet conditions.

> *I have got to the stage where as soon as it started to drizzle I go "Oh no!" And I think because of that flood situation and even now - they were talking rain over the weekend up here - and everybody went into panic mode. It was "We're going to flood!" We've got to try and get people over that as well, which is really hard* (6b, F, 50-60).

> *We've only got to have a half decent autumn break and we're in trouble. I think, logistically, it's going to be a nightmare* (28a, M, 30-40).

> *We're extremely worried that it could be an extremely wet year. It's already shaping up to be extremely wet and it could be - if that continues, well that could make it hard* (24a, M, 30-40).

This focus on wet conditions reflects the physical vulnerability of some households to further rain, given the saturated state of their properties at the time. It also reflects the challenge we all must confront in thinking past recent visceral experiences. As one woman commented:

> *It was so dry for so long, but it seems such a distant memory now. Like, it just seems such a long time ago that it was dry* (21b, F, 40-50).

While some were consumed with the ongoing reality of cleaning up after the heavy rains and floods, for others the painfulness of the previous dry period remained on their mind.

> *I'm still thankful if it rains. [...] I would say for the rest of my life that I'm going to be thankful when it rains [...] we've had nearly 10 years or more of drought. We'd nearly go back to '96 since we had above average rainfall. You can't get that out of your mind.* (18a, M, 30-40)

> *You're more mindful of it. After having all those dry years I guess you're more mindful of your water resources and all that sort of thing* (28b, F, 30-40).

> *Drought? Well hopefully, surely, there won't be drought. [...] one would hope that we would have a reasonable year with average rainfall from now on. But if it's extreme and then it goes from this into a complete and utter drought, well that would be hard to imagine, hard to put up with...* (24a, M, 30-40)

> *If you don't plan for dry, you're going to have trouble, because the dry times are the ones that are the tough years. Anybody can grow a crop in a wet year. (Although, I have noticed some that can't)... If you plan for a dry year, you'll always be far better off. So wishing or*

planning that the dry or the droughts have finished or the dry years have finished is probably foolishness [...] this [wet] year could be one out of the box (33a, M, 30-40).

It would be a bit harder now [if a drought occurred], because when the drought came last time we were a bit better financially off, we had a bit more behind us (30a, M, 50-60)

One young farmer summarised the view that numerous others seemed to share: in the event of another poor year, whether due to drought, floods or other difficulties, 'A tough decision will have to be made' (2a, M, 30-40). This echoes the feeling discussed in Section 4.1.2 of being on a precipice; it is not possible to tell whether this prediction is a general emotional response or a situation-specific assessment of what would happen if people were to be exposed to further significant stress. Reactions to the much-discussed issue of climate change colours projections of future stresses and the capacity and desire to adapt to them. We now turn to this issue.

Thus, despite the significant boost in morale provided for many people by the wet conditions, as well as the positive signs about soil moisture and prices in 2011, those who explicitly stated that they planned to try to capitalise on the perceived opportunity were in the minority. Most stated that they planned on farming "as usual" or on taking a more conservative, risk-averse approach (Figure 5).

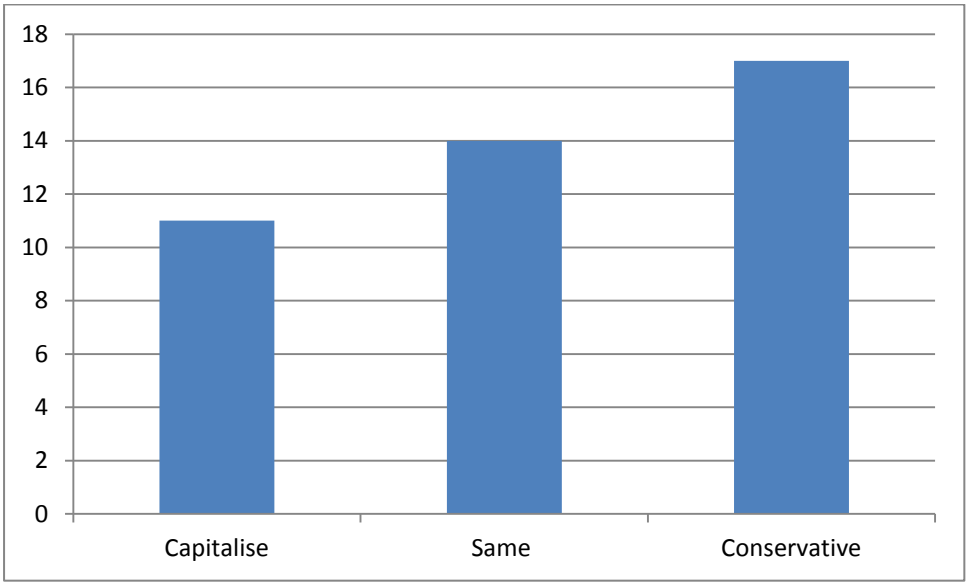

Figure 5. Plans for the 2011 season by farm. 'Capitalise' refers to an especially risk-taking approach in order to try to achieve some large gains. 'Same' refers to a 'normal' non-drought season approach, with a moderate level of risk-taking. 'Conservative' refers to taking a more risk-averse approach than normal.

In a further indication of the perceived depleted state many farm households, about 40% of farmers indicated that they planned to take what they saw as a relatively conservative approach to management in 2011, despite the promise of subsoil moisture. Seemingly independent of their outlook about the future of agriculture generally, the aim of this group was to achieve a gradual rather than massive improvement in circumstances in 2011, with any gain above that accepted as a pleasant bonus.

Interviewees gave numerous reasons for thinking that they should proceed carefully approaching the 2011 season. A conservative approach was justified on the grounds of caution and/or lack of perceived choice; the former stemmed from a negative or equivocal assessment of future external

conditions and/or people's own capacities. Some expressed concern that the coming year would be another climatic extreme, though there was variance in the focus on the possibility of further drought or wet conditions. The latter was seen by some to pose an enhanced flooding risk due to the existing saturation of the ground and full water storages. Others expressed concern that they would not have the reserves to invest in 'going hard' in the coming year. In particular, some were concerned about lacking the capital to expend on inputs for a big year (indicating a maximum level of financial risk they were willing to take on), the ongoing effect of extra problems created by the wet (e.g. weeds, messy paddocks, lost top soil) or being rushed in their preparation.

4.6.3 Some were approaching the coming season 'as usual'

Rather than being deliberately cautious, other farmers indicated they were planning on farming "as usual" in 2011. Of course, what "usual" entails for any individual is not clear cut in the context of the extended and significant variation in conditions that they have had to manage. What *is* now usual? All farmers made at least small changes to their farm management in order to cope with the extended drought period. As a result, in the post-drought and post-wet period, they faced questions about which form of management they felt they could or should return to. Their decision whether to reverse a change they had made depended on whether they perceived it as a short-term coping strategy or a longer- term adaptation, both originally and in practice. Given the wetter conditions, some actions undertaken as longer term drought adaptations may have been called into question.

For some, getting back to 'normal' was envisaged as a return to pre-drought farming, in which the combined challenges of the wet season and drought had to be overcome. For example, in the case of soil fertility, the dry, then wet, periods created an accumulative loss that some farmers mentioned as demanding action to return to pre-drought levels. In this sense, their management in 2011 is likely to be very different from that of the drought years. This "radical" change in approach is one adopted by some in 2010, enabling them to grow such magnificent crops. In the end, this 'normal' approach is ultimately conservative: it is about re-establishing, not changing, a previous system. As one explained:

> *All our fertiliser's been washed away, so we'll probably have to dump more on. We didn't put any on during the drought. All these things you didn't have to do during the drought - now you've just got to go into overdrive and completely change things to get back to normal* (15d, F, 30-40).

Another described quickly funnelling recent income back into the farm to try to get ready for the 2011 cropping season:

> *We got a lot of crop, and sold it all. Didn't muck around; we just took the best price we could within a three or four week period and sold it all. Now the money's in the bank and we're just doing budgets now. We're getting ready for the new one next season, but our overdraft's at a low position; a low ebb. We've got finance and money coming. [...] So we bought a second hand tractor [...] And we put a guy on this year. We're a month behind now where we should be. It's set everything back. That's another reason why we had to have this guy on, or we won't be ready* (5a, M, 30-40).

These farmers did not explicitly state they were 'going hard', and so are counted as 'same' rather than 'capitalise' on the figure above. However, by wanting to return quickly to a 'normal' pre-drought way of farming, they necessarily had to take on a degree of expense and risk. As others explained in terms of returning to "normal rotations" and crop choices:

> *Some of the rotations this year will go back to what I would consider more a normal rotation, as in a little bit more legume, a little bit more oil seed, canola, peas, lentils. Because we were just getting kicked in the guts all the time with those things in the drought, it just sort of went back to bread and butter. Last year I think there was one paddock of peas and the rest was just wheat and barley because it was just too high risk. You'd put all this money into sowing a paddock of canola and because you were already in debt when you started, you're just going: "This is a downward spiral. We'll just go back to bread and butter stuff". So, yes, now the rotations will go back to being a little bit more normal* (6a, M, 50-60).

> *I won't change my system [...] I like to see a bit of canola and a bit of barley and a bit of wheat. Two years ago, we were all just wheat barley, 80 per cent wheat. It was a good move but I don't like to do it and I'm happy to get back to what we were doing* (14a, M, 60-70).

> *Our rotations were sort of shot around a bit with the drought because we had cereals on cereals and failed crops and whatever. So we just need to try and get some things back into a better rotation. [...] Probably the same as every farmer, we will sow a bit more canola, and there might be a few more legumes to give some of the paddocks a bit of a disease break. But other than that we won't be changing it too much. [...] there'll be a bit more cost I suppose involved in planting. Seeds are a bit dearer and we'll use a bit more fertiliser. So there'll be increased costs to do that I suppose* (21a, M, 40-50).

Others' farm plans for 2011 reflected less responsiveness to conditions. While they indicated that they planned to farm essentially in their normal way in 2011, this did not necessarily entail a radical shift back to pre-drought farming; the changes they had made to accommodate the drought were very minor and so required little reversal. Indicative of the view that resilience is about being unwavering in the face of external pressures (discussed below), these farmers indicated that they would simply proceed as they always did. Others mentioned making little change to their farming approach in 2011 due to a lack of time, energy and resources. As one explained, he still felt too financially constrained to *'start doing something'*:

> *If I got rid of my overdraft, I might make a bit of money, but I'm not going to have enough [this year] to say "Right, now I'll start doing something". If I get another good year, then I'll start to get back in the comfort zone and then I might go "Hang on" - if it starts to look all right I might do something. But we're still at least 12 months off getting in the comfort zone [...] It's going to take a lot more, believe me, than rain* (18a,M,30-40)

This reference to "doing something" points to a desire for creative outlet and professional momentum. We now turn to those planning to act on that desire.

4.6.4 Some were fuelled by a strong desire to 'catch up' and regain professional momentum

For many farmers one of the casualties of the drought was a sense of professional satisfaction, momentum and interest. The reference to "more exciting things" in the quote above points, for example, to the role of boredom in contributing to the de-motivation reported by numerous interviewees. By constraining activities, future options and signs of success, drought not only stalled expected financial progress but also professional growth.

In addition to the monotony of drought, the particular late-season emergence of poor conditions over recent years added to the intense dissatisfaction many farmers felt. As described above, over the past four or more years cropping seasons frequently began from the low base of previous poor years, building enthusiasm with promising early conditions, then ending in disappointment as the season fell away. In 2010, the anti-climax was especially acute because of both the accumulative effects of previous build-ups and the sense that the potential for a good year was particularly strong. Combined with the moisture provided for the next season, the hopes once pinned on 2010 were rapidly transferred to 2011, adding significantly to anticipation about the coming season. Many expressed hope and confidence that 2011 would be the year that actually, finally, delivered them the dream. The irony is that for some households, the drought has enforced such a wait that a large part, if not all, of any financial reward obtained from a single bumper season would simply be absorbed in assisting in recovery to a 'pre-drought' farming or financial position.

Against this background, the magnitude and security of production that the wet conditions seemed to offer for 2011 was a source of intense professional energy and focus for many farmers at the time of interview. Some farmers described the sense of wanting to *'push the farm a bit hard'* and *'go in with a little bit of gusto'*. As one put it:

> *The drought changes our view a little bit and it's hard not to - it's difficult not to - scramble now and try and get money quickly, to push the farm a bit hard now that there's an opportunity to produce and try and catch up on what you've lost [...]The hardest part I reckon in our business is [that] we are risk takers at the end of the day, and if you keep losing your bet time and time again, it gets harder to bet each time [...] So, I think, while we've been resilient in the sense that we keep going, there's been a build-up to the point of almost desperation - that sort of need to feel like you're getting ahead* (26a,M,40-50).

This farmer was interviewed later than the others (for administrative reasons) and, while this was not ideal, it meant he was able to comment on some later developments in the farming community. One observation he made was that the 'desperation' he referred to above was expressed through the large number of machinery purchases made by farmers seeking to quickly 'gear up' and get their farms back to a satisfactory, satisfying level of operation.

> *I know there was an amazing amount of spending went on after this harvest. Even though there was a tough harvest people went out and bought headers, tractors and everything they could possibly get because they suddenly had some cash flow. I think that was pent up inability to do that over the last few years. If you talk to the guys who sell machinery they*

just can't believe how quickly farmers have walked in the door and bought stuff (26a, M, 40-50).

The desire to get some momentum up was also indicated by numerous other farmers who indicated that in the coming months they would be sowing at a high intensity, putting on large amounts of fertiliser, and generally managing their crops intensively to increase the possible yield benefit of sufficient moisture. With soil moisture removed as a limiting factor for once, they were anxious to make sure that yields were not limited by these other factors over which they had more control.

Now that it's shown us that it can rain again [...] and we're going in with a base of soil moisture - we've actually got confidence to move forward, to go in with a little bit of gusto, I suppose, and say: "Okay, well I can chuck everything at it" [...] whereas when you were going in with nearly a dry soil profile and you're relying on everything to fall out of the sky to get a crop for this year, you're going "I don't know". So yes, in that respect, my mindset is more positive (6a, M, 50-60).

The biggest opportunity is probably to crop the whole farm this year to try and capitalise on the moisture. So that's perhaps the biggest opportunity. Sell the sheep and crop the whole farm to try and you know grow mainly crop. Though that's not necessarily a good idea either because sheep are pretty good at the minute too (21a, M, 40-50).

There are positives and the positives are that it's given us a profile of moisture to work with this year, so you can go into the cropping season with a whole lot more confidence knowing that I've controlled the summer weeds - well, so far so good - and I can go out there and say with a positive attitude, saying: "Okay, I'm going to go with full rates of fertilisers and that sort of stuff and give it...". I'm planning to put urea on and top dress and stuff like that. [...] so yes, I'm starting to feel comfortable that there's a light at the end of the tunnel. We can just get out and say: "Okay, I'm nearly caught up" (6a, M, 50-60).

Yes, well, the confidence is up. The positiveness is there and the water's there. We've just got to try and capitalise on it now. Getting everything sprayed as quick as we can and getting sown early - getting sown on time [...] And there's a young guy moving back to the area - it's not easy to get them and find them - so get on to that and get him on to help (5a,M,30-40).

Well for the last few years it's just been spending the bare minimum on crops - just getting through. Now we're quite excited. We're going to grow a lot more canola and start getting our rotations back to work - weed control and all that sort of thing. You feel quite confident now. We're really only going to need two inches of rain between now and harvest to grow a crop (15c, M, 30-40).

We see here that for some farmers the physical and mental exhaustion described earlier was accompanied by stores of pent-up creative energy. One way of thinking of this is of farms as vehicles. During the years of drought, many farmers felt as if they were idling their motors, save for the occasional rev. Last year, they hit the accelerator but ran into the unexpected obstacle of excess water. This year, some gave the sense of being raring to go, racing to get to the starting line. While,

as described above, their efforts to get to this starting line have been rushed and there are some doubts about what shape their vehicles are in, some drivers continue to be determined and excited.

In addition to a sense of enthusiasm and impatience, there may also be a degree of gambling involved in the desire to 'go hard' over the coming season, as the references above to 'desperation' and being 'risk takers' suggest. Studies in psychology (e.g. Pietras *et al.* 2008) suggest that when individuals' reserves decline to a precipitous point, they switch from avoiding risk-taking to favouring it in a bid to "stay in the game" by means of some big wins. It may be that financially or emotionally some farmers have reached a point at which they are willing to 'chuck everything' at the coming season because they feel they need a big win if they are to stay farming. By tipping the odds towards a big year, the subsoil moisture delivered by the wet conditions was interpreted as a signal that now is the time to go for it. As a farmer quoted earlier put it, the rain was *'hugely game changing'* (15c, M, 30-40).

The subsoil moisture was not the only factor seen to tip the odds towards a good year. In discussing the coming season, many farmers went through a kind of mental inventory of influential factors, giving voice to the sort of risk assessment that they all do informally, if not formally. Assessment was related to factors in the external farming environment, such as price, as well as to their and their farm's capacities. As the farmer below reflected, last year changed his outlook for the better by reminding him that he 'can grow a crop'. This improvement in his 'perceived adaptive capacity' (Grothmann and Patt 2005) added to his positive outlook on his farm for 2011:

> *Now, after having a wet season, knowing that it can rain again, knowing that I* can *grow a crop, even though it wasn't as good as it could have been [...] and the market being the way it is - quite inflated prices. And I'm quite excited about sheep again. This flood has put water in every one of our dams. We haven't got one dry dam*. *We should do well* (28a, M, 30-40).

We see here the construction of 'contingent optimism': optimism based not simply on a constant disposition, but (also) more specifically on an assessment of the situation being faced at the time. As found also in other studies of farm households in drought, numerous interviewees in this study indicated that they believe that on balance there is rational cause to be optimistic. Contingent optimism differs from the 'defiant optimism' discussed in Report One, which was about a kind of heroic commitment to being optimistic about the future, despite signs to the contrary. Contingent optimism involves a positive outlook on the future, tempered by a sense that the desired positive outcomes are dependent on some uncontrollable external factors. It is in this sense a blend of optimism and realism. People generally indicated that their outlook on and plans for the future were a hybrid of their own desires (including the desire to be positive) and the uncertain but seemingly positive external conditions they faced.

4.6.5 Business strategies include optimisation, conservatism and a growing degree of opportunism

Given the lessons learnt from recent years, the situations they find themselves in, and ongoing cultural and economic factors, how are people approaching the near term future? Interviewees were asked explicitly what their strategy was going forward. Combined with findings throughout the sections above, the results suggest that farmers' strategies for the coming years vary, but fit along two main "axes". The first axis offers an option to place emphasis on consistency on the one hand,

and responsiveness or 'reactive-ness' to conditions on the other. The choice here is between endurance and innovation. The second axis reflects the difference between aiming to maximise profit or to stabilise income. This reflects the different aspects of normality people most want to re-establish: a normal and thus substantially replenished bank balance or a stable and secure mode of earning that income. These two axes designate four general strategies farmers are variously adopting for managing volatile (and/or unfavourable) climatic and economic conditions of the sort experienced over recent years (Figure 6):

- Optimisation: continually improving production efficiency and output to maximise profit
- Opportunism: tracking conditions in order to capitalise on opportunities when possible and cut losses when conditions deteriorate. Emphasis on pursuing upside risk.
- Conservatism: a consistently 'low cost' approach that trades off possible gains for more reliable profitability. Emphasis on minimising downside risk.
- Flexible conservatism/Cautious opportunism: a mix of conservatism and opportunism, where a desire to minimise downside risk is combined with a willingness to pursue upside risk[11].

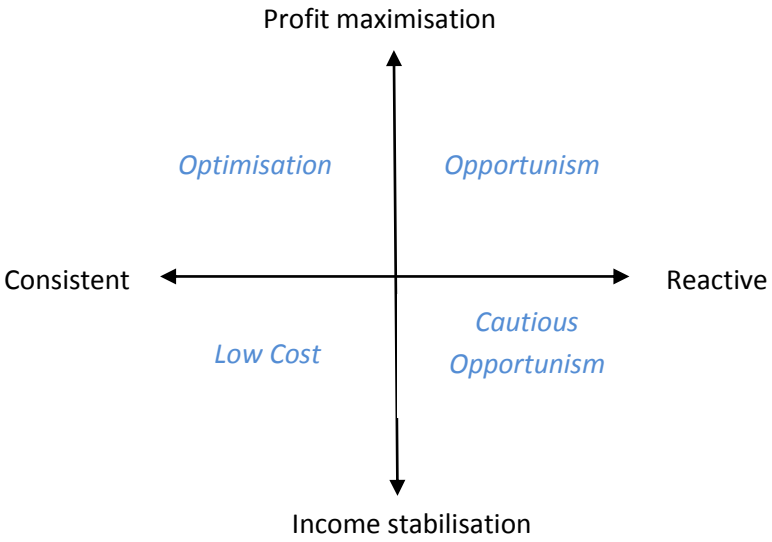

Figure 6. A schematic diagram of two key factors (axes) distinguishing the general strategy farmers are adopting over the near term, resulting in four ideal (abstract) types.

Each of these adaptation or risk management strategies has positives and negatives. The way in which they relate to other relevant factors like income levels and variability and specialisation versus diversification, are areas for further research. Across interviewees, all four approaches were supported, with no clear preference evident across the group[12]. Different farmers would argue about which was the most appropriate, as illustrated by the following quotes,

[11] Downside risk refers to the possible negative consequences that could arise from a given course of action (e.g. large financial costs) and upside risk refers to the possible positive consequences (e.g. large income gain).
[12] Note this could be a reflection of the open-ended interview methodology. If the survey dealt explicitly with this, a dominant category may be have been evident.

The goal of adaptation is to just keep getting better and more efficient (18a, M, 30-40 – optimisation strategy)

Our risk management strategy is to be very flexible, ready to change course as different situations arise pretty much, whether that's how you market, what kind of crops you grow, when you're going to sell it, when you spray it. You've got to try and have your farming systems as flexible as possible to adapt to different circumstances and a different level of confidence you've got, different risks that may appear [...] If you've got no feed, you've got to be ready to sell your sheep. Or if you've got enough rain, you've got to be - you've just got to be ready to do something about it. Be on top of it so you don't wait for it to get you. You've got to solve the problems when they arise, not when they start to affect you, otherwise your hands are tied [...] If you bury your head in the sand and don't go "Right, I'm going to get proactive about this", you cop it (18a, M, 30-40 – opportunism strategy).

Our farming system has changed quite a lot [...]. Instead of having a farm where we try and maximise yields, we've really become quite a low-cost farming enterprise [...] our sheep have helped us a lot. [...] so our farming enterprise has changed. In one sense, our crops weren't as good as they could have been this year, because they had a lower target yield ... But I think if we'd had that strategy in 2002, we would have not lost as much money as we did (1a, M, 50-60 – conservative strategy).

Well, my hopes and goals are to start buying some more ground and have reasonable years. [...] But I will make sure I don't over-commit myself and make sure that I don't go out the wrong way. I don't want to go and buy too much ground and be in financial trouble. [...] My goals are twofold, aren't they? It depends on which way I want to go. Do I take the risk and buy lots of ground if we have good seasons and keep going? If the share farmer decides to sell his ground, I'll buy what I can afford [...] But I don't need so much income. I don't want to be the richest man in the cemetery [...] so goals are pretty flexible (9a, M, 40-50 – flexible opportunism strategy).

Of course, in reality, many people would use some kind of hybrid of the theoretical types presented above. They may also switch between them as part of a higher level strategy of being adaptable in the face of uncertainty.

Some farmers indicated that the last few years have prompted them to shift to the right: to a greater focus on being responsive to inherently unpredictable conditions. While in one sense a risk management strategy, this focus on flexibility is not about risk avoidance. The extreme case is that of 'opportunity cropping' (or 'response cropping' or 'flexi-cropping' as it is also called) in which risk is reduced by cropping only when the probability of a positive outcome has reached a certain level (based on various indicators like soil moisture and/or seasonal forecasts) (Hayman, Crean *et al.* 2011). But making the decision to crop still entails taking on the risk that the year may in fact turn out to be unfavourable (in climate or other terms). Likewise, deciding not to crop entails the risk that the year will be better than expected and the opportunity for a good year is missed (with consequences for professional satisfaction as well as income). Given the general strength of cropping in the study area, for farmers in this study the 'not-crop' threshold would be very high; nevertheless some indicated that they were open to taking a break and doing something different if

severe drought returned. Likewise, some expressed this as a decision to be undertaken at a paddock rather than farm scale. It would be a decision made with regard to how intensively to manage a given area of crop throughout the season (i.e. level of input use), and as one relative to the possible benefits of grazing sheep instead of cropping.

In a seriously opportunistic approach, long-term success relies on the periodic achievement of extremely high income. This is the sort of 'bumper year' some farmers are aiming for in 2011 (and aimed for in 2010 and previous years). At the same time, however, the disappointment of previous capitalisation attempts, the persistent presence of some form of unfavourable conditions and the depleted nature of some farm businesses and households, mean that among farmers there has been a concurrent move toward a greater degree of conservatism.

Although it was not clear from the interviews, the combined effect of these dual moves may be a broad shift towards a 'flexible conservatism' or 'cautious opportunism' approach. Any such shift could itself be partial and impermanent. The conventional (farm) business ideal of an unwavering focus on optimisation and efficiency remains appealing. Symptomatic of this is the rapidity with which some farmers have (re)adopted a 'capitalisation' or 'same as usual' approach for 2011 on the basis of subsoil moisture (Section 4.6). Farmers' comments about a return to 'proper' farming similarly suggest that the target of this return is farming in a way unlimited by input, equipment or climatic constraints. Depending on the responsiveness of these farmers to any future decline in climate (or hydrological) conditions, their 'capitalisation' or 'same as usual' plans for 2011 may prove to be less a targeted response to the opportunity posed by soil moisture (opportunism) and more a generalised return to a preferred mode of farming (optimisation).

4.7 Endurance is widely valued, but challenged by those who instead emphasise innovation

4.7.1 Endurance is evident, valued and generally expected

Optimism about the future is basic to many human endeavours and to business enterprises in particular (Bennett 2011). It is especially necessary for the cyclical risk-taking involved in farming. One of the ways optimism encourages an individual to persevere through difficult conditions is by creating an expectation that such periods are temporary. Such endurance or perseverance is one of two main interpretations of resilience presented by interviewees. Perseverance has long been recognised or idealised as characteristics of those in Australian farming (Milne et al 2008). It has especially been attributed to those in the Mallee region which, like other marginal farming areas, has always been subject to highly variable and testing conditions (Anderson 2008, 2010). As one farmer commented: *maybe it's farmers in the Mallee and [resilience] is just a characteristic that they grow up with, I don't know* (13b, F, 60-70).

Endurance is especially valued in farming because it is not an inevitable or easy outcome. As seen in the sections above, many interviewees stressed how hard they had found the drought to be and reflected that at times they had wondered whether they would get through. At the same time, these personal descriptions were often accompanied by an acceptance of the inevitability of such testing times in farming and the ordinariness of toughing them out, pointing to the prevalence of problem-focused coping strategies over emotion-centred coping strategies as mentioned above. This is

illustrated by the frequent use of the word 'just' as farmers discussed resilience and whether they feel resilient themselves:

> *Probably. I've just got on with it, really. Yeah, it's hard to know. Well, it was always going to be difficult. You just make the best of it* (8a, M, 60-70).

> *[Resilience] means just bouncing back and finding a way all the time. If there's a particular problem each day [...] you've just got to fix and find a way for tomorrow* (5a, M, 30-40)

> *Resilient? It really means that you keep on going, whether things aren't looking good, you just keep on going.* (29a, M, 20-30)

> *Well I take it as being adaptable and sort of being able to say: "Well, right, we've had a failure [...] This has happened. We can't do anything about it. We've got to move on and just deal with it"* (21a, M, 40-50).

> *Most genuine farmers, if their bloody house burns down, they just say: "Oh well, we can't afford it, but we'll build another bastard". And that's the same if the haystack falls down or whatever [...] we'll stack her all up again. She'll be right. Yes, that's a trait you have to have as a farmer. You can't afford to bloody throw your hands up in disgust and walk away...* (43a, M, 60-70)

> *That's what I think resilience means - not giving in just because the easy option at that time is to give in* (5a, M, 30-40).

These comments point to the strong sense that resilience is part of the position description for farmers: *'You couldn't be a farmer if you weren't resilient'* (8a, M, 60-70). Although the last decade has involved record-breaking conditions and many farmers recognised how exceptionally tough things had been, they also emphasised that persevering through such conditions was *not* exceptional: it is *just* what they expect of themselves and each other. Great determination, pragmatism and patience were presented as normal qualities. As (McClelland 2010) writes about the area:

> *Life in this part of the world has never been easy. Drought has always hovered threateningly in the wings, accepted as an inevitable part of life. The recent protracted 'dryness' has been taxing, yet somehow the will to continue seems to survive* (p. 9).

Numerous interviewees represented optimism as an important source of motivation during the previous dry years, despite this positivity being tested by the length of the drought period. This belief that better times will emerge if one *just* perseveres a bit longer was vindicated by the arrival of the recent wet conditions. Climatic fluctuations are seen to inevitably bring about difficult times, but also better times. As one farmer reflected:

> *It all revolves. Your moods change with the seasons because farmers are so interconnected with the land and the seasons. When the farm's doing well and the seasons are good, the whole environment around us is good and the farms are producing money. Alternatively, when it's bad, it's really bad. That reflects back through farmers and bad attitudes and moods too.* (5a, M, 30-40)

Having experienced the re-emergence of good times in the past – and so knowing that this was possible — was described by a couple of interviewees as a mental advantage. Besides other advantages associated with older age (often higher equity, fewer dependents), the value of having experienced the ultimate rewards of enduring were emphasised by some interviewees. As one stated: '*I guess, we're in that age group that we've seen hard times before and you just keep going'* (NJ8b). Optimism was also presented as basic to the cyclical character of farming, with each and every farming season offering another chance, a window through which better conditions and a good season could be imagined. Two farmers commented about their understanding of resilience:

> *You can see that little pull of that rainbow around the corner [....] you know it's going to get better. You've just got to plod along a little bit further; it will turn round (29a, M, 20-30)*

> *It's about just keeping an almost an [sic] impossible optimistic view on things* (2a, M, 30-40).

Interviewees' reflections on the drought were captured at a time when it seemed that the drought had ended (at least for the time being) and that they had, therefore, 'survived' it. Some drew strength from this knowledge, which proved that survival was possible and bolstered their confidence. To an extent, this positive feedback from one tough period to the next counteracts the negative effect of such periods on farm and family assets. In essence, while the drought eroded people's personal and professional assets, it also potentially 'strengthened' them mentally. Discussed further below in terms of adaptations, comments by some interviewees point to this sense of strengthening through testing, or survival of the fittest:

> *I think [the drought] gave me some spine. It gave me some resilience in the sense that we had to keep backing up and having another go* (26a, M, 40-50).

> *I think [the drought] certainly tested people's passion for farming and it was a real test. I think the ones that have stuck with it are the ones that genuinely love farming. I think it has sort of weeded out the ones that didn't want to be here as from the ones that have a genuine passion and want to do farming* (15d, F, 30-40)

The above discussion about tests and toughness points to some interviewees' confidence and pride that - no matter what conditions are thrown at them - they will get through. The focus is on them and their response to external conditions. The extent to which these statements are accurate portrayals of how they feel, or are their espousal of a rural cultural ideal, is an open question.

Others are starting to question the inter-related idealisation of optimism and endurance. As discussed in the section below, a different framing of resilience was also evident in interviewee comments, one that placed more emphasis on questioning existing pathways and finding new ways.

4.7.2 Some query the feasibility and rationality of enduring without changing

The section above reveals a strong belief in the value of persevering and toughing things out. Some important variations on, or qualifications to, this theme also exist.

First of all, some farmers expressed frustration with the expectation that farmers are "naturally" resilient. They also took exception to the continuing pressure to adopt a positive outlook at all times,

which was criticised as both unrealistic and difficult. Some expressed uncertainty about their own resilience and the expectation or ideal that farmers will always "bounce back":

> *You know, there's a lot of almost poetry or something about farming [...] I don't know, I try to be proactive ... We've done it [been resilient] I suppose. But I haven't got confidence to say that I ... certainly we haven't come out of this 10 year period in flying colours, and it's pretty hard to say I've been resilient when we're on our knees* (18a, M, 30-40).

> *I got a bit sick of that term [resilience], really ... You can only have so much resilience. I guess you can bounce back, but it gets harder to bounce back really* (13b, F, 60-70).

> *Resilient means [...] get up and go again. That's what we've done, but there's not much getting up much longer for us. My brother's two years older and I've seen how he's broken down in the last two years. [...] But if I throw the towel like that, I'm going to be in trouble and I think we'll be sold in two years. Well, we might have to anyway* (32a, M, 60-70).

Secondly, a notable number of farmers were critical of an interpretation of resilience that over-emphasises mere continuity at the expense of change. The framing of resilience discussed above emphasises endurance and toughness. Success in this light is seen to be achieved through unwavering effort. But an alternative view instead emphasises change and innovation. It is about success achieved through negotiating obstacles. The distinction of course is blurred, and reference to both approaches – being 'tough' and 'finding a way' – was common, as seen in the following quote from a farmer about what resilience means to him:

> *It means that you don't give up. It means that you're pretty tough. You find a way to sow next year's crop. You won't give up and say: "It's all turned to shit this year and I'm going to pack it in". You'll find some way of sowing this year's crop* (9a, M, 40-50).

Despite the overlap in ideals, there is a tension between the approaches which has significance for how adaptation and resilience are conceived.

As implied above, a striking number of people expressed ambivalence about how rational, feasible or desirable it is to simply keep "going back for more". In doing so, they drew on another long standing ideal in agriculture, strongly promoted through the industry of agricultural extension, which is the idea of being innovative. Their ideas may simply reflect a well-rehearsed debate in the sector, but their comments resonate with the broader mood of questioning that seems to be emerging within the community as noted above. People are becoming more aware of their underlying vulnerabilities (Section 4.4) and reflecting on climate variability and climate change (Section 4.5). This is discussed further below in terms of many people's openness to reconsidering whether or not they remain in farming (Section 4.7.3).

Numerous farmers indicated that they are beginning to equate the "unwavering" approach with stupidity, particularly when it involves taking on more debt. Some directed this criticism at other farmers and some at themselves. The reflections provide valuable insight into how some farmers are trying to reconcile the tension between the cultural ideal of perseverance with the cultural ideal of innovation and uncertainty about the future.

[Resilience] is when you keep getting kicked in the guts and you stand up again [...] It's resilience or stupidity I suppose [...] A bit of both I think (30a, M, 50-60).

Well, I think farmers are silly really. They say they're resilient. For someone that's got a debt of $400,000 or $500,000 or $600,000, they walk down the street like they're $400,000 or $500,000 or $600,000 in front and it's really silly. They're taking a beating (3b, F, 60-70).

The most resilient part of a farmer is being able to economically manage and fluctuate according to their incomes. If you're going to overspend - well that's not resilience, that's stupidity (39a, M, 60-70).

Resilience is probably an ability to continue on with something even when it's tough going. Sometimes I think farmers aren't necessarily resilient but sometimes just plain stupid. I can say that, being in a farming family. You know, sometimes you just think: "Oh, this is just ridiculous. What are we doing this again for?" (33a, M, 30-40).

Well we're notoriously … well I suppose resilience is the word isn't it? (26a, M, 40-50)

I think in our game, we need to be resilient - that's what's kept a lot of small communities going, is that optimistic, resilient view. I guess there becomes a point though where if you become too stubborn and can't see or don't want to see tough decisions you might need to make (2a, M, 30-40).

You've got to make sure everything is running profitable [sic]. What you do has got to be getting a return. And if you're not getting a return and it's a too dry a year, well you don't say "Better luck next year"! You make a change, so that if it is the same next year you're not going to be caught the same ... No one else is going to give you a handout, you've got to make your own money, you've got to pay your own bills. So you've got to be viable (33a, M, 30-40)

There's not much difference between being resilient and sticking your head in the sand [...] I think a lot of people would say farmers are resilient when not many are actually resilient in the sense that they're actively trying to do something about it. So a lot - resilience is mastered by some of them just going "It's too hard, I don't want to do anything at all". So they just keep on doing... the same old thing [...] that may be what you call resilience: stubborn, too frightened to take another jump somewhere else. I don't know. A lot of people call it resilience because it's a positive word I suppose [...] I think if you talk about the floods and how communities band together and ... the fires and how people can get up from that - that's in a totally different league. That's what I'd more class as resilience, as opposed to the farmer that borrowed more money and puts a crop in again (18a, M, 30-40 (being critical of self)).

We see here that mere continuity or perseverance in the absence of innovation is interpreted by some farmers as a sign of stupidity, stubbornness or fear. Furthermore, the last quote above (in which the farmer was directing much of his criticism at himself) suggests that to proffer this view goes against a broader cultural ideal of wanting to appear positive (seen in the emphasis on optimism also).

The farmer above also indicates what the alternative to mere perseverance involves taking 'another jump somewhere else'. The image of jumping highlights the sense that risk is involved in innovating and adapting. Taking such a risk can in turn be frightening, especially when the stakes are high, as in a state of depleted reserves. Another farmer highlighted the risky and frightening character of 'trying something different' in already difficult circumstances:

> *One of the neighbours, without saying any names, said to me half way through the drought: "You guys are brave, you keep trying something different - but it seems to be working for you. We just keep doing the same thing every year hoping it's going to be different". I'm like, that is really stupid, if it's not working, it's not working. It's not going to work next year, so change something! [...] You don't just [...] throw that whole thing out, but you need to stop and analyse it and go, "Okay, well this isn't working and this is, so let's just adjust it a bit". But no, they were just in this thing where they were like "No, we don't change anything, we just do the same thing year in, year out". That's not really being resilient, that's just being stupid* (33a, M, 30-40).

The implication is that continuity or toughness is not sufficient in itself for long-term survival in the face of trying circumstances; that some degree of change and innovation – that is, adaptation - is required as well. Whether this has always been the understanding among farmers or whether it is an increasingly strong theme is an open question. It could be argued that, in the context of the uncertainty and new challenges that climate change and other current phenomena introduce, established strategies are being or should be increasingly called into question. At the same time, that very uncertainty makes identifying appropriate alternative strategies very difficult. How rational and effective are subsequent changes is an open question. For some farmers, changing strategy may be a sign of insecurity, panic and desperation rather than evidence of a new insight into system requirements. Changing direction, as well as not doing so, involves risk. The farmer comments above underline the often-overlooked point that innovating and adapting are in themselves risky for those involved. Some may be less willing or able to take risks than others, or less able to decide rationally, when circumstances are already difficult.

4.7.3 Some women are ambivalent about farming life and their personal resilience

It is well known that Australian farming culture is strongly gendered not only in structural terms (there are more men than women in the industry) but in terms of the different ways men and women are involved in farm life (Alston 1995). Although gender issues were not explored directly in this study, it was notable in the interviews that many women's stories of the past few years were consistently distinct from those of men. This includes their views on resilience. Often comparing their perspective to those voiced by their male partners, some women struggled to capture in words their experiences and perspectives on the notion of resilience. In part, this may reflect the constraints of group interviews, in response to which individuals are likely to filter what they say according to whom else is in attendance. More generally, it likely reflects the existence of strong cultural norms in rural communities grounded in what is viewed as "appropriate" to discuss or express to others. As (Norgaard 2011) notes in her rural study, it can be particularly difficult to speak about negative feelings in public in settings such as rural communities where both private experiences and pessimism are not normal topics of conversation. Over time, this may lead to a reduced capacity to notice or express such feelings, such that when people are unusually given the

chance to do so - as in an anonymous and reflective research interview - they find themselves lost for words. Alternatively, as feminist linguistics argues, our common vocabulary – such as popular words like resilience - may carry masculine ideals and overtones inappropriate or inadequate for capturing the range or truth of female (or male) experiences (Cameron 1990; Arthur 2003).

Numerous women talked positively about the resilience of their farms, families and selves over the drought. They expressed enthusiasm about the future and the farming way of life. As found also in the 2007 and 2008 interviews, some were pleasantly surprised by how resilient they had proven to be over recent years, finding that they had survived far better than they would have anticipated had someone described to them beforehand what they were going to go through. As one said, *'I think I've learnt that I am resilient'* (NJ4b). As with some farmers, this sense of having "come out the other side of drought in one piece" was an important source of confidence about their ability to survive further difficult times in the future. The strength they exhibited through the challenges of the past decade was viewed as an important psychological resource in going forward.

Some women, however, expressed doubts about personal and family resilience. The extent to which this reflects differences in their actual experiences or reveals their greater willingness (than men) to discuss such experiences is a moot point. Interpretations of what resilience entails, and the challenge of being resilient, seems to be shaped at least in part by the different positions many women have within the farm and family relative to men. It was women who more commonly expressed uncertainty and concern about both their circumstances and how they and their family members were responding to them. Some pointed to differences in their perspectives on farming relative to those of their husbands and the fact that such differences have been brought to the fore by the climatic challenges of recent years.

In thinking back over the drought, a number of women were critical of what they perceived to be their own level of resilience relative to their husbands. Many women noted that they have played the role of trying to provide emotional support and stability for their family during the drought. At the same time, most have limited direct control over the performance of the farm relative to their husbands (only one female identified as an active farmer). The farm context is therefore more 'external' for them, mediated by their husband's decisions and actions, which may be unclear or a source of worry to them. Reducing their control, this distance between them and the farm to which their circumstances are tied, can heighten women's actual and felt vulnerability within an already variable and uncertain farming context. One woman indicated how she uses her husband's mental outlook as a sort of barometer to understand the state of the farming context she is in at any one time:

> *I'd say X [her husband] is much more resilient than me. I think that was why I was worried about him [during the drought] because he was starting to get negative, and that is just so out of character. X is such an optimist all the time, which keeps me going. If he couldn't be positive about things, well it left me thinking: "Well, I don't know why I'm here, if he's not feeling good about it"* (38b, F, 50-60).

Others drew inspiration from the resilience they observed in their husbands:

For X [her husband] to get 10 inches of rain in that week, or nine-and-a-half inches of rain, and still get up and still go and say "Well, we have to fix this ready for when we can strip that crop" when I was just reeling. That's resilience.

I just don't know how they do it ... He went out there this morning or yesterday morning to do some spraying, and the tractor won't go because he had to drive it through the flood to get out. Now, since he's driven it through the water, it won't go. That would just ruin my day, whereas X just says, ring up the bloke and go and do something else. (38b, F, 50-60).

I think my mental health is more knocked around than X [her husband's] by the change. I guess that's kind of connected to, you know, just the promise of what is. I just look at the men [her husband and son] ... They've put in all this work. How can they be shattered again? ... But X is pretty level ... I mean, he doesn't have a great need to share that emotion stuff – ever – but he is pretty level I think, more so than me (11b, F, 40-50).

While many women were similarly admiring of their husbands' tenacity, a notable number expressed doubts about where it was all headed. Some women expressed feelings of doubt about the current and future wellbeing of themselves, their husband and their children given their farm situation. But having one's circumstances determined in large part by the decisions and actions of your partner can create not only a source of vulnerability but a complicated relationship dynamic. Thus expressing such thoughts is complicated by the risk that these views will be interpreted as doubts about their husband's farming abilities, undermining the emotional support role the women are trying to play and inducing defensiveness in their husbands. For this reason, some women indicated that they try to be optimistic, and then feel guilty about not being sufficiently optimistic and 'resilient'. They then cast themselves as a burden on their husbands. As one woman from a farm that had suffered bad crop damage in the 2010 rains explained, pointing to the way the recent farm difficulties expose pre-existing differences in her and her husband's attitude to farming:

There's resilience in farmers far and beyond there's resilience in any other human being. [...] I see it in X [her husband] day after day after day [...] That's where I'm down. I can't do it. I just don't want to do it anymore. [...] And it's not about not having a holiday - because really I probably didn't want the holiday anyhow, did I? So it's not about that. It's just that here is another - you know, realistically, it's probably 10 years to go, to pay back what we need to borrow. Yeah, so I find it a struggle at the minute. But we'll overcome that. I guess the struggle is the difference. I know it's just not about me and X, but it's the struggle of the difference between what partners' dreams are ... You know, the men are quite connected to the land and driven. I understand and respect that, but perhaps for myself I'm not so connected to the land. So therefore I wonder, why do it? You know, I wonder, why do it? I wonder why for ten years you look out the window and look for rain and then you get it and then look out to see if it's stopped [...] I can't say X has made it hard for me because I think he's managed it exceptionally well. I think I'm making it hard for him at the moment. [...]We've always had a different passion to a degree. Not that it's major but... It's not just about this year. [...] There's differences of whether we should just keep pushing on. I get the fact that we need to, but it doesn't mean I deal with that very well [...] but X has that level of resilience. I'm not saying it's easy [...]. Some days he just says, you know ... But he still does it. Despite the wife saying, "Why are you doing it?" (11b, F, 40-50).

Like the women quoted above, some seemed caught between admiring their husbands' tenacity and optimism, and being bemused and concerned by it, particularly as it related to taking on more debt. How openly they expressed doubt varied. Some were obviously trying to understand and accept their husband's mindset and farming culture more generally:

> *He just keeps putting that crop in, year after year, hopes for the best. I guess you have to be the eternal optimist to do that, don't you?* (36a, M, 30-40)

> *I'm probably more conservative I would guess [than her husband]. But you've got to, I guess, get it [the debt] to keep going. So the other option probably isn't that good either, I guess* (18b, F,30-40).

Some reflected specifically on the commitment farming seems to demand and spoke of learning or trying to adopt this position themselves. As three women originally from the city and now living on a farm with multiple young children reflected:

> *I'm a city girl and we had three children sort of one on top of the other almost. The whole thing for me has been very - how could I say? A lack of freedom and a lot of demands ... I think that in all that there's a lot of rewards - rewards that you wouldn't get unless you had made that commitment and that investment sort of thing. So I think that I've learned a lot, because I was very much an independent freedom lover before I got married. [...] I have an active faith in God and I don't think I would have survived without Him. I don't think I would have been able to actually stay here* (35b, F, 40-50).

> *There are times when I'm in the city and - I sort of said five years' ago when we were in the thick of drought and money was disappearing down the drain - I'm thinking well "Why are we doing this?" That was my reaction. But X's [her husband's] reaction was very different. "This is what we do. Bad times - they'll come good". Whereas my heart wasn't in the farm like it probably is more so now. But back then it was more like a business thing, whereas to him it was more lifestyle: "This is what we do". [...] A lot of it is generational farming. I don't know if it's resilience but it's perseverance so that you're not disappointing the generations gone. It's almost a battle to keep going. I guess you've just got to keep going. Not that you don't want to keep going, but it's all you know and it's your lifestyle. [...] But, me, I'd never seen a really good year until – well, this year is probably one of the better years we've had. But I'd never seen a good year in 10 years I've been married. So I'm thinking 'Well, this is ridiculous!" [laughs]. [...] I suppose now I've seen more of the journey [...] because you've been through the journey a bit longer, you can see how it works a little bit more perhaps. So the good years are good when they're good, and they're bad when they're bad. [...] But, yeah, possibly earlier I would have bailed [laughs]. Probably lucky he's here because he's, as you say, resilient I suppose: he just keeps going* (24b, F, 30-40).

> *I'm just happy that it did rain because I was thinking for years about all this rain ... For the whole time I've been up here it's been really dry so I'd never actually seen it ... So it's good to see that [the farm] can perform* (18b, F, 30-40).

We see here how a background level of confusion about and dissatisfaction with farming was exposed and amplified by the drought. Those who married into farming, such as those quoted

above, face the challenge of trying to differentiate farming cultural norms from the particularities of their husband's farming management style and personality and determining in either case whether they are happy to go along with it.

For some, concerns about farming have been alleviated by the current wet conditions. Yet, some women continued to express doubts about farming and a desire to leave. As three others commented:

> *I just think it's like banging your head against a brick wall* (38b, F, 50-60).

> *I think it's the worst profession in the world. Because no matter how good you are, you're at the mercy of the weather. You can be the best farmer on earth and still have to - you're never guaranteed an outcome. You know it's not like working in many other fields where you always know, "Yes, I'm going to earn this much this year" and whatever. Apart from that it's alright* (22b, F, 50-60).

> *My sister-in-law and I have been saying for a few years now: "Why are we doing this?" We just couldn't wait for them [their husbands] to say: "Right, we're going"* (30b, F, 50-60).

The above quote about waiting for a husband to decide to leave points to the way some women's limited control over decision-making about the farm includes limited say over the ultimate decision of whether to stay or go. Yet it is their relatively 'external' position on the farm that, combined with any primary care role they may have for children, simultaneously allows and even encourages them to question the value of staying in farming and consider the option of leaving. The result can be a sense of being both misunderstood and unheard.

It has long been recognised that a tension can exist within farming households between the focus on the farm and the focus on the family (e.g. Alston 1995). Interviews suggest that in some households this reflects the adoption of more general gender roles, in which the man is focused on work and the woman is the primary advocate for the family. This work/life tension is amplified and complicated in the case of farming by the significant implications that farming has for family. Rather than being simply a choice about the type of work or work hours the husband is involved in, it also conventionally determines the spatial location and character of the families' lives, both at the micro (farm) and macro (rural) level.

Leaving the farm seems to free women up to talk about any doubts they had. A woman who has moved with her husband to retire to the beach commented that while she tolerated farming at the time, she found the physical isolation, the extended-family politics and her husband's unremitting devotion to the job increasingly difficult as she got older. When asked if she misses the farm she replied:

> *I don't. No. [...] I was becoming a bit tense towards the end [...] When people say to me "Do you miss the farm?" they can't believe how quickly I answer! [laughs] And it's funny [...] because someone said the exact same thing about [a friend of hers in the same situation]. They said 'Do you miss the farm?" and she'd say "No!". There is nothing on this planet, not one thing, I miss* (3b, F, 60-70).

Another near retirement age also commented that her willingness to tolerate the farming lifestyle is wearing thin. These women indicated that being in farming has or had involved considerable personal sacrifice on their part. At the same time, they indicated that this compromise was not something that was commonly discussed among couples or more broadly. Rather, it seems that cultural norms about what it is appropriate or inappropriate to express means that such concerns and feelings remained largely hidden. As seen above in comments about not being sufficiently resilient, this can reflect a degree of self-blame on the part of individual women for failing to feel "appropriately" resilient and positive, worsening the situation for them. In her study of a rural community in Norway, (Norgaard 2011) concludes that 'emotions that were uncomfortable to individuals were uncomfortable not just because they reflected a bad situation, but also because they violated norms of social interaction in the community' (pp. 92-93).

Women's satisfaction with farming life and their partners' decision-making is not only a critical factor in their own wellbeing. In a closely related way, it can be a powerful influence on the sustainability of the farm household and business. (Barr 2009) notes that farms with dissatisfied women are more likely to be sold; female relationship satisfaction is 'a much better predictor of farm sale than farm size or profitability'. He quotes a farm consultant who states: 'Relationship failure is the greatest threat to farm business satisfaction today' (p. 80). Perhaps in recognition of the threat posed to the farm by relationship failure, or perhaps in an illustration of simply a different way of doing relationships, some families are adjusting or even overhauling their farming lifestyles to better accommodate the desires and needs of all family members, not just the primary farmer figures (discussed below in Section 4.8.4).

4.8 Most people are open to leaving but have strong reasons for staying and are finding ways to do so

4.8.1 Many voluntary and involuntary reasons influence the decision about whether to stay in farming

As discussed above in Section 4.1.2, in February 2011 most of the sample group remained in farming and on their farms (even accounting for non-contactable original participants). That said, virtually all interviewees indicated that they have actively engaged with the question of whether to stay in farming. This mood of doubt is similar to that found in 2007, when the people were still suffering from shock at the severity of the drought. At that time, many were asking the unfamiliar question of whether they would remain in farming, with the emphasis on whether they had the *capacity* to continue.

In 2011, while people were even more aware of the financial, economic, and environmental constraints within which they were operating,(seen in Sections 4.1.4, 4.4 and 4.6.2 above), the focus was on whether people *wanted* to remain in farming. This suggests that most people were either feeling more secure than in 2007 and/or were engaging in deeper questions about what they are doing with their lives. While more intangible, the question of desire and personal satisfaction with farming is not trivial in shaping farm households' decisions. Rather, as discussed further below, in explaining farm persistence and adaptation 'the desire to farm as an occupation and way of life ... [is] just as important as strategic business behaviours' (Jackson-Smith 1999, p. 4; Inwood and Sharp 2011).

There are many variations on the themes of "staying" or "leaving". Reflecting the way in which farming is a business, occupation, family activity and home, what these options mean to different people is not clear cut. One reason for this is that physical presence does not signify future intentions. There is a time lag between questions, decisions, plans and actions. Interviewee comments suggest that within the sample there may be a "sub-surface" movement towards leaving. While about a third indicated they were definite about staying, a third indicated they were actively considering whether to leave, and a third indicated they were in the process of planning to or acting on leaving. Most of those planning departure or in the process of beginning to leave are older and their actions reflect a natural step towards retirement.

Throughout, interviewees offered many reasons for remaining on their farm to date, and/or were likely to remain on their farm in the future. These reasons included 'voluntary' factors (reasons they wanted to stay) and 'involuntary' factors (reasons compelling them to stay). Similarly, people mentioned in a more hypothetical sense many reasons for going, again encompassing a range of desires and constraints. While more reasons were given for staying than going (indicative of the sample group being those *in* farming), it is important to note that all reasons are not equal and a decision may be strongly determined by one or two factors alone. Some of the reasons for staying are discussed in more detail in this section; reasons for potentially going are discussed in the following section.

Table 3. Reasons mentioned by interviewees for staying on or leaving their current farm, including voluntary choices and constraining (involuntary) factors

Reasons given for staying		Reasons given for potentially going	
Voluntary	**Involuntary**	**Voluntary**	**Involuntary**
Enjoyment of (some) farming tasks	'Sunk costs' in infrastructure	Desire for new and/or less stressful work	Chronic and/or acute financial pressure
Pride in accumulated skills and knowledge in farming	Cultural ideal of persistence (desire not to be seen as quitting)	Desire to live off-farm and/or in another area	Uncertainty about being able to financially provide for children to desired level long-term
Enjoyment of the physical farm space (including for children)	Perceived lack of desirable alternative work	Prioritisation of partners' job or wants	Need for less demanding and/or stressful work for health reasons
Farming allows increased contact with family through flexible work hours (theoretically)	Felt responsibility for family inheritance	Reduced prioritisation of all work (potentially leading to retirement)	Need for family to access distant school, health or other services
Farming allows increased contact with extended family (including childcare assistance in some cases)	Commitment to partner who is committed to farming	Desire for less proximity to extended family	
Friendships and connections with local community	Commitment to child wanting the farm in the future		
Enjoyment of off-farm work in the local area	Need to remain in local area to assist relatives (elderly parents, children) or local community		

The perceived desirability of farming is subjective and relative. A number of people compared the experience of farming with their prior expectations. A few young farmers particularly noted that their experience did not compare favourably with the expectations formed on the basis of their fathers' experiences during the 1970s and 1980s. The longevity of the drought was recognised as a factor in this, but the possibility that such obstacles could be encountered remained confronting and prompted reflection about the desirability of the profession. As one said:

> *When I signed up for the deal to be a farmer, I don't think I ever expected that we were going to go through some of this crap that we've been through in the last ... The last 10 years have been horrific, you know [...] It's been a lot harder than I ever really expected it to be [...] But that's character building I suppose. I don't know what for [...] The worst thing is that you work your guts out and you go nowhere further forward, you know? You start to wonder [...] I think about [leaving]. Yeah, I do think about it. [...] I think that [farming] is something that I wouldn't walk away from, but it's bloody frustrating. It's caused us a lot of grief. It's caused me a lot of worry and I'm sure it's caused X [his wife] and Y [his kids] a lot of worry too [...] that sort of stuff becomes - it goes through your mind all the time... I don't think there'd be anyone around that probably doesn't think about it* (40a, M, 40-50).

Comments from this farmer also illustrate the way numerous interviewees compared farming with what they observed of alternative occupations and ways of life:

> *You see people in the city with jobs and they knock off at five o'clock or in the town - they knock off at five o'clock - and they seem to be coping okay, and they don't have the worry, for Christ's sake* (40a, M, 40-50).

Like many others, in the process of asking serious questions about being in farming, this farmer simultaneously identified what he enjoys about it.

> *In the end, farming's good. I wouldn't walk away from it. I like what I do. I like the cropping side of it, I really like that. I like the livestock side of it [...] you have particularly favourite spots around your farm that you like... But it's - yeah, I like what I do, even though it's been awfully frustrating [...] we're not keen to go anywhere. We're not going anywhere.* (40a, M, 40-50).

This pattern of serious questioning, but ultimate reaffirmation, of the decision to be in farming was repeated across many interviews: people made an active choice to be in farming because they like it.

At the same time, some of the reasons for staying in farming were of a less 'voluntary' nature. Confirming a finding from earlier interviews, a range of constraints were frequently cited. One was the perception that to 'walk away' from the farm, as the farmer above phrased it, would be quitting, transgressing the strong cultural norm of persistence described earlier (Section 4.7.1). Another was the limited array of choices some farmers feel are open to them in terms of employment and lifestyle. As the farmer above continued, for example:

> *But what the hell do you do when you're a middle-aged balding old bugger with a big nose? What options do you have?* (40a, M, 40-50).

Some farmers had "specialised" in farming since they were children and had decided that that was what they wanted to do the extent that other options are obscured. Another explained:

> *It's one of those things. You're either in it or you're not. Our family's always been in it – so I've just been brought up to be a farmer, I think. So here we are. We just keep going* (20a, M, 30-40).

The extent to which other types of work can match the enjoyable aspects of farm life has an impact on what other options are perceived. A young farmer was asked whether farming was still an attractive option for him, given the business pressures he had described. He replied:

> *It's not an "option", as in - that's what I've studied, that's what I've learned, that's what I'm experienced in. And I enjoy it [...] I love the job. It's what I've been passionate about since I was a little kid [...] I really enjoy growing something and when I see a truck load of fat lambs go out of the property that I've done, it gives you a buzz. So I don't know any other business which would do that. I couldn't stand behind a counter and sell pies all day [...] But you always think about leaving. It's always an option. If you don't ... If you don't - then you're not thinking about all your options. Every day - you've got to think about everything* (18a, M, 30-40).

This farmer's family has been in farming for at least three generations. Such an inter-generational link, much-discussed as a vital aspect of family farming in Australia, is known to strengthen people's commitment to farming in both a geographic and occupational sense. While family connections can be a very positive reason to continue, they can also act as a less voluntary force. A number of interviewees mentioned feeling under pressure to maintain ownership of the family farm and (therefore) to continue their family lineage in farming. As a woman above observed about her husband, perseverance is about '*not disappointing the generations gone*' (24b, F, 30-40). The fourth generation 'middle-aged balding old bugger' quoted above referred to this sense of judgement in explaining the stressfulness of the drought:

> *I suppose the one thing that really worried me the most was that I might be the link that lost the farm. That's the thing that I kept thinking about when I was going through my worst time: "Would I be the person that was no bloody good and lost the farm?" That's probably the bit that really worried me. Yeah, worried the hell out of me. We've been here forever. Someday that will happen, let me tell you. The chain will break, I suppose. But I didn't want it to be me. That was a bloody scary thing. But what do you do? You can't beat the system sometimes* (40a, M, 40-50).

Intergenerational connections can also increase commitment to farming in an anticipatory sense, as seen in the section below. Irrespective of questions of future inheritance, the question of children also featured strongly in the positive reasons given for maintaining a farm lifestyle in the near term. Some emphasised the benefits of the physical, familial and social environment:

> *It's a great lifestyle for the kids and that. The kids love it out on the farm. They love the freedom of the farm [...] we don't need the new of everything. We're probably resilient in that way, in that we don't need to have the new of everything to survive* (20b, F, 30-40).

We have a good lifestyle. We've got two sets of grandparents that are always around. [...] And I get to [be around]. You sort of can't forget that it's a bit of a privilege, I suppose (26a, M, 40-50).

I think [we stay] for lifestyle, as much as anything, from my point of view. For the kids it's a lovely safe environment basically [...] so I'm happy for my children to be brought up in a small country town (24b, F, 30-40).

These and other social and family factors connecting people to a farm and local area provide insight into the many important reasons people remain farming despite the sorts of challenges they have been through in the past decade. Overall, there is a strong sense of both the positives and negatives of farming life. People seem increasingly unwilling to make unreasonable personal sacrifices but are also keen to keep farming if they are able to and if they remain motivated. For example, one farmer commented:

Well, I want to keep our family farming here. That's probably the main goal. Also I want to be farming comfortably. I don't want to be struggling. I don't want to struggle through for the next 30 years or 40 years and say why did we do that? I want the family to remain here, but I want us to be very comfortable and successful, I suppose. That's the goal (28a, M, 30-40).

Combined with uncertainty about future conditions, the attitude across the board is best described as "take each bit as it come". As one commented:

We were thinking of moving. We were really thinking of moving, like really, really thinking of moving ... There's all that emotional stuff with, you know, "Do you go? Do you stay?" All of that ... I wouldn't say that that's necessarily off the cards either ... You know, we're not actively going "Let's look at moving", but we're not saying, "No, we're going to be here for the next 50 years". We're just, like, take each bit as it comes.

4.8.2 Other generations are variously perceived as a reason to stay in or get out of farming

One decision frequently deferred to the future was that of succession. The question of relationships with younger and older generations was a common recurring theme which framed people's perception of their farm, farming life and the future.

As discussed in more detail in Report One, children were frequently discussed as a reason both for remaining in and getting out of farming. The question of whether parents are "doing the right thing" by their children by making either decision was a powerful concern. Some indicated that they were worried about the short- and long-term consequences of an unreliable and possibly limited farm income on their children. A young third generation farmer explained that one of the motivations for reconsidering farming was the pressure of now having to provide for his new child:

You've got to make a decision sometime that this is not going to work or it is going to work, because you don't get any younger. So if you bury your head in the sand or be resilient for 20 years - well, that 20 years is gone [...]. I'm 38. Well, by the time I get to 55 [...] you want to say "Well, I'm up and running, and now slowing down". If we get another 10 years of

drought, well that's going to make it bloody hard for me to say, "You know, I'll give X [his young child] a good standard of living and I'm still slowing down". I won't be able to do it. So, you've got to make a hard decision somewhere and go "Well, I can't chase that one anymore, I've got to do something else". Otherwise I'll be a very grumpy old man (18a, M, 30-40).

Children were also mentioned as having an indirect effect on their parents' view of farming simply by providing an alternative focus to work. Like others, the farmer above indicated that having a child had tempered his daily focus on farming:

Our little friend [his two year old son] has certainly given us a lot of challenges and now a lot of happiness. That's certainly changed a lot of things. You just can't totally get yourself absorbed [...] He takes an awful lot of it. So we didn't mean to have a child to do that, but of course the offshoot of having one is it certainly gives you another perspective on life and to think about. And when you see him you couldn't give a stuff whether it rains or not. He's just happy: that's good (18a, M, 30-40).

Another young farmer reflected with his wife on the attitudinal effect of having had children in the last five years, reflecting a similar reduction in focus on farming but a parallel concern about how to make it a secure proposition for the family:

Husband: *We've had some huge changes in the last five years [...] We've got two little girls now [...] The last interview we did - I was a bit lost then [managing through the drought] [...] You don't tend to think about it yourself - but the effect you have on other people while you're worrying or thinking too much about stuff that you can't control. It's a good thing to be conscious of. And we're not a lot of the time because you get caught up in going out the door and getting into farming and staying in it all day. It's not necessarily the whole of your life - well, it isn't the whole of your life.* (26a, M, 40-50).

Wife: *It's definitely made us think [...] X [her husband] has certainly started talking more about what we need to think about and what we can create here so that - not that we've got something to pass down - but so that we've got money to educate them. Are we making the right decisions on the farm that are going to build the life for them that we want to provide?* (26b, F, 30-40)

Husband: *It's just totally changed life. [At the last interview] I was 37 or 38 - so I'd already had one life before the kids came along. I was pretty selfish, I suppose, when you look back at it. But it just does change how you feel and think. On one hand, it puts a little bit more responsibility and I suppose you could call it pressure. It just makes you think about things a little bit differently, a bit longer term [...] But it also gives me a circuit breaker when I walk in the door at night because I've got two people to play with [...] That's an incredible stress reliever. If you let yourself be in those moments with those kids while they're growing up, it's great for your mental health because you realise that it's not that important [...] If the farm gets moved on to somebody else, it's not the end of the world. I'll be staying here as long as I can. I enjoy it, but*

> *it's not the be all and end all. I'd walk away with them tomorrow rather than them walk away from me, if you know what I mean* (26a, M, 40-50).

This sense of reprioritisation of family arose in many interviews. A farmer who had been travelling extensively doing contract work commented that he now wanted to make the shift to spending more time with his children.

> *Probably spend more time with the family, that's my main goal. [This summer] probably my young bloke will be with me in the shed or [...] I'll be just there with him, pottering round in the shed and he'll be there. I want to spend more time with him. I can remember that when I was a kid. [...] So really that's one goal: to have more family time in general [...] Being away from the farm [...] [was] a problem. It's hard on [the kids]* (29a, M, 20-30).

While children were most commonly mentioned as the impetus to pull back from working so hard, as seen in the comments above about choosing family over farm, the wellbeing of partners was also a pivotal concern. In both cases, people's reflection on the appeal of farming seems to have precipitated a shift in priorities away from farming and other work towards personal needs, suggesting a threshold in how much people are willing to sacrifice.

Children also increase people's focus on their farm by symbolising the long-term. In keeping with the findings of Inwood and Sharp (2011) that 'the absence of an heir leads to decreasing emphasis on farm productivity' (p.1), some interviewees commented that, conversely, having children had fired their desire to have a successful farm to hand over to them in the future. One interviewee asserted: *'Look, everyone hopes that there's another generation following'* (39a, M, 60-70). The farmer above who was worried about being the broken 'link' in his family 'chain', illustrated the potential influence of both younger and older generations on whether he chooses to expand:

> *X [his daughter] is good and I love having her here. When she was going to go away to uni, I was God ... Strewth. But now that she's sort of - I don't think she'll go. I don't reckon she's going to go this year. She'd like to stay, I think. She's been offered a job in town too if she wants it. I don't know whether she'd do that. I just worry about the fact that it's a bit isolated for kids, you know. [...] And unlike her father, she's very clever [...] But I suppose, if in fact the kids were involved, I would buy more dirt. In fact, I'm very keen to buy, next to us, here on this end - it used to be our land and my grandfather sold it years ago...* (40a, M, 40-50).

While this farmer's daughter was at the point of deciding whether to live and work on the farm for the time being, the influence of children can emerge far earlier, as another couple indicated:

> *I think even as far as our kids go - they're only two and five - but at least it gives us some real hope that, if they are interested, it sort of gives us the spur to keep on going* (15d, F, 30-40).

For the parents above the question is whether their children want to take on the family farm in the future; the hope is that they will, so that the two generations' ambitions, interests and future activities are aligned. For other parents, having a child wanting to take on the farm is a problem, both in the long-term future and for their own more immediate plans of whether to continue or retire. Some questioned how desirable the intergenerational transfer of the farm would be, given their own difficulties with, and resultant reservations about, farming. One couple discussed how to handle their son wanting to take on the family farm:

Husband: *We were talking about it the other day - whether we actually want to put him through the rollercoaster or have him on a level track* (7a, M, 50-60).

Wife: *Do him a favour I think* (7b, F, 50-60).

Husband: *The only reason why we haven't really sold out and nicked off is I didn't want to be too selfish on the young bloke. If he wants...* (7a, M, 50-60).

Wife: *I honest to God think we'd be doing him a huge favour if we did just sell up* (7b, F, 50-60).

For others, it was highly desirable that their child take on the farm but also an impossibility given the current financial state it was in. One farmer explained that his son was resistant to this unwelcome news.

> *We have as good as told him that [we can't afford to give him the farm], but he can't accept it. I've told him that. But he said "Dad, as soon as I win the lottery, you get the money". I said "Well bring it on!" He buys a ticket every week* (32a, M, 60-70).

For this farmer, not being able to hand the farm on meant not being able to keep his own personal working connection with the farm or enjoy working side by side with his son. This was a severe blow to his retirement dreams:

> *I want to retire in X [their local town]. My dream was always in my retired life I'd come home and [...] X [his son] might say "Can you work that cut up over the day, Dad?" That would be just the perfect retirement. It's not going to happen. [...] Life's dealt us a blow at the worst time. In the '67 drought, I was young, survived that one. The '82 drought - the banks told us to get out because that was a year of "get big or get out". Told them to get lost and leased the farm - got out of debt in about three years. But when you're 66 [...] I haven't got that many years to get out of debt. It's harder now, 'cause expenses are so high. [...] The plan was to try to get it down and then we can survive and get as much money for the farm as we can, not giving it all to the bank* (32a, M, 60-70).

The combination of factors influencing the desirability and feasibility of transferring farms to children meant that for most interviewees in this situation, future succession remained a large unknown. As some noted:

> *Not sure what he's going to do. That's something else for us to work out* (39b, F, 60-70).

> *We still say here, but that depends. If X [their son] doesn't want to ever come out here, we'd stay here until we couldn't, I suppose, anymore. That's down the track* (31b, F, 50-60).

> *It is a very open question, isn't it? It's very open in our ideas too. Because [...] we could keep going here until X [their son] is able to take over the farm or Y [their daughter]. They're both interested, more so X at the moment. But they're only little. Or there's the thing of, well, the long-term goal could be to go for a few more years, buy a lifestyle property somewhere else and go and just change lifestyle all together. It's deciding what. As I said, we just seem to go "Oh yeah, we're here, we'll just keep plodding along"* (33b, F, 30-40).

As emphasised in Report One, identifying trigger points for important decisions such as whether to hand the farm on to one's children (or which child) can be extremely difficult. While holding off on making a decision either way may be very rational, particularly when conditions are uncertain, living in a state of indecision can be exhausting, adding to the mental pressure of farming life.

It is well known that succession is a major challenge in farming (e.g. (Inwood and Sharp 2011)). Numerous interviewees indicated that living as the younger generation in the midst of a "half handover" is also exhausting. Decisions about succession difficult, as are their implementation. A number of farmers commented on the challenge of working under the watchful eye of their father. With decisions in farming increasingly time-pressured and complex, uncertainty about how decision-making control is shared can be a serious complication. Representing broader concerns about the judgement of peers, feeling judged by the decisions one is allowed to make can be unsettling. One farmer commented about his 80 year old father, who still comes out to the farm each day:

> *He is a really difficult grumpy old bugger because he can't do what he used to do and he's frustrated. He's quite fit, but he can't come to grips with the fact that someone else has got to do it, and move on [...] So you have all sorts of issues, and that all builds up as part of the pressure, you know? As if you're not under enough pressure trying to get your farming organised, you've got these cranky old buggers there that are causing you grief as well [...] Last week I actually got to the point and I said to him "As of today", I said, "You start full retirement. I'll call you when I need you"* (40a, M, 40-50).

One of the issues is the different time horizons on which younger and older generations may be thinking. According to one young couple, one of the implications of having decisions still shaped by retirement age figures was the following:

> *You're farming short sighted. [...] You've got someone who's not interested in - only worried about a year at a time. Because they don't have oodles of time left, so they're not worried about that. But they don't want anyone else to worry about that either because they might think it's going to cost them money [...] His [father's] ability to be able to manually work productively has gone. [...] But* everything *slows down with it - it's your mind, whether you're thinking, and that sort of stuff. It's sort of ground things to a bit of a slow mode* (33a, M, 30-40).

While older farmers were also mentioned as an important source of wisdom and advice, other interviewees confirmed that trying to think ahead and innovate can be more difficult when forced into 'slow mode'. Younger farmers mentioned pushing the succession process forward to give them greater clarity and control. But even the timing of succession is something about which the generations can disagree and over which younger farmers have limited control over. As another explained, referring to his adaptation of diversifying into a wetter climate zone:

> *It took a period of time. When I first started thinking about having land down south and just talked about it with Dad, he wasn't in favour of the idea. At that stage, he was about 70, so I started talking to him: "How's it going to work when your future's different to my future? We'll need to sit down and talk about it". Initially, he wasn't in favour of talking about it and didn't want to talk about it but after 12 months time, the idea that - because I had ambitions that were slightly different for him and if I wanted to buy land or do something differently, it*

was always going to be difficult and we were always going to argue. So, he finally came around and we just did succession planning (2a, M, 30-40).

We see here how the intergenerational family context of farming can influence the capacity of farmers to adapt their farms to rapidly changing or long-term conditions. Whether in terms of the implicit pressures created by children or the silent observations of semi-retired fathers, the intergenerational context is a powerful but neglected factor in how farmers prepare for the future.

4.8.3 Those who are leaving farming are doing so in a gradual, flexible way

Whether as a permanent or transitory response to the possibility of leaving, many households are positioning themselves part way between staying and going. As we now discuss, individuals and families have created a range of hybrid approaches, diversifying the image of what modern farm life looks like.

Most people's situations seem to be currently characterised by a conventional farm household model of an individual, couple or nuclear family living on a family owned farm, with the male adult devoting the vast majority of his work life to farming on that and perhaps other property (leased or owned). Other family members (if applicable) spend a considerable but flexible proportion of their time assisting with farm work (in an unpaid capacity) but are primarily occupied in other non-farm roles (employment or study) within the local region. Households typically have extended family members who are also involved with farming in the area and in many cases in the same farm business. All interact with the local community in various ways, although increasingly spread across different towns (as discussed below: Section 4.9.1).

This typical portrait underlines some of the multiple variables that characterise farm families' lives and hence come into play when a change in farm life is contemplated. In keeping with the broader mood of questioning noted above, some factors previously considered irrefutable (e.g. the collocation of farm and family) are being reconsidered as people seek innovative ways of accommodating their short and long-term needs. Resultant unconventional arrangements have been prompted in some cases by the need to manage unfavourable or risky climatic conditions. Some have also been prompted by an independent decision to exit farming. In all cases, what "exiting" looks like is not clear cut as a greater or lesser degree of change is made along some axes and not others. These axes include those listed in Figure 7 below, which illustrates the multilayered and spectrum quality of the question of whether one is or is not in farming.

In farming ⟵		⟶ Out of farming
Large	*Amount of land managed*	Zero
100%	*% of land owned*	Zero
Increase	*Direction of change in amount of land managed*	Decrease
100%	*% of land for commodity production*	Zero
On farm	*Location of house*	Far from farm
100%	*% of year spent farming*	Zero
100%	*% of income from farming*	Zero/Negative
Virtually all	*% of income invested in farm*	Negligible
Large	*No. of employees*	Zero

Figure 7. The multiple axes along which the extent to which one is or is not in farming is determined

It is beyond the scope of this report to discuss the diverse ways in which "farm households" are positioned along these axes. However, it is worth noting two key changes relating to the basic parameters of space and time. Firstly, as discussed further in the following section, one emerging shift is the decoupling of the traditional collocation of the farmer, family and farm on a temporary or permanent basis. A few households have together moved "off-farm", with the farmer now commuting in a full- or part-time capacity, in line with other observations of the rise of "commuter farming". One household moved into the local town and two were in distant regions as part of a more comprehensive change in their situations. Other altered housing arrangements include building or purchasing a house in town in preparation for a possible future move, or purchasing a unit for the female partner (and rest of the family at least one night a week) to use when she is working in town on shift work.

Some housing arrangements have been adjusted as a coping strategy in the face of drought-induced financial hardship. As mentioned earlier, three families discussed having taken up long-distance contracting, involving the farmer (and in one case, the son) being away from home for months at a time, at considerable cost to the whole family. The following two examples encapsulate this:

> *We go away for probably nearly three months. At least between two and three months a year we work away from home. So you are sacrificing family life and your own work around here to be away to try and create income to make it sustainable here I suppose. So if the year stays okay, and we can make a better income with the farm here, we would like to probably cut down on that, cut down travelling as far anyway with the contracting* (21a, M, 40-50).

> *[Over the past four years] I suppose the hay factor came into the farming and the carting of hay, selling it direct, all that sort of stuff. So that's come and that's now gone aside again for*

> *a number of reasons, probably mostly the drop in hay price. But yeah, I mean there was one year in particular there where X [her husband] was carting an awful lot and that was very hard on the family when he was working the farm and carting almost full time hay. It was hard on the farm and hard on the family because the other farms were needing the hay so that took top priority. So then our farm came second, and then the family third type thing. That was a very challenging year. I felt like a single mum a lot of the time* (33b, F, 30-40).

The second change is in the use of time. Reflecting the recognised emergence of "part-time farming" for those in semi-retirement, there are signs that some are stepping back from farming earlier than expected for the benefit of their own health. Related to the shift about reprioritising family, mentioned above, some older interviewees mentioned that they planned to work less in order to enjoy life more in a reaction to the long hours and stress they have endured over recent years. In some cases, this has occurred following a serious physical or mental health scare. Seen also in comments about not wanting to flog themselves if their children are not coming home to the farm, older interviewees in particular indicated wanting to pull back. One commented that he wanted to go on a two-year sabbatical:

> *I'd like to get more time off and relax and, yeah, not run myself into the ground so much, because I have been [...] I mean, why do I need to put myself under a heap of financial pressure? There's no kids on the farm with me now and they don't look like they're going to be on the farm. I reckon that's great - no pressure to keep the farm going for the next generation [...] I don't have to worry about it either because we've got no family farm. I bought it myself [...] I got started with nothing, so what I've got is for sale. If I want to, I can sell what I've got and retire any time I feel like [...] I'd like to have two years off farming, just to step away for a bit after things get back on their feet* (9a, M, 40-50).

The decision to "wind down" was not often phrased in terms of retirement *per se.* However, it is clearly on the trajectory toward that end, extending in a sense the "retirement preparation" phase. Besides exhaustion, health and shifted priorities, a further impetus to move toward retirement is the belief that remaining in farming is not a guaranteed route to more savings. Whereas previously some may have remained farming for a while longer in order to top up their superannuation, there is evidence of a belief that doing so may, in fact, put the household's savings at risk. A younger farmer observed that he had seen quite a few couples take early retirement in order to avoid the risk of losing what they have:

> *All the ones that have [left] are older so they've decided they've got to they're 55, 60 - why do they want to risk losing any more when they've already got enough and none of the kids are coming home? So they might as well do it* (18a, M, 30-40).

Seen above in the discussion about semi-retired fathers, the retirement process, even when made "official", can be drawn out over a long period as a family incrementally makes adjustments along the many axes illustrated in Figure 7 above.

It is worth exploring one example in detail for the insights it affords into the dynamic and multifaceted aspects of the decision to "exit farming". The example is of an older couple who 'sold out' in 2007 and moved to a distant town. Notably, the sale of the property and the move were not clearly demarcated in time. The house they moved to was in a community in which they had

holidayed for years and were involved socially and was far closer to their child and their family. They had purchased the house after two of their elderly parents, who had lived close to their farm, had passed away. With one further parent remaining in the original community, they now regularly travel the many hours back to visit him and their old friends, although 'the distance seems to be getting further and further away' (Interview 3a, M, 60-70). Their move was prompted in part by the desire to enable a relative and his young family to buy their land and house. After selling most of their holding, they kept a few hundred acres: a 'beautiful block' which had been in the family for generations and they were reluctant to lose. On this land, the farmer began to produce steers. However, at the time of interview, the feasibility of this enterprise was in doubt, partly due to market prices and partly due to the need to re-fence and continually chase lost stock following the floods. Rather than diversifying again, the farmer was considering 'cutting down' further and moving from 'semi semi' retirement into 'full' retirement. The decision of whether or not to sell the last block – the last connection with the family farm - was one he was pondering. He was considering keeping it 'forever'.

This example illustrates the staggered character of the decisions involved in retiring, including the decoupling of the farm as a home and a business, and the multi-stranded connections that exist between people and their community. It also illustrates how a series of external factors – namely the loss of dependents, family commitments both near to and far from the farm, the changing circumstances of the younger generation, extra work created by the floods, and poor market conditions – helped determine the rate if not the direction of this couple's trajectory between farming and not farming.

At the same time, the farmer above also commented that selling the main part of the farm was a decision he had been thinking about and planning for a long time. As such, the actual decision to sell and move was not simply a reaction to immediate circumstances:

> *I think if you are going to do something like what we've done, it must be ingrained in your brain for a number of years before you do it [...] If you've got something to really look forward to ... something five or ten years ahead ... it just gets in there and it works out all right. [...] If you are mentally prepared, it just works in* (3b, M, 60-70).

It is perhaps because of this preparatory mental work that this farmer has been able to transition smoothly into a new lifestyle and identity. He is still involved and interested in farming and now enjoys taking his new 'townie' friends up to his block each fortnight: educating them in the ways of farming and building new connections between his old and new life. But he has also taken to the new freedoms he has, enjoying driving past crops without feeling the need to look at them and having facilities on their doorstep. The shift was not one his wife took for granted. As she commented:

> *I was really, really surprised about how X [her husband] transformed, really.... The thing with X is that he really loves farming. He did. He just – he ate it, he drank it. He just loved farming. So it is surprising [...] He had difficulty getting out of sheep. He did. He liked the sheep. [...] I hate them. I hate them with a passion [laughter]* (3a, F, 60-70).

For this family, the exit from farming involved an exit from a close lifelong business partnership with the farmer's brother. His wife commented on how this arrangement had been somewhat oppressive

for both her husband and herself. She noted that, after leaving the family farm, her husband: '*all of a sudden [...] was really happy to be his own person'* (Interview 3a, F, 60-70). This incarnation included being able to choose to spend more time with his family. While in the partnership, he had been unable to accompany his wife on the frequent long trips she made to visit her children and grandchildren. This was not so much because of the jobs he needed to do on the farm, but as a sense of not wanting to disappoint or incur the disapproval of the other brother in the farm partnership. Both silently pushed each other to *'farm 24/7'* (Interview 3a, F, 60-70). Combined with the details about family factors above, we see here the complicated ways in which family played both a pull and push role in this couple's decisions about the rate and way in which they have left and remain connected with farming and their rural community.

4.8.4 Farming life is increasingly intense, mobile, outward-looking and geographically distributed

What does it take to stay in farming? What are modern families doing to make it all work? The nature of both farming and family life seems to be undergoing significant change, not only for those leaving as described above, but for those staying. Climatic uncertainty and shifts has certainly played a part, but so too has the complex array of factors affecting farm family lives. While diversification of farming has long been recognised (e.g. Ilbery 1991; Evans 1993), this has largely focused on changes internal to the physical farm boundary (e.g. diversification as a new enterprise type or value-adding business) and had a simplistic undifferentiated view of "off-farm" activities. Diversification now seems to have a distinctly spatial and familial character. The arrangements to which some households have come are designed to accommodate the increasingly spatially distributed character of farm businesses and employment on the one hand, and partners' career pathways and children's needs on the other. They collectively suggest that a new more flexible and mobile approach to farm family life is emerging, with consequences for how challenges like changing climate are addressed. We briefly review these here in terms of their farming specific and broader family characteristics.

It has been illustrated in previous sections that the pressures on farm businesses and thus on farmers are increasing. Running such businesses can take enormous concentration, energy and time, not to mention adaptability, innovation, courage, endurance, capital and luck. In the context of the growing array of climatic, pricing and other signals farmers need to continually respond to, simply organising the many, shifting tasks requiring attention into a linear sequence to be tackled (often as a sole operator) is a key farming challenge. The resultant 'dance' reflects the way that farmers' work is a complex and adaptive 'performance' (Crane *et al.* 2011).

Despite awareness of their (increasing) vulnerability to stochastic factors like flood, for many farmers operating at stretched capacity means that there is little room in the system for error or additional tasks, which is why disturbances (such as the extra work created by the extreme wet) can be so disruptive. As two farmers explained:

> *When there's tractor work to be done, the tractor needs to be going straight away, or when it's spraying time the sprayer needs to be going [...] There's no such thing as being able to sit down and waste two or three hours on a TV. You go until it's tea time and bed time. It's usually late by the time you get to bed. You've just got to utilise your time, otherwise you end up getting worse and worse, further and further behind* (33a, M, 30-40).

> *I just find with the climate and that, I don't seem to have as much time as I used to with the family and things like that. I can remember when I was a kid, we had plenty of time. You could go away for a month's holiday it seemed but now we don't seem to have as much [...] With the climate, we're probably working longer than we ever have* (29a, M, 20-30).

One of the pressures on farming is that life for some farm households is also becoming more spatially distributed and mobile. As mentioned above, while in the past business and family activities were collocated and concentrated on a single area of farm land, for some households these elements are becoming increasingly decoupled. Some interviewees indicated that as they made adaptations to shifting opportunities, pressures and expectations, they developed complicated combinations of living and working arrangements to accommodate farming and non-farming needs. This spatial spread is occurring in the farm business, the family income portfolio and family life.

Farming is stretching geographically in both a physical and an intangible sense. Physically, many farmers manage increasingly large and discontiguous properties. While this trend toward growth and spatial diversification has long been apparent, it seems to have been revitalised and accentuated by the combined effect of declining terms of trade and a variable and drying climate. Purchasing more land remains a common strategy for increasing productivity (Barr 2009), and purchasing new land in a different climatic zone to existing property is being proposed as a means of spreading risk.(e.g. Stokes and Howden 2010). Diversifying soil type has long been popular to accommodate different climatic regimes. It is likely that properties will become more disaggregated spatially, with farmers in the study area of north-western Victoria purchasing land a long way south to try to guarantee a different, and relatively wetter and cooler, climate. This is suggested by the decision of one household interviewed to do exactly this: to purchase land many hours' drive south of their original property in order to penetrate a seemingly more favourable climatic zone in light of climate change projections.

Combined with the relocation of some family homes to non-farm areas, a practical outcome is that some farmers are spending much more time travelling to their properties, adding a time and financial cost to the adaptation strategy and increasing dependence on sound road infrastructure (including during climatic extremes). This is exacerbated by the need to travel to gain access to professional services increasingly concentrated in larger towns, and to different silos and other marketplaces seeking competitive prices in the new decentralised regime. Attending to such geographically-distributed work responsibilities decreases the amount of time available to be physically on (any one) farm doing the time-sensitive work required, increasing the intensity with which such on-farm work needs to be performed and deepening the consequences of having anything go wrong.

Given their time constraints, some farmers discussed the alternative (or addition) of employing a farm manger or other workers. While some are already doing this, others indicated concern that the "hidden" financial and time costs of becoming an employer in terms of administration and management meant that such a tactic was not a feasible or desirable alternative. Challenges include finding an appropriate employee, which many noted was a tall order. Interviewees indicated that challenges also include striking the right balance between a professional and personal relationship with employees, given that professional distance is a much more blurry concept in small rural communities. When farmers do take on employees, the farm's spatial network is further extended

through the living arrangements and mobility needs of the employee (e.g. increasing the farm's reliance on good road between the farm and employee's home).

Farming life is also being stretched across space through intangible but increasingly strong connections with the global agricultural system and economy. Over the study period, the global context of interviewees' farm businesses and income security has been accentuated by costs and opportunities brought about by international markets (affecting the prices of commodities, inputs and shares). Commodity prices have varied in positive as well as negative ways as climatic impacts have reduced agricultural supply from distant competing exporters, emphasising the global character of the climate as well as of the economy and the 'global-local tele-connections' between farms around the world (Eakin *et al.* 2009). The large scale, multinational nature of input suppliers and commodity purchasers has also been brought home during the study period with farm households' experience of the price spike in inputs and deregulation of the Wheat Board in 2008. In each case, a number of interviewees commented on the information and broader power asymmetry they feel as, in just one of the many tasks they face, they interact with large, well-resourced, specialist companies.

The increasingly distributed character of other non-farming aspects of farming life adds to the sense that farming is being stretched physically and metaphorically. The most obvious aspect of this is off-farm work conducted by various household members. Women's paid employment plays a central role in many family's incomes, whether used to finance the farm, living expenses, or off-farm investments. Many interviewees indicated that the woman in the family was in (or had recently retired from) paid work, reflecting a wider trend in Australian farming and beyond (Meert *et al.* 2005; Gillespie and Mishra 2011; Pilgeram 2011). Some young women were in unpaid full time work at home with children, but also talked about going back into the paid labour-force if other sources of child care could be found. One such woman has established an internet-based business that she runs at night when her children are asleep. She described how not only is this a useful source of income for the family, but a welcome creative outlet and way of overcoming great physical distances to connect with like-minded others. The passion this woman has for her work points to a further shift that farms have to now accommodate: the move from women having, or wanting, simply part time "jobs" to seeking career paths on a par with their partner's commitment to farming. To the extent that small towns do not offer many suitable work options for career minded women, their involvement in a farming partnership demands that one or more partners travel considerable distances to the nearest suitable centre and/or the family relocates. This growing reliance of farm families on the accessibility of non-agricultural and even non-rural work is increased if farmers need or want to undertake off-farm work of a non-rural nature (decreasing the risk that the off-farm work would be affected by the same sort of climatic extremes that may affect farm income).

Some farm families are also looking to larger centres to provide their children with the sort of opportunities they want for them. While farm families have long had to "send their children away" for tertiary education and employment opportunities, some are questioning whether these opportunities (e.g. high performing schools, specialist educational facilities and sports teams) are something they should seek out earlier. Regardless of relocation decisions, many interviewees indicated that they visit a range of towns - not just the one nearest to them - in order to access the range of services they want. This further increases the role of travel in their lives. An older woman

reflected on the change she has seen since she had young children, describing the improvements for women but also the costs of having such highly mobile lives:

> *We were expected to get [our husband's] lunch and his Dad's lunch every day. The girls won't put up with that now. I've got three daughters so I know. It's a whole different thing [...] There was a lot of telling you what you should be doing and what you shouldn't be doing [...] It worked well because we were tolerant. [...] But it wouldn't happen anymore. The girls are too independent [...] but there are two sides to the story. We didn't have that kind of pressure of working [off farm]. We were home with the kids. The other thing back then is that we didn't travel like you do now. Sometimes I might only go to town once a week. That's all I had the need to go. Whereas now, there's more things on, the kids are perhaps more involved [...] because those things are on* (3a, F, 60-70).

To the extent that such travel is an emerging dependency in the sector, it highlights the role of good quality roads and access to vehicles and fuel, as well as the time and physical energy to drive safely, as critical enabling factors in modern farm business. To the extent that climatic extremes disrupt these factors and that climate change mitigation policies make road travel more expensive, increased dependence on road transportation may prove to be an unreliable adaptation strategy in the long-term. Broader questions about what remains rooted in place and what moves might need to be asked.

This section has described how, in addition to the intensification of the farming occupation for farmers, some households are positioning themselves more permanently at the interface of being in and out of farming through new work/life arrangements that stretch existing categories of what it is to be a farm family. Awareness of how their decisions affect and are constrained by broader family needs adds to the pressure on farmers and contributes to the innovative adaptations developed by farm households. Intricately orchestrated, highly personalised and long distance movements characterise many individuals' and families' lives in the farming sector. Combined with the diversity of goals and strategic directions being applied in the farm businesses themselves, the result is that households' circumstances are highly differentiated on a daily as well as annual and inter-annual time scale. Farm households are finding ways of making farming work for them, but in highly diverse ways. As one farmer commented on the farming element specifically:

> *It's amazing how many different ways you can farm. Everybody seems to farm differently and yet everybody is successful at a different level* (26a, M, 40-50).

We turn now to a final but crucial element of farming life alluded to above, which is the interactions farm households have with non-family members.

4.9 People are connecting with the rural community in distributed, private and positive ways

4.9.1 People's engagement with rural community is becoming less place-based

As suggested above, a single physical farm is becoming less of a centralising force in some farm households' lives. Likewise, single local communities seem to have less of a concentrating effect on individuals', families' and neighbours' lives as people look and travel further afield to engage with others. There are multiple reasons for the emergence of this pattern, representing a range of push and pull factors. One is the positive feedback loop instigated when individuals, as described in the previous section, need to travel to non-local centres to satisfy needs such as employment, schooling, or agribusiness services and, in the name of time or cost-efficiency, begin to concentrate their other activities such as shopping and sport in the same centres. Interviewees described how this pattern is beginning to emerge in their own lives. The flow of farming dollars in rural communities has been the subject of much study, with various factors found to contribute to the 'uncoupling' of farm household incomes and local town economies. Those mentioned by interviewees in this study are listed in Table 4 below.

Table 4 Factors contributing to the 'uncoupling' thesis: the reduction in local spending by farm households (inspired by Stayner and Reeve 1990: 1-2)

External to the farm sector	Internal to the farm sector
• greater centralization of professional and other services in regional centres • greater centralization of sports teams and locations people congregate to socialise • increases in 'comparison shopping' due to price sensitivity on household items (leading to greater business leakage from smaller to larger towns) • Recognition of shopping as a social outing rather than a chore; propulsion of people to diversity of outlets in larger centres • perceived decrease in quality of remaining shops and services in small towns: encourages individuals to use other centres	• formation of connections and utilisation of shops and services in other centres as off-farm employment takes farming people to other centres • necessity of going to more specialised retailers and finance providers as farmers use more sophisticated technical and capital inputs • decrease in farmer use of local labour (in favour of no additional labour or periodic use of contractors) leading to decrease in effective number of individual consumers associated with the farm • periodic decline in farm incomes and ongoing high farm indebtedness resulting in decreased spending and increased price sensitivity • decentralised marketing; increased need for farmers to travel to sell their commodities • increasing cost of inputs: increased cost sensitivity on input purchases, leading to 'shopping around'

The recognised ongoing reduction in diverse and quality services in some local towns was frequently the subject of comment by interviewees. Often people did not elaborate but rather expressed a sense of resignation about the trend, reflecting the way that 'despite the best of intentions, it is often difficult to see what tools are available to secure a declining small town's future' (Barr 2009:

42). One farmer pointed to the interconnectedness between the falling terms of trade to which farmers are exposed and town size:

> *I mean, in terms of trade, farmers are making less money. Towns are getting smaller because farms are getting bigger, bigger equipment, less wages [...] you're cutting out people's jobs. Like, for me to get efficient and do something, well someone else was doing that, so they're not there anymore [...] That decreases your standard of living because... I mean, just to go to the local town - there's now only one pub and there might be one man and his dog in there, whereas only a matter of 10 years ago the pub was full [...] So the standard of living in the town has dropped a lot [...] Farmers, the money they can spend, the local plumber, the whole lot has been affected [...] So I don't know what you do about it... I don't know what could turn that around* (30a, M, 30-40).

This farmer has a strong understanding of the systemic connections between economic and social factors and farming's role as both a cause and victim of the problem. Also at work is the policy context in which '*farms are getting bigger, bigger equipment, less wages*' is accepted as an inevitability or celebrated as a positive step. Yet, as seen in Section 4.4, some interviewees are also beginning to question this model and think about alternatives to the 'get big or get out' optimisation approach in light of climatic uncertainty.

Interviewees also indicated awareness of the importance of their own contributions to the community, whether in terms of volunteering, spending or service use. As in Report One, the time pressures people are under were mentioned as a constraint on voluntary work. A number of people indicated that one thing they want to re-establish in their "post-drought lives" was more active participation in local organisations. At the same time, the issues were recognised as more than a short-term drought-induced difficulty. One woman commented on the ageing of the population of volunteers:

> *We had to - we've pulled back on some things, but I think we probably do feel very strongly that you get out what you put in. So we have - we do try and put into the things that are going to make a difference. There aren't that many people to put in. Especially when people get older, they can't be out every night of the week. So yeah, it does fall back on the people who are a bit younger* (18b, F, 30-40).

Nevertheless, as this woman's comment about pulling back indicates, time, finances and emotional energy remain precious commodities and people indicated that they have to be judicious in spending them. Some have a sense that any individual effort or sacrifice for the good of the community is not enough to turn things around, contributing to a further withdrawal of engagement. One interviewee commented that:

> *We're isolated out here and that is difficult [...] Connection to town probably has reduced a bit. I think that's perhaps reflective of where we're at in our mind, but it's also reflective of the changing town* (5b, F, 40-50).

As this implies, the decline in small towns emerges from the reinforcing feedback between opportunity and behaviour, and personal and structural factors.

People's personal travel behaviour is in turn a determinant by the communities with which they interact and how. The work-based travel patterns described in the previous section shape and are shaped by non-work related activities and needs. The latter include voluntary and involuntary factors. For example, some people spoke of having to travel further to access the health services they need. Some retirement-age interviewees factor access to doctors and specialist medical services into their deliberations about the retirement destination.

A particular service mentioned by numerous interviewees as critical in their family's plans was access to good schools. While some discussed the high quality of their local school (and their desire to keep it like that), four families indicated that they felt they were not able to access schools they were satisfied with. The traditional alternative of sending a child to a more distant school on a school bus was eschewed by all. Instead, one family had relocated to be closer to a school of their choosing (involving moving off-farm). The other three had started home schooling their children, with one noting that *'a lot of people do it, locally, here now'* (53b, F 40-50). One mother, dissatisfied with the quality of teaching at the local state school, also occasionally taught a couple of disenfranchised young people who had dropped out of school in the area. Another cited the behaviour of the children of recent new entrants to the area as the reason for withdrawing their children from the local primary school. The third couple was unwilling to place their prep-age child on a school bus full of older kids for a one hour commute each way to school and felt unable to commit to the driving themselves; they decided to take on the schooling burden instead. All were strongly positive about their decision to home school their children, despite the high time costs involved in such an extreme demonstration of self-reliance.

One of the casualties of the reduction in common foci for members of the community is a reduction of incidental but welcome social catch-ups, exacerbating the sense of social isolation. A number of interviewees mentioned that, as fewer people use the local pub, there was no guarantee of having of company if they were to travel in, a disincentive for making the effort to go. As one commented:

> *Well, it affects you personally, as in the town's not as good as it used to be. If you want a night out you've got to go somewhere else* (30a, M, 30-40).

This young farmer also noted that, those with some disposable income, feeling that others around them did not, meant that he would look to spend it outside the local community. This underlines the notion that a social relationship between people with different financial circumstances can be difficult. It also highlights the way in which perceived inequalities in circumstances create obstacles to funnelling individual households' financial success into the local community. There may be some kind of minimum social threshold to trigger local spending behaviour. That said, the same farmer noted that, in a good year, considerable donations are made to local clubs and services in recognition that *'there's not much excess money'* (30a, M, 30-40) around and that such community hubs are the key to keeping people engaged.

In 2007, one of the changes that many interviewees commented on was the arrival of new entrants into some local areas to take advantage of the cheap housing on offer. It was noted that tensions existed between the new and existing residents, with the former perceived to be uninterested in contributing to the community in the highly participatory fashion that has traditionally characterised small town life. While the degree of emotional tension expressed about this situation was far less in

2011, pointing to a degree of acceptance, interviewees also indicated that the divided situation itself remained largely unchanged. Thus, while some towns have been filling up to a degree through economic migration, in the eyes of many existing residents, they remain, as far as they are concerned, "empty". Newcomers remain invisible to existing residents not only because their paths don't cross and they lack a personal connection, but because the former are seen to be ineffective in adding to the population of active participants that services and organisations are struggling to find. As one person commented:

> *I mean, every house in X [his local town] has nearly got someone in it. But I wouldn't have any idea who they are and a lot of them haven't got kids or I don't know if a lot of them work. I don't know whether it's cheap housing and they come from Melbourne and they live here ... I'm not biased, but I don't think they really add to the society in X, otherwise I'd know them, I'd see them around. That's changed. Shops have shut, pubs have shut. Sporting events have - they're battling to find numbers* (30a, M, 30-40).

An exception to this was mentioned in Section 4.2.3 where it was explained that emergency flood responses had provided a welcome catalyst for some new community members to become just that: members of the community, pointing to the way that abnormal circumstances provide an opening for shifts in regular patterns of engagement. How permanent any such shift has been is a matter for further research.

As also illustrated in Section 4.2.3, many people spoke of the importance of social support in helping them get through the extreme wet and the preceding drought years. Two interviewees commented:

> *Your friends become very important because we're all in the same boat ... You know, you all get together and ... just have a laugh. Well, not a laugh. You try and laugh it off with a beer. You know, it's going to be okay, we're all in it together* (11a, M, 30-40).

> *I think sometimes to take [your problems] to an objective person [e.g. a counsellor] to talk to is probably very good. But I think mostly you just do it yourself. Within that circle I was talking about. If I didn't have that circle, I probably wouldn't be able to do it ourselves [...] Even though we live in such an isolated situation geographically, we've never been isolated as people* (43b, F, 50-60).

As illustrated by the last comment, social support was frequently referred to in terms of private circles of geographically distributed friends rather than community-wide, place-based groups. While this private, privatised nature of support may be a long-standing feature of rural community life, interviewee comments suggest that it is being heightened by households' increasingly decentralised patterns of community engagement. As a common focus on local activities dwindles, people are organising their own get-togethers. These are naturally more selective than broad community occasions and so strengthen some ties while weakening others. Interviewee comments suggest that some of the ties reflect the broader geographic reach of interviewees' lives, including but extending beyond neighbours and local associates. In this way, place-based groups are giving way to highly personalised networks of social relations.

Exceptions to this trend were mentioned, perhaps reflecting differences in local circumstances and personality types. Some mentioned the enduring importance of the local football team for

themselves and their community, citing Saturdays at the footy as a key social outlet, stress reliever and, for one or two, source of exercise. Others similarly mentioned staying involved in local sporting teams, with some indicating that in recognition of their physical and mental health needs, they were giving more priority to physical exercise (as mentioned in Section 4.1.3). In some cases, the connection with the sports teams was through children, with one home-schooling parent mentioning a deliberate decision to keep their child involved in such teams. Others also talked about enjoying community events such as balls and fetes.

But, overall, many people painted a picture in which such occasions and opportunities are less common than they were. And despite the retreat into more private groupings, these larger community- wide get-togethers are missed. As one farmer commented:

> *Probably a bit more socialising and get-together probably does need to be done around the place because I know I don't see half the people I used to see when I was in my 20s. They're all too busy doing this and doing that and doing that, you know? Everybody has - there's not as much mixing goes on as what there used to be* (9a, M, 40-50).

An implication of there being less informal networking is that people do not have a good understanding of how others are faring. Reflecting the ongoing relevance of the "searching social surveillance" noted in Report One, many interviewees once again indicated that they are hungry to know what others are going through, how they are feeling and how they are responding. In part, this is a desire for learning, and in part for the indirect emotional support that can be garnered by simply knowing that one is "not alone". More specifically, many were keen to know they were not singled out as the worst off. As some commented:

> *Just to be able to get away and see that somebody else is worse off than you is always a positive* (44a, M, 30-40).
>
> *It does get you down a little bit, but I always think we're not as bad as some. There is someone always worse out there and that kind of gives you - makes you feel a little bit better* (37a, M, 30-40).
>
> *It makes it better when you know that you're not the only one that's suffering from things that are happening* (11b, F, 30-40).
>
> *You realise that you've not the only one in the situation. If you stay at home you think you're the only one that's in a bad situation* (2a, M, 40-50).

As much as a person's absolute circumstances shape their experiences and perceptions, so too does the social context and relativity of their circumstances. Knowing others are going through similar situations gives a sense of being understood. By normalising the situation, it also attenuates feelings of self-blame. Others' experiences also provide a useful lesson from which to learn and a mirror for one's own decisions. In the same way that people are searching to understand what it "normal" climatically, they are searching to understand what "normal" impacts and responses are like.

While time pressure and geographic and social isolation limit the number of in-person social interactions, cultural conversation and emotional norms of the sort discussed in previous sections mean that the depth of communication when such interactions do occur is often limited. As seen

above in some reflections about resilience (Section 4.7), the dominant pattern is of "public positivity" and "private unease". This was noted as a limitation by numerous interviewees, reducing the extent to which experiences are freely shared. As one couple noted about their experience:

Wife: *I don't think you really see how people really feel. I mean, most people around here wouldn't have known what X [her husband] has been through in the last couple of years, or me. I mean, I think on the surface everything looks pretty much the same, but I think there's a bit of a crisis coming where there are going to be people who won't be able to keep doing what they're doing.* (53b, F, 40-50).

Husband: *I'm embarrassed to say it [getting depression] happened, and I don't tell anyone about it, but that's what goes on [...] But I think there's probably a bit of it, you know ... bit of depression around. I'm sure there is. I don't think I'd have been the only one. But I try and make sure people never know, because I'm a bit a joker [...] and deep down they would never have known that I was bloody burning up [...] A lot of people go through hell and they don't ever accept it. You can see it ruining people. You talk to them about it and you see that they sort of acknowledge there's an issue, but people don't want to accept the fact that they've got a problem. It's an embarrassing thing. You've got no idea how embarrassed you are when you find that you've got - people look at you as being a mental case, you know? [...] But I'd be prepared, if it was an opportunity, to talk to someone about it, if it would help them. I think there's not enough that happens, you know? It scares the shit out of me [...] But it's something that I think there's not enough discussion - open discussion – about, you know, what the implications are with farming* (53a, M, 40-50).

As with the related question of decisions about whether to leave farming, we see here an indication that there may be some "subsurface" movement in the farming population, both in terms of a build-up of private pressures and a shift to be willing to expose and discuss them. If such open discussion were to occur, people may be surprised at both the diversity and similarities in experiences and perceptions.

4.9.2 Advisors and farmer groups are widely valued for intellectual and social support

One of the most frequently mentioned sources of support that have helped farm households and businesses to be resilient through the last few years was agricultural information and advice. Reflecting the pace of change, complexity in what farmers now need to know, and uncertain futures they face, the role of credible information and trustworthy advice was highlighted as critical to being able to manage businesses as successfully as has been possible in the past.

A regularly mentioned source of information and advice were agronomists and other private advisors who work with farmers one-on-one, illustrating another way in which farm households' connections with the rural community are increasingly conducted through private channels. As noted above in Section 4.4.1, use of private sources, notably agronomists and advisors, seems virtually ubiquitous: the complexity of agriculture means that outsourcing some knowledge and skills is increasingly accepted as a necessary business strategy (Kingwell 2011). The success of a farmer-advisor relationship lies in trust and candour, giving advisors a highly-privileged role in farmers' lives (Pannell *et al.* 2006; Smith and Campbell 2009). Comments by interviewees suggest that most put

considerable trust in their advisors. Many especially indicated that they were highly reliant on agronomic advice, using an agronomist to plan out their farming approach over the coming season and consulting him or her when adjusting management plans throughout the year. As a couple of farmers commented:

> *We rely an awful lot on agronomists nowadays, even in the planning process for cropping. They have a good understanding of - if you've got your paddock history there - rotations and input costs. They can just plug that all in and you can make variations as you go if you need to* (28a, M, 60-70).

> *We've got an absolute top agronomist. It makes a big difference [...] Farming wise, it's our main source of information* (52a, M, 60-70).

Agronomic advice was mentioned as being particularly needed in 2011, given the unusual farming situation farmers faced after the unusual climatic conditions.

The trust and long-standing relations many interviewees indicated they have with their agronomist seems to be an important source of social support and stability for farm households amidst fluctuating conditions. Some indicated that they felt very loyal to their advisor. For example, one family's agronomist was very unwell at the time of interview (which they attributed to the stress he experienced working in the farming environment over the last few years). It was uncertain when he could return to work. Although the family felt in need of agronomic advice to prepare for the upcoming season, they were postponing finding a replacement as they did not want to desert their original one.

Besides one-on-one contractual relationships, farmers mentioned seeking agricultural knowledge through informal networks of neighbours and peers. One mentioned for example that while he personally does not employ an advisor:

> *I've got friends who are clients of X [an agronomy firm] and you pick their brains to see what they've been told. So, yeah, you try and talk to as many people as you can and neighbours and friends* (11a, M, 30-40).

Many also mentioned being in touch with formal farmer networks or groups such as the No-Till Association or AGRIvision. One commented on the value of the discontinued Top Crop program:

> *We always used to have a Top Crop Group. That seems to have fallen in with funding [...] It's not so much that our group's not keen [...] that used to be fantastic for our community. We had regular meetings* (41b, F, 40-50).

Reflecting the origin of this study, numerous interviewees commented on the work of the BCG. Some especially noted that they appreciated the technical information the organisation provided, particularly that derived from varietal trials local to their area. As two said:

> *They can experiment with things that we can't [...] There's new varieties being trialled, new techniques being trialled. We haven't got the capacity to do that ourselves. That's where I would see their benefit is. They can trial and fiddle and work things out. Like if a new variety of wheat comes out, for example, someone's got to try it for two or three years to see if it's a*

bit better than the other ones and trial plots and [...] whatever else. [...] They can fiddle and [...] do all those trials and then impart that knowledge. That's where I see their advantage (39a, M, 60-70).

We can access research that's already been done. We don't have to do it for ourselves to try and work out what crop to grow where and when (29a, M, 30-40).

While one farmer noted that he thought the organisation was becoming over-stretched, a number noted with approval that the organisation is seeking to provider a broader context to the agronomic work by looking at other issues affecting farming.

I think it's good that they've expanded beyond - that they've gone into more the social research side as well. I think the other side's obviously crucial (18b, F, 30-40).

[They have] picked up a lot of this sort of stuff that I think are pretty big issues, but no one else touches - most are into the practical or the money or the profitability side. Whereas I think there's certainly a social side of it that needs addressing or it needs a bit of attention from time to time (12a, M, 50-60).

I've noticed they seem to be - not less production focused - but they've expanded their focus beyond just production. I think that's a real benefit (18a, M, 30-40).

BCG was also complimented on the practical rather than overly 'scientific' nature of their research, in keeping with the scepticism about science noted in Section 4.5.2. Contributing to the practicality of their offering are the field days and other experience-based occasions they hold. These were particularly commented upon as valuable networking and welcome social occasions, underlining the point above about such connections not occurring as frequently.

I try and attend their field days. I didn't go last year 'cause I was busy. But it's a bit of a meeting place too, catching up with guys you don't often see. You get a lot from those sorts of things, even from comments and questions that farmers make when you're going round the sites. So I think they're still pretty relevant (28a, M, 60-70).

Their field days as well as an information day, there is a social day as well for people to interact. They're doing a hell of a good job (2a, N, 40-50).

I think it's great that they can provide as many varied opportunities for people to come and not only receive information but also network and share information, because I think there's a lot of people who have got a lot to give, but don't have the opportunities to do so (18b, F, 30-40).

Yeah the social aspect of things has been great (13c, F, 30-40).

He [her husband] could have gone to X [another town] or Birchip. He chose to go to Birchip because they were so positive and really supportive and I think that that's been a huge thing for [him] - to be surrounded by those positive people. That was a really conscious effort that he made to stay with that group. They're really good friends and he enjoys their company and that sort of thing. He likes them as people. He wasn't just hanging around them… I

think their role's been really important and I think it will continue because nothing's going to stay the same. Things are going to change all the time (13a, F, 60-70).

One older farmer noted that he didn't think he personally needed to attend field days as he was near retirement, but suggested that they were very important for younger farmers, given the challenges they were going to face in the future:

Probably invaluable for younger men to get involved in those sorts of things because they're going to need groups like those to help them keep up [...] Probably all the young guys should be involved. Basically they're not going to survive unless they are pretty switched on. They've got to be pretty intelligent fellows. Most of the young blokes that I know around that are pretty bright young men and they've got to be - just got to be [...] they've got to be pretty intelligent young men to be able to cope with it all. But sometimes being too intelligent is not a good thing, either. They've got to be able to ride the - there's going to be rough times again - always is (42a, M, 60-70).

Events are not only directed at farmers. One woman commented on how valuable she finds the women's-only events both from an educational and social perspective:

I go to the women's agronomy group and I mean I don't pick up a lot - it takes a bit to learn - I haven't got agriculture background - but you learn little bits along the way. So I like them for that aspect because I'm picking up - might do something on sheep and another time they'll do something on, I don't know grains and marketing. I don't pick up a huge amount but I pick a little bit and every little you learn is good. Yeah it's a social day and I speak to other women in the same boat (11b, F, 30-40).

Travelling to and attending to such events can demand time that those under acute time pressure cannot afford, leading to those in stressed situations missing out on both the educational and social benefits of such occasions. Numerous interviewees mentioned that whether they got to BCG or any other community event was contingent on them having time available on the day. Many then went on to note that they had not had such time available over recent years. As two commented:

I went to a few of them years ago - but it's just been another time thing (44a, M, 30-40)

Every time [they've] got a day on, I'm either [crutching], shearing, I've got to sell my wool or something (37a, M, 20-30).

One interviewee commented that the sticking point for her husband was the travel time.

It's bit of a long way to go and attend some field days. I know he [her husband] does try and make the effort if he has got the time, because he does enjoy all that sort of thing [...] I guess he would be more inclined to go to something that's more local, as opposed to something that's over an hour away (41b, F, 30-40).

Another interviewee indicated that what might be called localness may also operate to put people off. Pointing to a further example of the distributed rather than concentrated place-based character

of many modern rural interactions, an interviewee suggested that the BCG functions did not operate as local community magnets in the way he would have expected:

> *They probably need to attract more locals to their functions. You go to some of their functions and a lot of the local people who you think would be there are not there [...] I don't know what it is. A lot of local farmers don't attend many of their functions so I'm not sure how you attract them to come [...] A lot of people come from far and wide* (11a, M, 30-40).

While the direct influence of the organisation within the local farming community may be limited, its indirect effect is widely celebrated, touted as an example of the sort of interconnected economic and social development small towns need. As one said:

> *I think they do an amazing job for the community - not only for the farming community - but the local community. What they strive to achieve, I think it's sensational, what they do and that... I'm not trying to suck up to them by any stretch of the imagination, it's just what they've achieved from where they've come from and where their vision is to go, it's just fantastic. They bring people into the community, they bring outsiders in [...] Like, there's the company reps who come to the expos. And all of a sudden everybody that's got half a connection with agriculture in the southeast of Australia knows where Birchip is. You can't put a value on that I don't think* (45b, M, 50-60).

4.9.3 There are numerous basic improvements needed to support rural communities

So, what could be done to support farm households and rural communities? That is the question concerned organisations most want to answer.

When interviewees were asked this question, many struggled to isolate one or two key actions that could be taken, reflecting the deeply systemic and complex nature of the challenges they face. As discussed further below, some were also critical of small, short-term, bandaid measures. Nevertheless, there were some recurring suggestions, covering in large part the services and facilities that rural communities are known to utilise and from which they benefit. Interviewees specifically called for support to provide, improve or maintain the following:

- clubs and organisations, including but not limited to sports clubs
- schools, kindergartens and childcare services, including school bus services
- health services, including doctors, hospitals, aged care, social work, counselling and wellbeing based services such as men's fitness groups
- sports and recreation facilities, including swimming pools, lakeside facilities and town parks
- police (absent in many towns)
- road infrastructure and service stations
- an increased number of shearers, contractors and agricultural workers
- the Rural Financial Counselling service
- agricultural research, development and extension, (on varieties, pest management, marketing, financial management, and OH&S)
- new industries, including non-agricultural industries to "drought proof" local economies.

These are all familiar suggestions, pointing to the ongoing failure to halt processes of rural decline in many areas. In identifying the need for these improvements, interviewees underlined the need for an adequate standard of living for people in order keep people in the area, perhaps reflecting their underlying concerns about their own situations. As a couple suggested:

> *Got to keep the people happy in the communities to get them to stay here* (11b, F, 30-40).

> *Just have to keep making the town attractive enough to get people to keep the schools and everything going. Every now and then it gets a bit scary, like with the schools - class numbers and that* (20b, F, 30-40).

Reflecting the idea in resilience science that certain small changes can have large effects (Walker and Salt 2006) and that resilience requires the identification and protection of critical assets (Parker 2010), interviewees identified a range of services that, if lost, would trigger people to leave farming or the area. For example one highlighted the school bus as a critical factor allowing families with school age children to live on farm.

> *If you're living on a farm and you live out of town [...] it's pretty important that your kids get picked up and get taken to school. But if they discontinue the bus run, well, you nearly, hardly, barely, couldn't live on the farm. You'd be running in and out* (11a, M, 30-40).

Others emphasised health services as a critical factor, including the couple that highlighted the immense value of the Flying Doctor Service, twice-needed to rescue the mother and baby son during gestation. In addition to mobile health services, some advocated for place-based health services. The farmer quoted above further suggested that:

> *A lot of people won't come to town to live, or perhaps won't stay here to live, if there's no hospital* (11a, M, 30-40).

In addition to stemming out-migration, some interviewees emphasised the need to stimulate in-migration, pointing to a sense that the populations of some towns have already dipped below a critical threshold. In line with existing thinking, new industries or other employment options were seen as the key to kick-starting a repopulation process; value-adding agricultural enterprises such as flour mills suggested. Another interviewee called for a non-agricultural industry less susceptible to being negatively affected by climate than agriculture and agricultural service industries. This diversity would increase the resilience of the local economy, but even they may not be immune from reduced flows of money, as many non-agriculture related businesses in small towns found during the drought (RMCG 2007). Such a decoupling of the rural economy from climate-vulnerable activities such as agriculture has been suggested more broadly as an appropriate climate change adaptation (Thomas and Twyman 2005). What this process would mean for farm households' long-term future in a region is an open question. In any case, (Barr 2009)'s characterisation of the broad region of the study area as the 'production landscape' suggests that there are few options for significant activities other than agriculture.

An ongoing focus on agriculture suggests that the existing flow of urban migrants into the local towns is especially valuable. To the extent that they are attracted into the region by housing rather than jobs or activities, the challenge is to integrate them more fully into the local economy and community. Although it may be an awkward fit, some from this group may be well placed to help

address the labour shortage that currently exists in agriculture, if appropriately trained. Other assistance may also benefit this group and allow them to begin to participate more fully in the community. An interviewee challenged the idea presented in Section 4.9.1 above that existing residents do not 'see' the new entrants by demonstrating insight into their health needs:

> *We badly need a social worker in the community. See, there's a lot of mental health problems and people in the town that need emotional support. Mainly they're not farming people, but people that have come to the community. We need to support those community people* (37a, F, 60-70).

We see here the potential interconnections between personalised health services for individuals and broader societal and economic outcomes. Appreciating the existence of such cross-scale and cross-sectoral connections is a key element of resilience thinking (Cork 2010).

The belief that improving the capacity of (vulnerable) individuals benefits the community at large is evident in the idea of supporting agricultural research, development and extension (RDE) as a public good. As discussed above, some interviewees emphasised that individual farmers are not able to conduct the required research themselves. As a result, they were appreciative of groups like BCG for providing a collective service in lieu of government support for agricultural RDE which they see as having 'fallen by the wayside' (42a, M, 60-70).

> *Without governments doing independent trials, somebody has to [...] I think [community agricultural groups] are filling a lot of the hole left by government. That's a good thing that they are filling that, but I think it's disappointing that government departments are creating those holes and just saying, "Doesn't matter, Birchip Cropping Group will pick up the slack". You know what I mean? Or, "Somebody else will step in if this is really needed". Which is what's happening - other people are stepping in because it* is *really needed* (18a, M, 30-40).

Another farmer noted that if the work of BCG is actually to replace publically-funded research, the results need to be made available to all farmers rather than paid members only. He called for subsidisation of membership to groups such as BCG so that more people can gain access to information and improve their farm viability. That, he said, would be *'one of the best things around'* (27a, M, 60-70).

The logic that helping farm individuals was a form of public good was supported until the relatively recent intensification of deregulation in the sector (Argent 2000; Cocklin and Dibden 2002; Jennings 2011). This included the agricultural component of the National Drought Policy (Botterill 2003) and, more specifically, the Rural Financial Counselling Service. Some people mentioned how valuable they had found this service and called for it to be maintained. As one said:

> *The Rural [Financial] Counselling Service - I've used them [...] Not last year, but the year before, the previous two, three years I've used the local fellow [...] That was a big help [...] So that's pretty important still to be maintained* (28a, M, 60-70).

However, the idea that agricultural income trickles through to non-agricultural groups has been contested. As illustrated by the suspension of the business support component of the drought policy and recent deregulation of wheat marketing, government concern has shifted to the equity

implications of using collective resources (i.e. taxes) to help one group (farmers who meet certain criteria).

Government drought assistance elicited strong responses in the 2007 and 2008 interviews. Although some people (notably a couple of young farmers in a business expansion phase) underlined that the interest rate payments had been essential to their business survival over past years, the change of policy received little mention in the 2011 interviews. This could reflect the fact that for most interviewees such payments always played a limited role in their lives (as they did not apply or were ineligible), that at the time of interview they were not focused on drought, and/or that they are supportive of or resigned to the change.

Certainly in earlier interviews there was considerable negativism about the policy, particularly that financial assistance directed at businesses as opposed to family welfare. People were concerned that business assistance created a poor image of agriculture and introduced inequities into the sector. While some farmers noted that they perceived that there is no alternative to financing their business growth through debt, necessitating that they take on a certain degree of risk, as we saw in Section 4.7.2 above others were highly critical of debt-based farming. In keeping with this, some interviewees suggested that replacing individual business support with more collective forms of assistance was a step in the right direction. Complementing the idea that community benefits can flow from individual level assistance, some interviewees emphasised that the opposite also works: that individual level benefits can flow from community assistance. As seen above in other calls for community-wide initiatives such as hospitals, a couple of people explicitly contrasted this approach with the pre-existing drought policy support of individual farm businesses. As one stated:

> *Rather than see so much drought funding going to individual businesses, I'd rather see a couple of new doctors or a bit better schools. A few more teachers in our schools, or - you know, support rural communities that way* (18a, M, 30-40).

Not only does the scale of assistance shift with this proposed move, but so does the sectoral target, underlining the reliance of farm households on the broader community of which they are a part. As mentioned above, the need for support measures that appreciate these cross-scale and cross-sectoral connections is in keeping with our understanding of resilient systems (Walker and Salt 2006; Cork 2010).

It was argued earlier that farm household lives are becoming more distributed and less place-based. This shift represents an adaptation to contemporary pressures, including the decline of nearby small towns, rather than a desired, planned or even sustainable shift. Rather, many farming interviewees emphasised how much they would like rural life in general to be made more sustainable. One noted that working to do so could itself serve to help revitalise a place-based sense of community camaraderie and positivity about the future.

> *I think that if there's programs in place that actually help communities help themselves, I suppose - help them work together and bring them together and provide them with opportunities to work on things together. I think that's definitely going to be the way forward. I think one of the hardest things in a rural sense is seeing towns disintegrate because there's people moving away, had to move away, off-farm or whatever [...] some farms getting bigger at the expense of other family farms that have had to - couldn't survive.*

> *Young people moving away because they don't want to be involved in - they've got other opportunities and probably not going to come back, necessarily, or don't have any intention. That side is, I think, pretty hard. Because you can see that the community doesn't have the most ... I think having children, that's been one of the hardest things for us to look at and think, "How much future is there here for our kids?" So any programs that are in place that actually make you feel there is [a future] would be good…* (18b, F, 30-40).

This points to a further general element of resilience thinking which is the underlying principle of subsidiarity: devolving an appropriate level of control to the most local level (Marshall 2010). In contrast to extreme versions of 'self-reliance' (Herbert-Cheshire and Higgins 2004), this is not about devolving responsibility for *any* help, but helping in such a way that builds capacity in the process, leading to lasting rather than short-term improvement. Seen in many government initiatives, the idea is to provide enabling resources for communities to use, rather than providing prescriptive programs. For example, the government would not withdraw completely from provision of agricultural RDE (as some interviewees feel has been the case); it would continue funding, but funnel the assistance through a community-based organisation such as BCG. In that way, local relevance and community benefits would be enhanced.

Recent moves in government policy indicate encouraging support for this idea in agriculture and beyond. It is important to point out, though, that one interpretation of the "help to self-help" idea works against the resilience of communities by excessively focusing on the short term and "just enough" nature of such intervention. Numerous interviewees noted the ineffectiveness and stressfulness of having initiatives funded only for short periods or of making small changes: continual expenditure of precious time and energy on funding applications to attain a degree of continuity or to make lasting improvements was deplored. As a couple of interviewees stated:

> *Fundraising - it would be great to be able to cut out fundraising and to get big lump sums to each club* (11b, F, 30-40).

> *From my mind, it doesn't really matter who's doing it [agricultural research], as long as there is some certainty that they will receive funding to be able to continue to do it* (18b, F, 30-40).

Another noted that grant applications themselves require capacities that some people do not have, introducing an inequity into the system:

> *I also have noticed in the past few years, there seems to be a trend towards grants for everything. The only way to get support of funding for something is to go through the grant process. It only hit me - we were actually filling out a grant, it was at a meeting – and there was another guy there who was an older farmer, sitting beside me, and he was having trouble filling it out. It just struck me then and there that the grant process disadvantages a lot of people* (18a, M, 30-40).

Being invited to submit grant applications regularly is not likely to help people develop a sense of control over their future of the sort that is associated with resilience in individuals (Douglas 2010). As found with farm households' experiences of applying for National Drought Policy business support (Report One), this is particularly the case if the process itself reinforces a sense of

helplessness and frustration. The fact that so many people find grant applications difficult speaks for itself.

We come back then to the ongoing importance of focusing on individual level capacities (often referred to as 'human capital'). These can be developed through community-wide initiatives. They can also be delivered in a group-based format that simultaneously builds understanding and support between people (often referred to as 'social capital'). An example of such an initiative was specified by one interviewee. She described the exceptionally high level of interest received in a local men's health group temporarily established in the town. While the group was disbanded when funding ran out, the engendered enthusiasm suggests that the potential was there to build momentum and turn the scheme into something quite significant (in a social as well as physical health sense):

> *We had a men's health thing last year that started for six weeks and they ended up extending it. We had about 16 men every week doing an exercise programme and different health things every week and it sort of came from that. These guys wanted it to continue. That was really good* (13a, F, 60-70).

An exercise group may be the sort of small change initiative that can ultimately deliver significant improvements in the life of individuals if maintained over the long-term. To the extent that it strengthens the ability to contribute to and desire to remain in the area, it also delivers community benefits to those engaged in the development and delivery of the program. It is notable that the retired farming couple interviewed in this study nominated joining the local walking group as one of the most beneficial things they had done in their new community, allowing them to connect with others and feel more energetic. They also noted that having walking tracks was key to their new activity, underlining the importance of appropriate physical infrastructure.

5 Conclusions

For most farm households the last few years could be described as a series of near wins that collectively created a near loss. As the drought dragged on and people increasingly craved the return of "normal life", a series of late season collapses in crop yields progressively absorbed their precious reserves, including money, energy, motivation and resolve, providing most households with a glimmer of potential but little in real returns.

Despite the erosion of their base, households were required by the cyclical character of cropping to extend themselves with each new season. Some increasingly sought to protect themselves from further loss, while others felt more inclined than ever to chase that elusive big win. All wanted to be rewarded for their perseverance, to recalibrate their lives and to regain some forward momentum.

In 2010, the late season collapse was not initiated by the absence of spring rainfall as in previous years, but by highly unusual and intense rain events, leading to extensive flooding in some regions. While losing crops yet again was another devastating disappointment, the arrival of this rain represented a sudden reprieve from the drought that had been more damaging over the longer term. The arrival of this water was a desperately welcome escape, not only from the physical effects of drought, but from the mental vision of unrelenting future dryness by which some had begun to be troubled. The soil moisture meant farm households were able to avoid the deeper losses or harder decisions that ongoing drought would have created. But, frustratingly, it did so by offering potential gain not direct success, requiring them to once again extend themselves in the following season, while overcoming many water-induced disruptions and difficulties along the way. To the extent that coming seasons may provide some "wins", it is important that the vulnerabilities exposed by the acute conditions over recent years are not forgotten or ignored, and that a period of reprieve be used proactively to improve on existing systems.

Overall, it seems many farm households are now reinvigorated to "keep going" while remaining vulnerable to further shocks. The overwhelming sense is that people are deeply and diversely capable, but that they have survived to date as a result of "muddling through" on their own. While "muddling through" is a recommended learning-based strategy for incrementally understanding and addressing complex, dynamic situations (see (Ison 2010; Armson 2011)), to be successful it needs to be highly attentive, reflective, strategic and flexible. "Muddling through", in the absence of appropriate, learning may create resilience, but in a negative rather than positive sense as options for change are missed and systems become more locked into a maladaptive way of doing things (Anderies et al 2006, Barnett and O'Neill 2009, Cork 2010).

To successfully adapt to ongoing variable conditions of all sorts, farm households need to address the existing 'adaptation deficits' (*cf.* Burton 2011) exposed by the drought and wet and to improve their capacity to absorb shocks and change as needed. To do this, they need to find ways to enable and encourage reflection, learning and innovation. Given uncertainty about conditions ahead and the interconnectedness of people's futures, experiences and learning need to be pooled to allow for coordinated and effective adaptation. Despite the government's promotion of the ideal of "self-reliance" (Herbert-Cheshire and Higgins 2004), professional and personal isolation is a major debilitator. To the extent that people's individual current strategies reduce the time, energy,

resources and inclination they have to engage in shared critique and change, such strategies may be ultimately maladaptive.

More specifically, what have we learnt about the resilience of farm individuals and families and the role of climatic extremes and other changes in their lives? There are four further conclusions to note.

Firstly, the effects of climatic extremes on farm households extend far beyond the climate, cascading through all aspects of the members' lives. During the drought, many people's personal and professional reserves were eroded and they began to ask serious questions about their continued presence in farming. Their response to the opportunity and work posed by the extreme wet was a mixture of elation, desperation and exhaustion. Optimism itself rapidly bounced back, but with tinges of anxiety remaining beneath. Decisions about harvest varied; many farmers were left wondering what they could and should have done differently to reduce the losses most incurred from the extreme wet.

Secondly, all farm households necessarily adapted to changes in climatic and other conditions. Some of these adaptations were anticipatory and most were reactive, undertaken in response to uncertainty about future conditions at any one time. Adaptations varied in the extent to which they were targeted at specific climate conditions (notably dryness) and took into account uncertainty, family needs (eg succession) and broader shifts (eg price). Some actions involved significant and lingering costs and risks, which in some cases became apparent when the climate dramatically changed to wet. Other actions included strategic shifts (eg to lower input farming) that have longer term relevance. Limitations on the adoption or success of adaptations include lack of:

- adequate knowledge about the full systemic characteristics, including the near- and long-term risks of different adaptation options and strategies in the context of interacting not singular climatic risks
- understanding of the true nature of climate change, including sources of uncertainty and certainty and non-climatic flow-on effects
- time and energy for devoting to the sort of strategic planning and constant adaptive management that is needed
- capital or ability to increase financial strain by taking on a risky adaptation.

Thirdly, in the context of the drag on business momentum created by the drought and what many accept is great uncertainty about future climate, there was a desperate urge for a "bumper year" in 2011. This desire has been building over successive failed seasons. It is about professional satisfaction and status as much as financial viability, and work is needed into the implications for farmer identities posed by climate variability and change. A focus on opportunistically capitalising on upside risks when possible seems to be emerging, suggesting that long-standing calls for farmers to be more entrepreneurial and risk-taking are being rebadged as an adaptation strategy. Yet the co-existence of policies that simultaneously communicate that they are now expected to more skilfully avoid downside risks is conflicting. The stakes are raised for any risk-taking attempt by farmers, increasing the cultural and political pressure under which they operate and adding anxiety about a more uncertain and variable climate. The positives and negatives of dampening rather than chasing variability in production (through low-input versus opportunistic strategies) has implications for the sort of enabling systems farmers need. This demands further research.

Fourthly, as indicated above, there is an emerging mood of questioning among farm households as they come to a greater realisation of the complexity, vulnerability and difficulty of "making it all work". Those who would conventionally be classified as "successful" or as "leading farmers" are among those who, within the safety of an anonymous interview environment, express real concern about how they are meant to juggle the risks they increasingly carry. High level questions about the appropriateness of existing policy pressures to expand average farm sizes under increasing climate risk need to be addressed.

So, too, do questions about the long-term sustainability and appeal of rural and farming life. People are keenly aware that important issues are bubbling under the surface for them and others; they are questioning the viability and desirability of their long-term involvement. At the same time, they are evolving new and innovative ways of being involved, challenging the conventional model of a farm-based, farm-focused household. While work is needed to understand the long-term and collective effects of these strategies, such innovation is an example of the many adaptations households have been making in order to remain in farming. Discussion is now needed about what positive and negative feedbacks people consider to have emerged from such actions; what personal, professional and environmental recovery is needed and what improvements and preparations are called for in the context of ongoing risk and opportunity.

Experiences with the release of the first report on *Critical Breaking Point* suggest that some people will react with bemusement, scepticism, or even anger to what they will perceive in this report as unrepresentatively negative farming experiences and perspectives, particularly if conditions in the near term are strongly favourable and optimism again becomes dominant. Yet, the randomly sampled and carefully analysed nature of this research, plus explicit comments by interviewees, suggest that the thrust of these conclusions is likely to be seen as unrepresentative largely because of the strong cultural norm in many rural communities requiring that people keep their troubles and concerns to themselves.

This study found that, when given the chance to reflect and guarded against peer recrimination by the anonymity of the interview environment, interviewees from diverse backgrounds expressed — sometimes with relief or surprise — negative emotions absent from most public rural discourses. Voluntarily repressing anxieties and concerns can be an adaptive strategy for getting through short-term crisis situations. When this norm or habit becomes ingrained and involuntary, however, it can obstruct realism, sharing, learning and improvement.

Similarly, forgetting can be adaptive, but equally problematic, if perpetuated. Interviewees may themselves be surprised to read their responses from back in February 2011, particularly if their situation has markedly improved. To the extent that these recorded feelings point to deeper issues that remain to be addressed, it is important that, when people have the energy (and the inclination), they look back and deepen their understanding of their situation, of their own and others' reactions and of how they can better position themselves to deal with future challenges.

This report aims to assist in this collective reflection process.

6 Recommendations

Those outside the farming community could do many positive things to assist farm households in the recovery and preparation challenges they face, hand-in-hand with farm households themselves. Quality of life in rural areas underpins farm household resilience: externally-enabled substantial improvements in this area would help to improve both farming and family outcomes and avoid some of the extreme adaptations farm families are, of necessity, making.

Overall, there are two main sorts of improvement needed, reflecting the way resilience requires attending to cross-scale and cross-sectoral linkages:

- well-funded, community-based initiatives to contribute to the long-term wellbeing and standard of living of rural people and places, including the improvement of infrastructure and basic services
- well-funded, community-led research into and discussion about the broad issues confronting farm households, including systemic analysis of vulnerabilities, the positives and negatives of different potential adaptations (from technical developments to off-farm actions), their performance over time under different conditions and their interaction.

As presented in the text, many valuable community-based ideas about where assistance is most needed were provided by interviewees, including support for:

- clubs and organisations, including but not limited to sports clubs
- schools, kindergartens and childcare services, including school bus services
- health services, including doctors, hospitals, aged care, and social workers, counselling and wellbeing-based services such as men's fitness groups
- sports and recreation facilities, including swimming pools, lakeside facilities and town parks
- police (absent in many towns)
- road infrastructure and service stations
- an increased number of shearers, contractors and agricultural workers
- the Rural Financial Counselling service
- agricultural research, development and extension (on varieties, pest management, marketing, financial management, and OH&S)
- the setting up of new industries, including non-agricultural industries to "drought proof" local economies.

Some farming-specific areas for potential support also emerge from the findings overall. While this is an incomplete list, its aim is to stimulate further discussion, not prescribe:

- systemic research into the positives and negatives of different coping and adaptation strategies and their performance and interaction over time, given the vulnerabilities introduced by some adaptations adopted by some farmers during the drought;
- mechanisms for and advice on time management, given the powerful influence of time pressures on many aspects of farming individuals lives, including how to allow for a necessary degree of flexibility in response to uncertain conditions. (This could include the creation of a new

profession of “Executive farmer assistants” tasked with assisting farmers to manage multiple business concerns and office-based tasks, including grain marketing).

- development of affordable time-saving devices, such as rapid fencing options, distant water-level measuring technologies, including the provision of quality roads to further address the issue of time pressures;
- mechanisms for and independent (non agri-business) sources of advice on grain marketing options, including the possibility of cooperation between farmers, given that this was discussed as a significant new source of uncertainty and strain on farmers.
- mechanisms for and advice on strategic directions, including analysis of the positives and negatives of different strategic approaches over time under conditions of variability, given emerging questions about what is the most appropriate approach. (This could include the possible creation of a scheme offering farmers (individually or collectively) insights from advisors, mentors or an external “board”).
- facilitation of social learning between members of the farming community with forums, webinars, workshops and discussion groups tackling strategic as well as technical issues, given the fact that individuals seem more isolated professionally and personally but also in need of more insight into what others are doing and have learned about managing the new conditions;
- facilitation of farmer group or local scenario planning exercises to set in motion the process of envisaging possible futures in local agriculture and to identify key factors that help people to think about the possible futures of their communities and regions to inform their individual and collective decisions;
- development of accessible methods of recording, analysing and regularly reflecting on farming conditions and decisions in order to facilitate timely feedback and enhance learning and understanding, given the need for more adaptive management;
- development of systems to foster the sharing of equipment and swapping of labour in order to reduce the financial pressure of investing in such assets;
- provision of improved climate science information, emphasising the ongoing nature of variability, what is certain and uncertain and information about different types of uncertainty, to improve accurate understanding of climate and help people become better prepared for further inter- and intra-seasonal variability of the sort they have recently encountered;
- subsidising of farmer group memberships and/or provision of long-term funding to farmer organisations to increase access to relevant research information, given the decline in government provision of such support and the growing need for it in light of the complexity of farming.

As the rollercoaster ride of climatic variability continues in the context of longer-term challenges, farm households need to simultaneously adapt to short and long-term pressures, building their specific and generic resilience as they do so. The interconnectedness of sequential climatic extremes and of farming, family and rural community situations highlights the broader linkages that characterise the system of which we are all a part. Sharing experiences, perspectives and reflections are focal to the sort of learning that is needed as we seek to adapt society at large to a more uncertain future.

7 Epilogue

At the time of interview, all eyes were on the coming season; people experienced a passionate desire to catch up and regain some professional momentum. While many were trying to temper their optimism by remembering the lessons learnt over previous failed seasons, there was a sense of excitement that with plenty of moisture in the soil at the start of the season, 2011 *should* be a good year. They faced difficult decisions about balancing their desire to capitalise on the existing potential against the risk of over-investing in crops which may not have sufficient moisture to finish properly. As discussed in the Key Findings, some would "go for it", some would be very cautious and others would do some of each.

The early months of the 2011 growing season signalled a return to dry conditions, underlining the dramatic way in which climatic conditions can change. During April and May, when most farmers were sowing (presuming they managed to clean up from the impacts of the wet conditions in time), there was no rain. Crops were sown into dry soil and many germinated unevenly. What came up was greeted by hungry mice. Some farmers baited their crops up to six times (when bait was available) and re-sowed some paddocks to ensure a chance at a good yield and make the most of the precious subsoil moisture. Combined with the intensity with which some were sowing, the paddocks were sinks for heavy investments. As a farmer interviewed late for this project noted in June:

> *The bills we've paid to put the crop in this year, because we required more fertilisers because it's possibly a good season and there's water there so you have to go for it. But we spent a lot more on chemical, a lot more on fertiliser. I was a little bit shocked when I paid the bills in June, as to what the risk we've got out there is* (26a, M, 40-50).

While the growing season from April to August continued to deliver very little rainfall[13], by September the crops were looking well.

At the time of writing, the harvest looks as if it will indeed be the long-awaited and much-needed 'bumper year' for many families. Yet, as we have seen, "at the time of writing" is no guarantee in the context of farming.

[13] Rainfall until August was at 'Decile 3' for most areas, which means that it accords with the lowest 30% of the long-term dataset.

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Appendix A

Detailed Methodology

General approach

This research takes a qualitative, ethnographic approach that seeks to understand people's lived experience and perspectives in the context of their environment and relationships (Patton 2002). It takes a predominantly grounded theory (data driven) approach (*cf* (Glaser and Strauss 1967)), which stresses the need to begin with and empathise with research participants' everyday reality (Alvesson and Skoldberg 2000). Interested in the 'micro' of people's lives and decision making, this project also attends to how they interact with broader processes and systems. In particular, this research recognises the value of the household scale as a window on how individuals connect with the wider community, society, economy and physical environment (Reid, Sutton *et al.* 2010). It also contributes to the relatively small body of work that uses a longitudinal approach to research 'in' time as well as about it (McLeod and Thompson 2009), combining this with an interpretive approach that explores people's memories of past change and perceptions of the future.

Sampling

This study began in February 2007 with group interviews with 56 randomly sampled farming households (109 individuals) in the Southern Mallee-Wimmera region, North West Victoria[14]. February was chosen as a good time for interviews with farmers as it represents something of a transition period between one (cropping) season and the next, facilitating reflection on the season past and the one coming up, and enabling many families to have more time available.

Part 1 of the study was followed by Part 2, which involved two rounds of interviews at six month intervals (September 2007 and in February 2008) with a subset of 20 of the original households. This subset was loosely purposive, focused on households in 'expanding' and 'winding down' phases (see BCG (2008)). These additional 40 interviews brought the total number of interviews for Parts 1 and 2 of this study to 100. (See BCG (2008) for further details).

To continue the research ('Part 3') we attempted to contact the original 56 households by sending letters in December 2010 and conducting follow up phone calls January-February 2011. Fourteen were uncontactable and 4 declined a further interview. In February 2011, four years after the original study, 40 follow-up interviews were undertaken with the remaining households, with a further two in July 2011, bringing the total number of interviews conducted over the longitudinal study to 142. In total, 42 of the original 60 households (70%) and 88 of the original 109 people (80%) were re-interviewed. Seventeen of these households were interviewed four times. Table 1 below provides a breakdown of the sample. The interviews were completed in the same manner as the original interviews, although by different interviewers.

[14] As in 2011, interviews were semi-structured, in-depth (approximately 2 hours) and held in-person at the homes of the interviewees. The number of interviewees per interview ranged from 1 to 4. For detail about how the households were selected, see Report One.

Table 5. Breakdown of interview and interviewee numbers and timing

Parts 1 and 2		Interviewed in Feb 2007	Re-interviewed in Sep 2007	Re-interviewed in Feb 2008	**Total**	
	Interviews	56 households	20 households	20 households	Total number of interviews Number interviewed once Number interview three times	100 40 20
	Individuals	109	41	39	Total number of individuals Number interviewed once Number interviewed twice Number interview three times	189 68 41 39
Part 3		Total sample	Subset of sample		**Total**	
Interviewed in Feb 2011	Interviews	42	17 re-interviewed		Total number of interviews Number interviewed twice Number interview four times	42 42 17
	Individuals	88	38		Total number of individuals Number interviewed twice Number interview four times	88 88 38
Total					Household Interviews Individuals involved	142 109

The sample of households re-interviewed in 2011 represents only those still contactable at their original contact details (76%) and those willing to be re-interviewed (70%). Of those not willing to be re-interviewed, one was the wife of an older farmer who has since passed away, and the others stated that they were too busy. As discussed in the findings, it is potentially significant that a relatively significant proportion of households (14/56) were un-contactable. Seven of these appeared to still reside at the address, but did not return phone messages, suggesting they were perhaps on holidays, busy or uninterested. A further two (both older male farmers) are known to have passed away since Feb 2007. It is not known whether the final five have moved, left farming or passed away. As their involvement in the research was confidential, it was not possible to use local connections to try to find them.

Interviews

Interviews were arranged and conducted by four local interviewers, replicating the local interviewer technique used in the previous rounds of research[15]. Four local women (one of whom had participated in the original interviews) were recruited through BCG and trained by the chief researcher. This skills development both aimed to build local capacity in social research and to improve the quality of the interviews, by drawing on the insights and rapport of people who understood the area and current issues. Four interviewers were used as it was a sufficient number to allow the interviews to be conducted efficiently within a month (given the large amount of travel involved in accessing all interviewees), but as small a number as possible to limit variation.

Interviewers attended two training workshops in December 2010 and January 2011. At these workshops they helped to refine to the research questions, learnt about and practiced interview

[15] For research and logistical reasons, the chief researcher also conducted three interviews and a member of BCG staff also conducted one interview.

best practice, and discussed the challenges involved. No interviewer conducted research in her own local area, or with anyone she or any of her family knew. All interviewers signed confidentiality agreements.

All interviews were conducted in-person and at interviewees' homes. They were conducted with as many members of a farm household who were available. This group interview approach was taken to reflect the interpersonal context of farm life and decision-making, to efficiently capture a diversity of perspectives, and to encourage reflection and discussion among participants. Within this context, interviewers also encouraged individuals to respond separately to each topic. Often participants included two or three generations, including children. Other households generally consisted of older couples, or older single men. Attention was paid to the mental, emotional and relational challenges the interviews potentially posed to interviewees and interviewers, with care taken to minimise the creation of difficult situations.

Interviews were semi-structured, which means that they were guided by a consistent list of questions (below), but also had a conversational style, in which interviewees were able to discuss things in an order and way that they preferred, including bringing up topics of importance to them, that otherwise would have been missed by a more structured approach. Interviews lasted one to two hours, and were recorded.

Analysis

All of the interview recordings were transcribed by a commercial company[16]. While transcription is always imperfect in that written documents cannot capture all of the same meanings as those expressed in real-time, real-life experiences (Cope 2009), this technique provided a wealth of very rich data which was then systematically coded in a multi-step process. While NVivo® was used to manage the data, coding was done by hand. While laborious, this gives a more accurate picture than isolating the use of key words. The preliminary reading of the transcripts identified key themes, consistent with the main questions asked. Transcripts were then reanalysed by two researchers to further refine these themes and identify further ones. The diversity of perspectives was mapped and illustrative passages were identified. Findings were workshopped and the process was repeated a number of times.

Transcripts from previous rounds of research were also reanalysed. This was first focused on the twenty households previously interviewed three times (originally chosen to represent ten younger and ten older families or individuals). These interviews were analysed to map the change over time in their experiences and perspectives. Four of these were then chosen for closer analysis again. All 60 original interviews were then reanalysed for mention of specific topics, notably climate change.

Findings were iteratively refined during the writing process to try to identify how best to represent complex multifaceted issues in a linear sequence. Quotes are used extensively in order to allow interviewees' own words to evoke their perspective. For the sake of clarity and brevity, quotes have been lightly edited. '[...]' is used to signal where conversation has been edited out for continuity, while '...' refers to a natural pause in the conversation. Where relevant, non-verbal cues such as laughter are also indicated. Some quotes report on exchanges between members of the farm household if the interaction itself is significant and the meaning emerges out of the exchange.

[16] Except for one interview were the Dictaphone did not work and extensive notes were taken instead.

As explained above, this research is deliberately qualitative not quantitative. Nevertheless, some indication of the broad generalisability of points is usually given to provide the reader with a sense of how widespread certain experiences or perspectives are within the sample group. In many of the interviews, individuals within a household did present their own point of view on the same question. These individual level responses provide some insight into similarities and differences in different household members' perspectives and experiences, which is of value in itself and also allows some obvious points of difference (such as age) to be explored to some degree. Where graphs are included, the purpose is to indicate broad trends only.

Limitations

Although the original selection of the interviewees was random and therefore theoretically indicative of the broader farming community, the results of this research are suggestive only and cannot be reliably extrapolated to that community. Larger scale survey work is needed if patterns within the broader community are wanted.

This study did not use individual interviews to complement the group interviews as seen, for example, in Gray et al (1993) (choosing instead to interview more households). Therefore individuals' responses need to be understood as having been offered, in most cases, in the presence of other household members, and so potentially constrained in some ways. While all individuals were encouraged to contribute to the interviews, it also varies in how much they did so. It is therefore not possible to reliably report on the degree to which differences between individuals' responses reflect systematic factors such as age and gender. Such trends were also obscured because the sample size was relatively small for such comparisons and the deliberately semi-structured nature of the interviews means that slightly different information was collected in each interview. Nevertheless, some suggestive trends (e.g. in women's responses) did emerge and are commented on in the findings.

Interviews also often did not include all the family members involved in the farming context of those we interviewed. Often there are parents or siblings involved in the farm in some way, who live elsewhere. Although these broader farm members were welcome to be involved in the interviews, and in a few cases they did participate, they were generally missed due to the 'household' nature of the interviews. The same applies to other non-family farm members, namely employees.

Using a multiple number of interviewers potentially introduces some systematic variation into the data. Interviews were analysed to ascertain if such systematic differences were apparent. While some interviewers did focus on some topics more than others, no meaningful differences in interviewees' general responses were detected and the interviews are considered generally comparable. Due to availability, there was also some change in the interviewers and interviewees involved in the different interview rounds in each year. This further variation was also not detected to systematically distort the data. In 2011, the one interviewer involved in previous rounds was allocated to interviewees she had not previously interviewed, to maintain consistency in the newness of interviewer-interviewee relationships across the group.

Finally, interviews were conducted in February 2011 and not earlier (e.g. following the initial 6 month patter of interview frequency) due to the availability of research funding. As it happens, the timing of the interviews was fortuitous, coming soon after the extreme rain and floods in 2010/2011

and so capturing a significant change in farm households' circumstances and encouraging reflection on "the drought".

Interview guide

Thank you so much for your time today. My name is X and I am one of the interviewers for the Critical Breaking Point project.

The subject of this research is close to my heart as my own family is also in farming in the X area...

Your input to this research is absolutely invaluable and we really appreciate it.

Please don't hesitate to interrupt me if you have any questions.

If it is ok with you, I would like to record the interview to ensure accuracy. Everything you say will be confidential and all reporting will be done in an anonymous way.

1. To get started, who do I have here today? [state all the names aloud for the tape]

The present: dealing with the wet

2. Broadly speaking, how would you describe your current situation?
    - What are the positives and negatives of your situation at the moment?
    - How has the recent extreme wet weather affected you?
        - How has your normal life and work cycle been affected?
            - Have you had to skip holidays?
            - Has it created any new work or problems?
        - How has it affected you mentally/emotionally?
        - Has it created any new opportunities?
    - Would you say you have now recovered from the extreme wet?
        - If not, what will it take for you to recover?
    - Besides the weather, what else has been going on for you? What other factors are in play?
    - So, overall, how would you say you are feeling?

The past 3-4 years

3. So, thinking back now, what has been going on for you over the last 3-4 years?
    - How does your current situation differ from that 3 to 4 years ago?
4. What have you learnt from your experiences over the last few years?
    - Has your strategy changed in any way, over the last few years, or longer term?
    - Do you think about things differently, or do things differently? If so, in what way?

Drought and resilience

5. This research started out focusing on drought, which is hard to believe at the moment. In your mind, would you say the drought is now over?
    - How long were you (or have you been) in drought for?
6. Thinking about that drought or dry period, how would you say it affected you overall?

- How has your health been affected?
- What about you as a family and business?

7. In what ways have you – and haven't you - recovered from the drought period?
   - Financially?
   - Emotionally?
   - What has influenced this?
8. People often say that farmers are "resilient". What does resilience mean to you?
   - Would you describe yourselves as resilient?
     - In terms of psychological resilience?
     - In terms of your family and business situation?
     - Have you got any sources of off-farm income? How important is this to your resilience, and has its importance changed over time?
   - What mechanisms do you use to cope with stress?
     - Have these changed over time at all?
     - What do you do to look after yourself?
   - How can you, your business and your community be helped to be resilient?

Climate extremes and climate change

9. What would it mean for you if we had another year - or multiple years - of extreme weather?
   - Would it make a difference if it were extreme dry rather than wet?
10. How concerned are you that these extremes are part of longer term climate change?
    - Has your level of concern increased over recent years?
11. What do you think adaptation to climate change means?
    - What do you need to do to adapt to climate change?
    - What does agriculture need to do in general to adapt? Is a different approach needed?
    - Is it something you consciously think about? Would you say you have started trying to adapt?
12. What is the goal of adaptation for you? What do you most want to hang on to and protect?
13. How much about your farm and lives and community? Do you feel you may have to change over coming years?
    - How prepared do you feel to do this?

Looking ahead: this year

14. In terms of this year, what do you want to achieve, personally and professionally?
    - What decisions do you have to make and how will you make them?
15. What is your risk management strategy?
16. Do you think you will do anything differently on or off the farm this year?
    - If so, what and why?
    - What resources do you need?
    - How well-equipped do you feel to make and act on your plans?

- Will you use any kind of external advice or support? If so, what and why?

Looking ahead: longer term

17. Longer term, what are your hopes and goals for the future, both professionally and personally?
18. What are your concerns?
19. How do you feel about being in farming in Australia today?
    - Is farming still an attractive option for each of you? For your children?
    - If you are thinking about leaving farming, what is your exit strategy?
        - How and when do you think you will implement this?
    - Has anyone you know decided in the last three years to leave farming or your community?
        - If so, how does this affect your own desire to be here?

The local community

20. Thinking more generally about the community in this area, how do you think people are going?
21. What changes have you seen over the last 3 years?
    - What role have you had in these changes, and how have they affected you?
22. How connected do you feel to the community here?
    - Has this changed over the last three years?
        - If so, in what way?
23. What is the main thing you would like to improve about your or your community's situation right now and in the longer term?
24. What role do you think community groups like BCG need to play in the region?
25. If Funding was unlimited, what should be invested in, to make your community more resilient and a better place to be?
26. Finally, do you have any further thoughts you would like to add?

Thank you very much for your time, reflection and honesty, both now and in previous interviews. Like last time, these interviews will be transcribed in a confidential manner and your input will be anonymous in any reporting. The reports will be used to help BCG and others understand how farming families' situations are changing and what could be done. A report will be sent to you when it is complete. If you have any questions or concerns in the meantime, please do not hesitate to get in touch. I'll leave you with the numbers of Alex and Margaret at BCG just in case.

Appendix B.
Interview code

Interview number	Interviewee number	Gender	Age Bracket	Feb-07	Sep-07	Feb-08	Feb-11
1	1a	M	50-60	X	X	X	X
	1b	F	50-60	X	X	X	X
2	2a	M	30-40	X	X		X
	2b	F	30-40				X
3	3b	F	60-70	X	X	X	X
	3a	M	60-70	X	X	X	X
4	4a	M	60-70	X			X
	4b	F	60-70	X			X
	4c	M	20-30				X
5	5a	M	30-40	X	X	X	X
	5b	F	30-40	X	X	X	X
6	6a	M	50-60	X			X
	6b	F	50-60	X			X
7	7a	M	50-60	X			X
	7b	F	50-60	X			X
8	8a	M	60-70	X	X	X	X
9	9a	M	40-50	X			X
10	10a	M	30-40	X	X	X	X
	10b	F	30-40	X	X	X	X
11	11a	M	40-50	X			X
	11b	F	40-50	X			X
12	12a	M	30-40	X			X
	12b	F	30-40	X			X
13	13a	M	60-70	X			X
	13b	F	60-70	X			X
14	14a	M	60-70	X	X	X	X
	14b	F	60-70	X	X	X	X
15	15a	M	60-70	X	X		
	15b	F	60-70	X	X	X	X
	15c	M	30-40	X	X	X	X
	15d	F	30-40	X	X	X	X
16	16a	M	70-80	X			X
	16b	F	60-70	X			X
17	17b	F	70-80	X	X	X	X
	17a	M	70-80	X	X	X	X
18	18a	M	30-40	X	X	X	X
	18b	F	30-40	X	X	X	X
	18c	M	30-40	X			
19	19a	M	60-70	X			X

	19b	F	60-70	X			X
20	20a	M	30-40	X	X		X
	20b	F	30-40	X	X	X	X
21	21a	M	40-50	X			X
	21b	F	40-50	X			X
22	22a	M	50-60	X			X
	22b	F	50-60				X
23	23a	F	40-50	X			X
	23b	M	40-50	X			X
24	24a	M	30-40	X	X	X	X
	24b	F	30-40	X	X	X	X
25	25a	M	40-50	X			X
	25b	F	40-50	X			X
26	26a	M	40-50	X			X
	26b	F	30-40				X
27	27a	M	50-60	X			X
	27b	F	50-60	X			X
28	28a	M	30-40	X	X	X	X
	28b	F	30-40	X	X	X	X
29	29a	M	20-30	X			X
30	30a	M	50-60	X			X
	30b	F	50-60	X			X
31	31a	M	50-60	X			
	31b	F	50-60	X			X
32	32a	M	60-70	X	X	X	X
	32b	F	60-70	X	X	X	X
	32c	M	20-30		X		
33	33a	M	30-40	X	X	X	X
	33b	F	30-40	X	X	X	X
34	34a	M	40-50	X			X
	34b	F	40-50	X			X
35	35a	M	40-50	X			X
	35b	F	40-50				X
36	36a	M	30-40	X	X	X	X
	36b	F	30-40	X	X	X	X
	36c	M	10-20	X			X
37	37a	M	60-70	X			X
	37b	F	60-70	X			
38	38a	M	50-60	X	X	X	X
	38b	F	50-60	X	X	X	X
	38c	M	10-20	X			X
39	39a	M	60-70	X			X
	39b	F	60-70				X
40	40a	M	40-50	X	X	X	X
	40b	F	40-50	X	X	X	X

41	41a	M	70-80	X			X
	41b	M	40-50	X			X
	41c	F	40-50	X			X
	41d	M	40-50	X			X
42	42a	M	50-60	X			X
	42b	F	50-60	X			X
	42c	M	20-30	X			X
	42d	F	20-30				X
43	43a	M	60-70	X			X
	43b	F	60-70	X			
44	44a	M	30-40	X	X		
	44b	F	30-40	X	X	X	
45	45a	M	60-70	X			
	45b	F	50-60	X			
	45c	F	30-40	X			
46	46a	M	50-60	X			
	46b	F	50-60	X			
47	47a	M	30-40	X			
	47b	F	30-40	X			
48	48a	M	70-80	X			
	48b	F	70-80	X			
49	49a	M	30-40	X			
	49b	F	30-40	X			
50	50a	M	70-80	X	X	X	
	50b	F	70-80		X	X	
51	51a	M	40-50	X			
	51b	F	40-50	X			
	51c	M	20-30	X			
52	52a	M	70-80	X			
53	53a	M	40-50	X	X	X	
	53b	F	40-50	X	X	X	
54	54a	M	40-50	X			
	54b	F	40-50	X			
55	55a	M	40-50	X			
	55b	F	40-50	X			
56	56a	M	40-50	X			

Appendix C
Key Findings from Report One (2007-2008)

Overall key findings

1. Virtually all farming families are eating into their physical, financial and personal/emotional reserves to cope with the drought and will continue to need to do so if drought continues;
2. For most farming families, the effects of drought will remain with them for years after the drought ends;
3. The majority of farming families are persevering and have not been pushed to leave farming, although most have had to alter their personal and professional plans and most have engaged the question of whether to leave and will continue to re-engage it over coming years;
4. There are strong differences between the circumstances and outlooks of farming families and these differences appear to be widening in some ways;
5. Regardless of how severely a farming family's financial situation has been affected by the drought, they have been, and will continue to be, affected by drought indirectly as it exacerbates other issues, affects those around them, and throws a veil of uncertainty over the future;
6. Farming families' awareness of, and sensitivity to, the risks involved in farming has escalated and many are adopting what could be a permanently more conservative approach to production, marketing and income protection;
7. The default position for a minority of farmers is optimism and the proportion of people who share this outlook swells at the start of each year when the potential of the new season is still unknown;
8. Some people's outlook on farming, climate and the world in general has been fundamentally darkened by their experience over the last few years and they now suffer from high levels of anxiety irrespective of weather conditions;
9. People remain committed to their sector and communities, but struggle with the multiple demands upon them and are being forced to focus on their own needs to cope with the effects of the drought;
10. The vast majority of small rural communities are facing serious issues of declining active populations and services, and this is negatively affecting the wellbeing and resolve of the farming families that help make up those communities; and
11. Financial assistance is now welcomed and accepted by most, but will continue to aggravate negative responses amongst some, for the way that it conflicts with their belief in self-help.