

Lincoln University Digital Thesis

Copyright Statement

The digital copy of this thesis is protected by the Copyright Act 1994 (New Zealand).

This thesis may be consulted by you, provided you comply with the provisions of the Act and the following conditions of use:

- you will use the copy only for the purposes of research or private study
- you will recognise the author's right to be identified as the author of the thesis and due acknowledgement will be made to the author where appropriate
- you will obtain the author's permission before publishing any material from the thesis.

**The influence of the Black and White tide:
Dairy farming, landscape and community change**

A thesis
submitted in partial fulfilment
of the requirements for the Degree of
Master of Social Science

at
Lincoln University
by
Philippa Jane Rawlinson

Lincoln University

2011

Abstract of a thesis submitted in partial fulfilment of the requirements for the Degree of Master of Social Science.

**The influence of the black and white tide:
Dairy farming, landscape and community change**

by
Philippa Jane Rawlinson

In Austen, a part of Canterbury in the South Island of New Zealand, pastoral and arable communities have been centrally important to the rural economy, community, and landscape for multiple generations. Recently, these multi-generational land uses have been replaced by intensive dairy farms. The change has been dramatic. Sheep flocks and arable crops have been replaced by luscious swathes of green pasture and herds of dairy cows. Dairy farmers and their employees have replaced farming families, many of whom have been in the community for multiple generations. It is against this background that this thesis has sought to understand the factors underpinning the transition to intensive dairy farming, and the influence of this transition on the rural landscape, its residents, and community institutions.

A qualitative research approach was used for collection of primary data. Semi-structured interviews were conducted with farmers, business and community leaders, and newcomers to Austen. Primary data were complemented by the collection of secondary academic literature and local government reports. These data were thematically coded, and sorted, to identify key categories, meanings, and ideas.

In Austen, land use change has been driven by the availability and reliability of irrigation water, and introduction of more efficient methods of water application. The defining moment of change occurred in the late 1970s, when land was first purchased for

conversion to dairy farming by career dairy farmers. Established land owners would remain committed to traditional land uses until the late 1990s. Consistent declines in pastoral commodity prices when compared to the continued prosperity of the dairy industry, and introduction of automated irrigation devices, enforced the decision to convert to dairy farming. It is since 2000, that the number of dairy cows has increased by 884 per cent, the total number of dairy herds has tripled, and an ever increasing number of farmers have converted to dairy farming.

Conversion to dairy farming and introduction of automated irrigation, have contributed to a significant modification of the rural landscape. Once marked by abundant trees and hedges on paddock boundaries, these landscapes are now notable for their lack of trees and hedges. Production is paramount and shelter vegetation impedes this. The mode of dairy farming that prevails in Austen is an example of the continued commitment of farmers to productivism.

Austen's community has been influenced by the introduction of dairy farming. New conflicts and arrangements have emerged, only identified in a limited way in existing social research. These new conflicts are based around the migratory nature of dairy farm employees and new modes of operation associated with dairy farming. Community relations and rural schools are influenced by these conflicts. Without irrigation, it is doubtful whether any of these changes would have occurred.

Keywords: Canterbury, dairy farming, land use change, rural landscape change, community change, productivism.

Acknowledgements

There are many people who have helped to contribute to this thesis. Firstly, I would like to thank my research participants. Thank you for sharing your stories, experiences, and opinions. Completing these interviews was the most interesting part of this research and I am so lucky to have been able to listen to your stories and present them in this thesis.

To Professor Harvey Perkins and Dr. Rupert Tipples, my supervisors, it has been a long journey but we made it in the end. I appreciate the perseverance, interest, and guidance you provided me to complete this thesis. Thank you also to Lincoln University for providing me with this opportunity.

Thank you to Karen and Pete. You have been my third and fourth supervisors, editors, and motivators throughout this entire process. Words cannot convey how much you helped me.

Thanks to Minge and my family. I know you never understood what I was doing or what I was talking about, but it is all finished now. I know I would not have achieved this without your help and support.

Thanks also to the numerous dairy farmers who have employed me over the last six years. I enjoyed the early mornings, the sunrises, and the opportunity to be part of a team.

Finally, Jack you can have your house back.

Table of Contents

Abstract.....	ii
Acknowledgements	iv
Table of Contents.....	v
List of Figures.....	viii
List of Tables.....	ix
Chapter 1 Introduction.....	1
1.1 Introduction to the study	1
1.2 Background to the study	2
1.3 Research Objectives	6
1.4 Naming the Study area	6
1.5 Personal Interest	7
1.6 Thesis Structure and Organisation	8
Chapter 2 Research Method.....	10
2.1 Qualitative Research Approach	10
2.2 Data Collection	11
2.2.1 Exploring the Research Context	11
2.2.2 Semi Structured Interviews	12
2.2.3 Participant Selection	13
2.2.4 Participant Recruitment	14
2.2.5 Participant Observation	14
2.3 Ethical Considerations	15
2.4 Data Analysis	16
2.5 Critique of the Research Method as used by this study	17
2.6 Chapter Summary	18
Chapter 3 Literature Review.....	19
3.1 Rural Change Literature.....	19
3.1.1 Frameworks of Rural Change	20
3.1.2 New Zealand Agriculture.....	24
3.1.3 Post productivist New Zealand?.....	25
3.2 Characteristics of Intensive Dairy Farming.....	29
3.2.1 Labour Characteristics of the Dairy Industry.....	30
3.2.2 Dairy Farm Career Pathway.....	32
3.2.3 Dairy Farm Employee Migrations.....	34
3.2.4 Migrant Dairy Farm Employees.....	37
3.3 Community Change	39
3.3.1 Population Change	40
3.3.2 Community Conflict.....	42
Chapter 4 Context.....	44
4.1 Establishing Austen.....	44
4.1.1 Pastoral Sheep Farming.....	44
4.1.2 Arable Farming	46
4.1.3 Climatic Variations.....	49
4.1.4 Rural Landscape	50

4.2	Irrigation	50
4.2.1	Community Irrigation Scheme	51
4.2.2	Changing Ideologies	53
4.2.3	Ground and Surface water for Irrigation.....	54
4.2.4	Methods of Irrigation	55
4.3	Introduction of Dairy Farming	56
4.3.1	Quiet Expansion	56
4.3.2	Generator of Employment	58
4.3.3	Population Growth	59
4.4	Chapter Summary.....	60
Chapter 5 Results		61
5.1	Austen's Land Uses.....	61
5.1.1	Irrigation	63
5.1.2	Property Ownership	64
5.1.3	Productivist Agriculture.....	65
5.1.4	Rural Community.....	69
5.2	Transition to Dairy Farming	71
5.2.1	Irrigation	71
5.2.2	Business Opportunities	73
5.2.3	Flat Land	76
5.2.4	Taylor's Dairy Conversion.....	76
5.3	Intensive Dairy Farming.....	77
5.3.1	Income.....	77
5.3.2	Fonterra.....	80
5.3.3	Irrigation.....	81
Chapter 6 Results		86
6.1	Landscape Change	86
6.1.1	Justification for the removal of landscape features.....	87
6.1.2	Reaction to Landscape Change	89
6.2	Consolidation of Dairy Farming	91
6.2.1	Perceptions of Dairy Farm Employees	91
6.2.2	Movement of Dairy Farm Employees.....	93
6.2.3	Dairy Farm Employees and Children	96
6.3	Community Relations	100
6.3.1	Community Practices and Co-operation	100
6.3.2	Dairy Farm Practices.....	104
6.4	Migrant Dairy Farm Employees	106
6.4.1	Migrant Workers	106
6.4.2	Learning and speaking English	107
Chapter 7 Discussion		110
7.1	Rural land use change.....	110
7.1.1	Pastoral Farming and Productivism.....	111
7.1.2	Irrigation and Dairy Farming	113
7.1.3	Dairy farming and Productivism.....	114
7.2	Landscape Change	115
7.2.1	Landscape change, Irrigation, and Intensive Dairy Farming	115
7.2.2	Evolution of Landscape Values.....	116
7.2.3	Landscape Change and Media Attention	117
7.3	Community Change	118

7.3.1	Population Growth and Ethnic Diversification	118
7.3.2	Rural Primary School and Dairy Farming.....	120
7.3.3	The Ultimate Goal: Land Ownership	121
7.4	Chapter Summary	124
Chapter 8 Conclusion		125
8.1	Summary of Findings	126
8.2	Limitations of Research	130
8.3	Recommendations for Future Research.....	131
Appendix A		132
Appendix B		134
Appendix C		136
References.....		137

List of Figures

Figure 1-1 Inquisitive dairy cows in Austen	1
Figure 1-2 Land use change in Austen	5
Figure 2-1 Growth of dairy farming in Austen	10
Figure 3-1 An interpretation of Fonterra's continued prosperity	27
Figure 3-2 Dairy commodity price trend 1990-2011	28
Figure 3-3 Dairy farm career pathway	32
Figure 3-4 Movement of Dairy farm employees 1991-2006	35
Figure 3-5 Temporary work visas for migrant dairy farm employees	38
Figure 3-6 Structural changes in population.....	41
Figure 4-1 Sheep grazing in Austen.....	45
Figure 4-2 Increase of sheep flocks and total sheep in Austen	46
Figure 4-3 Fluctuations in wheat acreage	47
Figure 4-4 Harvesting in Austen.....	48
Figure 4-5 Climatic variation in Austen: drought and snowfall	49
Figure 4-6 An example of trees, hedges and shelter belts	50
Figure 4-7 Installing border dyke irrigation in the 1970s	53
Figure 4-8 Centre pivot irrigator	56
Figure 4-9 Growth of dairy farming	57
Figure 4-10 Population growth 1991-2006.....	59
Figure 5-1 Roto Rainer operating in Austen	64
Figure 5-2 Before and after: the difference a subsidy makes	67
Figure 5-3 Drying off dairy cows - May 2011	72
Figure 5-4 Rotary dairy shed	74
Figure 5-5 Herringbone dairy shed	74
Figure 5-6 Artificial insemination of dairy cows, October 2011	75
Figure 5-7 Milk harvested from cows is secured in milk vats	81
Figure 5-8 A irrigation storage pond	85
Figure 6-1 A former shelter belt awaits its destiny	87
Figure 6-2 An example of a treeless property	88
Figure 6-3 A tanker accident in Austen.....	92
Figure 6-4 Dairy farm employees moving on Gypsy Day	94
Figure 6-5 Cows grazing on a dairy support property	101
Figure 6-6 Orphan lambs being fed	104
Figure 8-1 A herd of dairy cows walking to work	125

List of Tables

Table 1 Population Growth of Amuri and Waitaki Areas	40
Table 2 Comparison of production achieved in Austen and Waikato	58
Table 3 Estimated income generated by land use in Austen	78

Chapter 1

Introduction



Figure 1-1 Inquisitive dairy cows in Austen

1.1 Introduction to the study

This thesis reports a study of rural land use and community change in Canterbury, located in the South Island of New Zealand. Simply known by the pseudonym '*Austen*' or the '*study area*', in order to protect the identities of my research participants, this area has experienced a great deal of change in recent times. Multi-generational land uses have been replaced by new and more intensive agricultural activities, particularly, intensive dairy farming (Figure 1-1¹). This transition is best evidenced by my own childhood experiences in the study area. During my childhood, my sisters and I were sent to help our Grandparents on their sheep farm. At this time, school holidays coincided with early winter feeding out, lambing and tailing, and summer irrigation. I can recall prolonged periods of summer drought, winter snow, and cold weather, where stock would sit out storms behind abundant shelter. Time caught up with my Grandparents and with no generational handover, the farm was sold in 1998.

¹ All figures by the author unless otherwise acknowledged

I then lost touch with this rural landscape and its people; that is until I entered university in 2005. A chance meeting with a local dairy farmer, led to a summer job on a dairy farm, and a permanent part-time job for as long as I required it. It was here that I realised that the rural landscape of my childhood had dramatically changed. Sheep flocks and paddocks of arable crop were gone, replaced by swards of green grass and dairy cows. But it was not only the physical landscape that had changed, I got the sense too that the rural community was not the same.

It is this realisation that provides the foundation for this research. This thesis therefore aims to interpret the transition from traditional sheep, beef and arable farming, to intensive dairy farming; and understand how this transition has influenced the rural landscape, its residents and community institutions.

1.2 Background to the study

Since settlement of New Zealand by Great Britain in 1840, agriculture has been the backbone of New Zealand's society and economy (Egoz, Bowring and Perkins, 2006). In the study area and beyond, pastoral and arable farms have been the economic anchor of rural communities. Several generations of farmers have contributed to the development of a landscape that has become an important element of individual and collective identities, and history (Liepins and Bradshaw, 1999). Emphasising the strong colonial links with Great Britain, early trade links developed with the British enabled New Zealanders to enjoy a high standard of living '*off the sheep's back*' for much of the 20th century (Haggerty, Campbell and Morris, 2009). These farm incomes were greatly affected by fluctuations of the global agricultural commodity price throughout this time, as 80 per cent of agricultural output was exported from sheep, beef, and dairy industries (Le Heron, 1989).

After the conclusion of the Second World War, the New Zealand Government enacted legislation to protect farmers from these fluctuations and intensify agricultural production. Following the example set by Great Britain and Australia, the government committed to productivist agricultural policy (Ilbery and Bowler, 1998; Wilson, 2001;

Argent, 2002; Jay, 2004; Woods, 2005; Wilson, 2007; Mackay, Perkins and Espiner, 2009). Farmers in this regime were provided with financial security and incentives to intensify agricultural production (Haggerty *et al.*, 2009). Productivism remained uncontested until the 1960s, when it was first challenged, where the costs associated with agricultural production increased and commodity prices declined (Hawke, 1985; Cameron, 2009); these factors were then compounded by Great Britain's entry into the European Economic Community in 1973 (Gouin, 2006). Farmers responded by decreasing stock numbers, but the Government introduced financial mechanisms to reverse this trend, to stimulate production, and provide further protection from global markets (Le Heron, 1989).

These measures created a false prosperity for New Zealand agriculture: land values increased by 240 per cent and farm incomes increased by 25 per cent (Smith and Montgomery, 2003). This occurred in a context where 40 per cent of farm incomes were derived from the government (Cloke, 1989; Smith and Montgomery, 2003). The multiple costs associated with the continued support of the productivist regime placed pressure on the government, wider society, and environment in the 1980s. Financial support of agriculture cost government \$2.5 billion between 1980 and 1985 (Cloke, 1989) and methods associated with agricultural intensification were linked with resource exploitation and environmental degradation (Jay, 2004). Taking the view that support for agricultural productivism was untenable, the fourth Labour Government which came to power in 1984, initiated a period of economic restructuring, where all 30 support mechanisms for agriculture being removed (Cloke, 1989).

The first response of farmers was to send excess stock to slaughterhouses for processing (Le Heron, 1989). This trend continues, with the New Zealand sheep flock now at its smallest since 1950 (Greenhalgh, 2010). Farmers were now in a situation where they had mounting debt and high interest rates, deteriorating land values and diminishing incomes (Johnson and Sandrey, 1990; Campbell, 1994; Wilson, 1994). The rural change literature suggests, that the response of farmers to the new economic conditions would be a transition to less intensive agricultural practices and land uses (Ilbery and Bowler, 1998; Wilson, 2001; Wilson, 2007). Farmers in New Zealand have instead, where

possible, adopted ever more intensive approaches to agriculture to ensure financial survival (Evans, Morris and Winter, 2002). An important example of this intensification of agriculture has been evidenced by the trend away from production of traditional pastoral commodities to intensive dairy farming, in *new* areas of New Zealand (Smith and Montgomery, 2003; Gray and Le Heron, 2010).

My study area is one such region where intensive dairy farming has been introduced, alongside that in wider Canterbury, several parts of Otago, and Southland (Gray and Le Heron, 2010). Previous attempts at establishing dairy farming in these drier areas of New Zealand had been prevented by a lack of consistent summer rainfall. This rainfall is required for pasture growth, milk production, and therefore the generation of income. The availability of ground and surface water for irrigation, and improved methods of irrigation, have been used to overcome these limitations, and are major factors in the development of dairy farming in these regions (Perkins, 2006; Closey, 2009; Pangborn and Woodford, 2010). The introduction of efficient methods of irrigation and the nature of intensive dairy farming has necessitated the removal of landscape features that were once an important element of earlier regional landscape in these areas.

The rate of change to intensive dairy farming has increased in recent years in response to continued prosperous times for the dairy industry. The upward trend of the dairy commodity price has encouraged many to convert to intensive dairy farming. Figure 1-2 provides an illustration of the dramatic land use change to dairy farming in Austen, an area where it had been a very minor land use and is now a major agricultural activity. It has been estimated that 45 to 50 per cent of land in the wider region is now devoted to intensive dairy farming (Engelbrecht, 2010).

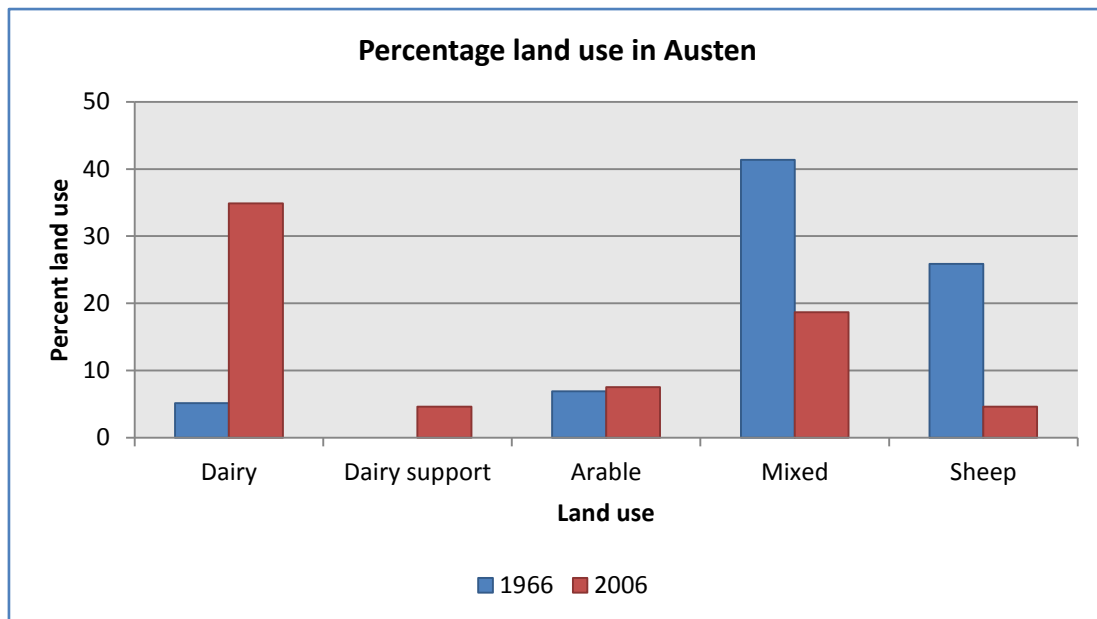


Figure 1-2 Land use change in Austen (Source: Dodson, 2006: 9)

Modifications to agricultural systems represent only *part* of the change in the regions affected. Communities and their local institutions have also been influenced in a variety of ways. Pastoral and arable families have been the foundation of many rural communities prior to contact with intensive dairy farming. Woods (2005) indicates that communities of this type were formed around multi-generational relationships with each other and particular forms of rural production. There has been little research conducted in Austen prior to this research, but research in other regions suggests that the introduction of intensive dairy farming contributes to the *“emergence of different rural economies and changed social patterns”* (McCrostie Little and Taylor, 2001: 1). These new social patterns emerge as there is an exodus of the older pastoral and arable community and an influx of new workers associated with dairy farming (McCrostie Little and Taylor, 2001; McClintock, Taylor and McCrostie Little, 2002; Taylor *et al.*, 2003). Other research conducted in Canterbury has more generally focussed on the first response of farmers to the removal of subsidies and resulting multiple job holding (see Campbell, 1994; Robertson, Perkins and Taylor, 2008). Other work has studied the roles of hydrogeology and risk management in water allocation (see Dommissie, 2006; Closey, 2009). My study will address this gap in the literature and focus on the influence of this new land use on rural landscape and community.

1.3 Research Objectives

Accordingly, to address this gap in the literature, the following research objectives were formulated to investigate the development of intensive dairy farming and the multiple influences the new land use has had in Austen:

1. Explore the traditional land use in the region and understand what facilitated the transition to dairy farming.
2. Investigate the influence of dairy farming on the rural landscape and the surrounding community.

To guide the exploration of these research objectives, the following research questions were developed:

- When did conversions (from pastoral and arable farming to dairy farming) occur?
- What factors instigated the process of conversion?
- In what ways has the introduction of dairy farming affected the farmed landscape?
- How has the introduction of dairy farming affected the rural community including such things as the provision of educational, recreational, and other social services?
- How have locals and newcomers experienced and interpreted the new dairy farming economy in the area?

1.4 Naming the Study area

A major ethical consideration, as signalled in the opening of this chapter, has been the protection of participants' identities. This was a necessary requirement for this study because of the nature of rural communities where, as one participant identified '*everyone knows everyone*'. Foremost, *no* direct reference has been made to the study area. Instead the study area has been referred to in text by the generic term '*the study area*' or the pseudonym '*Austen*', and where necessary, the wider region is referenced as the region. No detailed description of the area under study, beyond what is

necessary for a contextual understanding, has been made. Where identifying features are discussed in the text they are referred to using generic terms such as '*river*' or '*farmer*'. Similarly in text citations with identifying features (for example the town name), have been replaced with generic terms.

An important component of this thesis has been participants' stories of change. To ensure that these stories are told and brought to life, participants have been allocated with pseudonyms and generic titles describing their occupations, so they cannot be identified. A further discussion of the ethical considerations of this study will be outlined in Chapter Two.

1.5 Personal Interest

The expansion of the dairy industry in Austen has occurred at a very fortunate time for me. In recent years there has been high demand for skilled and experienced full-time and part-time dairy farm employees, and I have been employed in both capacities. I have worked on a number of dairy farms in Austen, including those classified as large: a 3,000 dairy cow herd, milked through two 80 bail rotary dairy sheds; and what is now considered as below average: 750 dairy cows milked through a 54 bail rotary dairy shed. Illustrating the various ownership and management structures that operate in the dairy industry, I have worked on a corporate dairy farm, for an equity partnership and a contract milker. And reflecting the changing demands for dairy farm employees, I have worked with New Zealand born employees and an increasing number of migrant dairy farm employees. My experiences of the considerable highs and lows of working in the dairy industry over the last six years are an invaluable resource for this thesis.

To complement these direct experiences, I have also worked as an Artificial Insemination Assistant for the last three years. This seasonal role involved the preparation of semen for insemination of dairy cows by technicians. This opportunity has shown me a side of dairy farming that many individuals would not have the opportunity to experience, providing valuable insights into the workings of the dairy industry that many researchers do not have.

The development of the dairy industry in Austen has supported not only me, but my extended family, with employment as: a tanker driver for Fonterra, irrigation engineer, administrator, and workers in areas of dairy support such as contract calf rearing and winter grazing. This is also proof of the wide-ranging influence that dairy farming now has on individuals in Austen.

1.6 Thesis Structure and Organisation

Following this introduction, Chapter Two will outline the methodological approach that was undertaken for this study. This chapter will identify the techniques that were used for the collection and analysis of data, and discuss the major ethical considerations that were taken into account for this research.

Chapter Three will review the literature that provides the theoretical base for this research. This literature review will focus on the framework that was developed by scholars to interpret change in rural areas throughout the 20th century and applicability to the New Zealand context. The second section of the chapter will focus on the known characteristics of intensive dairy farming, and community change associated with the introduction of a new land use such as intensive dairy farming.

Chapter Four provides a brief historical and contextual overview of the development of agriculture and role of irrigation in Austen. This chapter also includes an interpretation of the development of dairy farming and the influence on the economic development of Austen.

The results of my study will be presented in Chapters Five and Six. The first of these chapters will focus on the traditional land uses in Austen, the subsidy era of agriculture, rural community and farming practices at that time. It will also discuss the development of dairy farming in the region, identifying the first attractions of dairy farming and then those factors association with conversion post-2000. Chapter Six will then focus on the influences of land use change on the rural landscape and community. It will detail the

interpretations of local community members and newcomers regarding the new land use, and how dairy farming has changed the composition and practices within the community.

Chapter Eight will provide a discussion of the results of this study set against the literature that was reviewed in Chapter Two. This discussion chapter will focus on factors associated with change in Austen and discuss the ways in which the introduction of dairy farming to a region creates new physical and social landscapes. Chapter Nine will conclude the study.

Chapter 2

Research Method

This chapter will outline the research method that was undertaken for this study. This will include a discussion of data collection, data analysis, and data management techniques used. With a topic of this nature, there are a number of ethical considerations that had to be taken into consideration and this chapter will discuss these. To conclude this chapter, I will outline the limitations of the research method used in this research.

2.1 Qualitative Research Approach

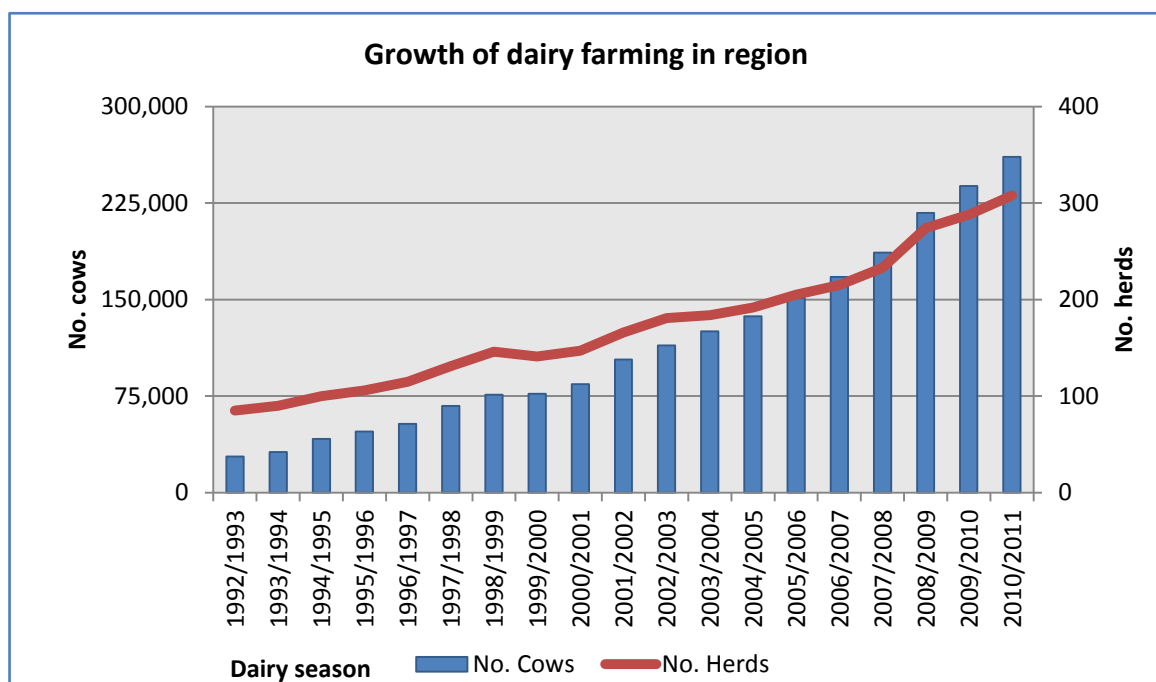


Figure 2-1 Growth of dairy farming in Austen (Source: LIC, 1993-2011)

Figure 2-1 provides a graphic illustration of the growth of dairy farming in Austen. As is the case with quantitative research, these numbers do not *'tell the story'* (Rubin and Rubin, 2005). Figure 2-1 does not provide an indication of how or why dairy farming has developed and the influence that the growth of dairy farming has on the rural landscape

and the rural community. It is on this basis that a qualitative research approach was undertaken for this study to answer these questions.

A qualitative research approach entails the study of individuals in their natural settings, in order to gain an understanding of the interpretations they ascribe to the phenomena under study (Denzin and Lincoln, 2008). Qualitative studies enable the researcher to gain an in-depth understanding of what is being studied (Kneale and Santy, 1999; Merriam, 2002; Rubin and Rubin, 2005; Lofland, Snow, Anderson and Lofland, 2006; Tolich and Davidson, 2011) and generates a rich understanding of the topic using participants' perspectives, experiences, intuitions, and feelings (Kneale and Santy, 1999). The richly descriptive data produced by participants can then be supported in text using words, photographs and observations, that reinforce and further illustrate research findings (Tolich and Davidson, 1999).

2.2 Data Collection

A mixed methods qualitative approach was undertaken to collect data for this thesis. The adoption of this method has many advantages, providing the researcher with a greater understanding of the topic, and serves to enhance the validity of data as *"if different sources of information are saying the same thing, then the social researcher can have some confidence that the findings are valid"* (Tolich and Davidson, 1999: 34). This section will document the methods of data collection that were used for this research.

2.2.1 Exploring the Research Context

Understanding the research context and the current state of knowledge about a research theme and place are critical first steps before undertaking data collection. As such, an extensive literature review was first undertaken and focussed on the theoretical interpretations related to change in rural areas, dairy farming and community change. Online databases and journals were reviewed, as well as central and local government publications, and literature produced by the Lincoln University Agribusiness and Economics Research Unit. Secondary quantitative data were also reviewed for this study

and included Census data for the region. A delay of the 2011 Census has been a limitation for local level government data; it is now all based on projections and forecasts from Census 2006, rather than actual data. Additionally, the annual LIC (Livestock Improvement Corporation) statistics regarding New Zealand dairy farming was an invaluable tool for this, and other dairy farming based research, providing a comprehensive analysis of the dairy industry for each season.

In order to gain a historical overview of the studied region, local history books were reviewed. The most important source of local history in the region is Scotter (1972). This book may be almost 40 years old, but it is the most comprehensive source of history for the region. A subject search (for example: agriculture, dairy farming) of indexed newspaper archives was completed, where details of articles of interest were recorded (totalling 207). I also took a collection of photographs throughout the course of this research. These photographs provided an illustration of the key elements of dairy farming in the region, as well as helping to illustrate the visual change that has occurred in its landscapes. A further visual aide was 'Google Earth', providing a 'bird's eye view' of the physical changes that have occurred in Austen.

2.2.2 Semi Structured Interviews

The primary method of data collection for this thesis was semi-structured interviews. The interview is one of the most powerful and information-rich ways to gather data. There are three different types of interviews that researchers can use: unstructured, semi-structured and structured; the most common method is the face-to-face, semi-structured interview (Fontana and Frey, 2008). The semi-structured interview is essentially a conversation between the researcher and participant, guided by a set of predetermined and open ended research questions, forming an interview guide (Rubin and Rubin, 2005; Fontana and Frey, 2008). This interview guide acts as "*a list of things to ask about when talking to a person being interviewed*" (Lofland *et al.*, 2006: 115). The interview guides for this study comprised of three sections: the first consisted of introductory, historical and background questions; the second consisted of in-depth

questions; and the final section consisted of concluding remarks and questions as the interview drew to a close (Appendix A).

Each interview was digitally recorded and transcribed as soon as practically possible by the researcher. Digitally recording interviews enabled me to focus on listening for words, themes, or ideas that could be expanded upon using a probing question. These sorts of questions are useful when seeking clarification of unfamiliar ideas or terms, or to draw further explanations from participants. In case the digital recordings failed for any reason, brief field notes were taken.

In total, 20 semi-structured interviews were completed with participants. These interviews ranged in length from 30 minutes to 150 minutes. For qualitative research there is no such thing as a perfect sample size (Marshall, 1996), and interviewing continued until data saturation was reached. This is the point where no new themes, concepts or ideas emerge from the data, and when this point was reached interviews ceased.

2.2.3 Participant Selection

A purposeful sampling technique was adopted for this research. This enabled me to select the most productive and information rich sample of participants to answer the research objectives and questions (Marshall, 1996). The adoption of a purposeful sampling technique illustrates that the researcher recognises the '*cast of characters*' (Lofland *et al.*, 2006) and can be based on the researcher's practical knowledge and experience in the study area (Marshall, 1996). In my case, participants were selected on the basis of my occupational network in the dairy industry and contacts in pastoral and other land-based industries. Furthermore, participants were selected to take part in this research on the basis of their membership of the following groups: dairy farmer, dairy farm employee, arable or pastoral farmer, business leader, community leader, or newcomer. In some cases, participants were selected to address both research objectives. For example, one dairy farmer was able to talk about the historical

development of the dairy industry, pastoral and arable farming, and in the capacity as a community member through involvement in the local rugby club and primary school.

2.2.4 Participant Recruitment

After the list of potential participants was selected, participants were then recruited. This involved an initial phone call to participants, at a time judged convenient. For farmers and land-based participants, this was completed during the lunch hour and early evening; and for business and community leaders, this entailed a phone call during business hours. During this phone call I identified myself, discussed the nature of the study and invited the potential informant to participate in the study. All those selected to participate in the study, agreed to participate; although one initially declined citing a heavy workload, but agreed to participate at a later date.

Two participants requested a copy of the Research Information sheet (Appendix B) prior to the interview. This was emailed to them, enabling these participants to prepare for the interview. In one case, the participant prepared a list of information to be discussed at the completion of the interview; this was information that the participant thought pertinent to the study. Interviews were then completed at the participant's convenience, at the researcher's home, participant's homes, or their places of business.

2.2.5 Participant Observation

To gain a direct understanding of dairy farming in the region, a number of observations were also completed. This involved attendance at rural events such as dairy farm focus days, and an open day at a nearby Fonterra² factory. Time was also spent participating in the daily life of a dairy farm employee in the region, completing such daily tasks as: milking cows, collecting cows for morning and afternoon milking, and shifting fences. Participation in these events helped with data interpretation and data analysis. Where possible, brief field notes were completed in the field, and expanded at the end of the day. At times where it was not possible to write brief notes, mental notes were taken

² Fonterra is New Zealand's leading dairy co-operative.

and expanded upon as soon as practically possible. Participants were aware of the researcher being an ‘outsider’, as a Masters student from Lincoln University collecting field data for this study, rather than a fellow employee.

2.3 Ethical Considerations

There are five key ethical principles involved in social science research and these are: voluntary participation, informed consent, do no harm, avoid deceit, and the protection of confidentiality and anonymity (Tolich and Davidson, 1999; Babbie, 2010; Tolich and Davidson, 2011). This research has been conducted in accordance with these accepted ethical practices, and approved by the Lincoln University Human Ethics committee. This section will outline the measures that were undertaken in accordance with the approved Human Ethics committee application.

When participants were first recruited, they were verbally informed of the voluntary nature of the study, their rights to withdraw from the study at any time, and the processes in place to protect their confidentiality. Prior to each interview commencing these points were then verbally reiterated, and in the written Participant Information Sheet (Appendix B), that all participants were required to read before the interview. Participants then signed a consent form (Appendix C), and where relevant, mobile call logs on the researcher’s phone were deleted.

The protection of participants’ identities was a major ethical consideration as *“everyone knows everyone in farming circles”*. Confidentiality and anonymity are not the same, and researchers cannot offer both (Babbie, 2010; Tolich and Davidson, 2011). Anonymity is provided where the researcher is unable to connect the response of the participant to the participant (such as the case in quantitative studies), and confidentiality is where the researcher is able to connect participants to their responses, but does not make this connection public (Babbie, 2010; Tolich and Davidson, 2011). To provide my participants with confidentiality, I assigned them a participant identification number to allow me to connect each participant with the raw data. A master list of these identities and identification numbers were kept in secure place. This ensured that

if participants withdrew from the study, their data could be easily identified and withdrawn. In this thesis, participants have been referred to using a pseudonym assigned by the researcher, and generic title describing their occupation.

As is the case of studies of this kind, such as Somerset's 1938 rural community study entitled '*Littledene*', no readily identifiable reference of any kind has been made to the studied region; and is a further method undertaken to enhance the protection of participants' identities. In text any identifiable features of the region (road names, mountains or people) have been replaced with a pseudonym or alternative generic title such as *river* or *road*. Some very knowledgeable observers may be able to identify the region under study and thus lift the '*veil of confidentiality*' (Lofland *et al.*, 2006), but these measures described here will ensure generally that participants' identities remain confidential.

2.4 Data Analysis

The process of data analysis in qualitative research occurs simultaneously with data collection (Kneale and Santy, 1999), and this is another advantage of qualitative research. The process of data analysis started with transcription of the 20 interviews by the researcher, and provided innate familiarity with all transcripts. The analysis of these transcripts then involved the process of data reduction, data organisation, and data interpretation (Tolich and Davidson, 1999; Tolich and Davidson, 2011). It is from these interview transcripts that the researcher identified themes, ideas, and concepts that were then coded. These codes were based on important themes emerging from the data related to the research objectives and questions (Tolich and Davidson, 2011). In total, 13 primary and 11 secondary codes were developed to form the data set for this research. The interpretations drawn from this data shaped the development of the thesis.

2.5 Critique of the Research Method as used by this study

It is important to briefly critique the use of the qualitative research approach. Firstly, a purposeful sampling method was adopted in the recruitment and selection of participants. This was completed so that I could identify the '*cast of characters*' (Lofland *et al.*, 2006) and to provide the rich and descriptive data that this study needed. There was however, a gender bias in the participants that were selected for this study, with 15 male participants and five female. The high number of male participants was consequent upon the dominance of men in the day-to-day running of farms in the region, and in professional capacities such as farm consulting.

One of the criticisms of qualitative research is that it is value-laden (Tolich and Davidson, 2011). The researcher's values and experiences can influence the research project through the entire thesis process, from the choice of topic, methods used, the research problem, and data analysis (Tolich and Davidson, 1999). In my case, I grew up in the studied region and witnessed the land use change that has been undertaken in the region, and have had firsthand experience of working in the dairy industry. These experiences have given me a particular perspective of the dairy industry and helped to contribute to the recruitment of participants, and my drive to secure in-depth data. To minimise any unintentional bias that may have been caused by this, I consistently reflected on "*what they did, why they did it and how they did it*" (Tolich and Davidson, 1999: 39)

To ensure the credibility and validity of data, a mixed methods approach was undertaken, known as triangulation. Triangulation "*allows comparison of results from different sources, which along with weighting the evidence should provide sufficient evidence that the phenomena or generated theory really did occur*" (Kneale and Santy, 1999: 29). In this case, where a participant reported an event occurring, relevant literature was investigated to ensure the validity of what participants reported: for example, participants highlighted that the first dairying conversions in the region occurred in the 1970s, Roadley (2009) and other newspaper articles were used to reinforce this finding.

2.6 Chapter Summary

A qualitative research approach was adopted for this study as it provides rich and in-depth accounts of participants' experiences, perceptions, and understandings of the studied phenomena. Data were collected using a mixture of social science methods and included: semi-structured interviews, participant observation and secondary data. Participants were recruited using a purposeful sampling technique that was based on my personal knowledge, experience in the region, and its people. To protect participants' confidentiality, no reference has been made to the real name of the studied region in text and participants have been given pseudonyms. Data analysis occurred simultaneously with data collection, where a thematic analysis of interview transcripts enabled the construction of a single data set. The following chapter will present a review of the literature that underpins this thesis.

Chapter 3 Literature Review

Theorising Rural Change and Interpreting Intensive Dairy Farming

Pastoral and arable farming enterprises have shaped, sustained, and contributed to New Zealand's rural communities, landscapes, and economy for many generations. In many places in Canterbury, Southland, and Otago, for example, these enterprises have been replaced by intensive dairy farms. The black and white tide has swept all before it, diversifying and rejuvenating the communities and economies of such regions. This new form of production is a representation of the continued commitment of farmers to the productivist ideology. This literature review will first outline the intellectual frameworks and theory presented by scholars to interpret rural change; and secondly, discuss the theoretical aspects of the shift to intensive agricultural land uses, as exemplified by intensive dairy farming including aspects of landscape and community change.

3.1 Rural Change Literature

Scholarly interest in processes of rural change was scarce before economic restructuring and the subsequent '*rural crisis*' of the 1970s and 1980s throughout the industrialised world (Mackay *et al.*, 2009). This crisis focused the attention of scholars' on understanding how the new regulatory environment was affecting rural people and their use of landscapes (Wilson, 2007; Mackay *et al.*, 2009). Scholars from Great Britain developed a body of literature to characterise the changes that had occurred following the conclusion of World War Two, where the focus was on intensifying agricultural productivity, known as productivism; and the changes that manifested at the end of this era, known as post productivism (Ilbery and Bowler, 1998; Wilson, 2001; Argent, 2002; Evans *et al.*, 2002; Wilson, 2007; Mackay *et al.*, 2009). This latter idea emerged from the recent '*cultural turn*' in social science, where there is now a focus on the rise of rural consumption and associated land uses (Mackay *et al.*, 2009), ideas around processes of

multifunctionality (Holmes, 2002; Holmes, 2006; Wilson, 2007) and commodification of the countryside (Perkins, 2006; Floydsand and Jakobsen, 2007). This section of the literature review will outline and discuss each of these frameworks, and the applicability to my research setting.

3.1.1 Frameworks of Rural Change

Although conceived in the 1990s (Wilson, 2007) productivism describes the period following the conclusion of the Second World War, and the commitment made by governments of industrialised countries to intensifying and maximising agricultural production (Ilbery and Bowler, 1998; Wilson, 2001; Wilson, 2007; Bjorkhaug and Richards, 2008). The commitment to productivism was driven by wartime hardship, fears of global food shortages, and a desire to protect domestic agricultural markets (Bjorkhaug and Richards, 2008; Mackay *et al.*, 2009). This intensification of agriculture was achieved by the introduction of government policy measures to encourage farmers to intensify agricultural production. Productivism can thus be defined *“on the basis of an industrially driven agriculture akin to Fordist modes of production of high quantities of food and strongly supported by the state through subsidies and a productivist policy regime”* (Wilson, 2007: 80).

For Wilson (2001) productivism entails more than government policy and practice. He conceives productivism on the basis of seven interrelated dimensions, these are: *agricultural policies, agrarian ideology, governance, food regimes, agricultural production, farming techniques and environmental impacts*. These interrelated dimensions are required to highlight the *“multitude of different characteristics [that] need to be considered to fully understand [productivism]”* (Wilson, 2007: 81). Mackay *et al.* (2009) note that Ilbery and Bowler (1998) were among the first to define the characteristics of productivism, narrowly defining it on the basis of three characteristics: *intensification, concentration, and specialisation*.

Agricultural policies are often viewed as markers of productivism as they are the most *“easily accessible sets of information”* (Wilson, 2001: 83). Such agricultural policies used

by governments to influence farmers throughout this era include price guarantees, subsidies, and protectionism (Wilson, 2001; Wilson, 2007). This policy framework provided farmers with security to intensify production and enabled them to *“evade the seemingly immutable laws of supply and demand – producing maximum product without any significant diminution of market price”* (Haggerty et al., 2009: 770). This policy framework was created by a small and exclusive group of individuals and stakeholders who had convinced governments that these financial support measures were a necessary policy requirement (Wilson, 2001; Wilson, 2007).

Farmers as food producers for the nation, held the central hegemonic position in society and rural communities (Wilson, 2001; Wilson, 2007). The land use was considered the most important activity occurring in rural areas and *“assumed to be essential, inherently positive, and associated with lifestyles that are ideal, natural, virtuous, and democratic. Urban life, by contrast, [was] interpreted as artificial and morally inferior”* (Egoz et al., 2006: 54). It was urban interests that were perceived as the main threat to rural areas (Wilson, 2001; Wilson, 2007).

In this regime, the importance of farming was a central element of farmers’ beliefs regarding the use of rural space. In the pursuit of additional production, farmers removed landscape features that impeded production (Gravsholt Busck, 2002), for example, 22 per cent of hedgerows in Great Britain were removed between 1960 to 1990 (Woods, 2005). In New Zealand, trees and hedges were not valued unless they contributed to the productive process (Egoz, Bowring and Perkins, 2001), as one participant in the study commented *“to me . . . they’re only two types of trees and that’s firewood and lambing shelter”* (Egoz et al., 2001: 88). In contrast, other studies have found that the removal of landscape features challenges the natural character of rural areas and contributes to the destruction of families’ landscape histories *“rendering their life’s work inconsequential”* (Barlow and Cocklin, 2003: 515).

Agricultural production intensified as farmers altered their farming techniques to embrace the productivist ethos. The industrialisation of agriculture and mechanisation of farming equipment, such as the introduction of tractors and combine harvesters,

helped to modify the natural processes of agriculture and accelerate intensive production processes (Ilbery and Bowler, 1998; Wilson, 2007). Modification of natural processes occurred further through the use of biochemical inputs (fertilisers and pesticides) that were subsidised by government (Wilson, 2007). Fewer, but larger farms developed as farmers opted for production of specialised commodities (Ilbery and Bowler, 1998). However, with government subsidies and mass consumption of agricultural production farmers became locked *“into a treadmill of production that [was] geared toward increases of production and profit”* (Bjorkhaug and Richards, 2008: 99). Caught in this cycle, over-production of agricultural commodities and surpluses became a problem characterised by such things as *‘Butter Mountains’* and *‘Milk Lakes’* (Bjorkhaug and Richards, 2008). Increased government support was justified to protect farmers from fluctuations in commodity prices, but placed pressure on state and society (Woods, 2005; Wilson, 2007).

Agricultural production in the developed world increased by 60 per cent from 1960 to 1990 with the support of the productivist framework (Woods, 2005). Environmentally, the impacts of pursuing productivist policy were becoming publicised in the 1970s and 1980s. The increased use of fertilisers *“to make up for the rapid nutrient losses caused by intensive farming”* (Wilson, 2007: 93), and application of pesticides had a detrimental effect on the bio-physical environment, with harmful effects on waterways, pastures, soils, habitats, and native biodiversity (Woods, 2005; Wilson, 2007). In Great Britain for example, 90 per cent of wildlife rich meadows and 30 to 40 per cent of woodland disappeared at this time (Wilson, 2007).

These environmental impacts, combined with high commodity costs (particularly those associated with oil and its many by-products) and surpluses in agricultural production contributed to a farming crisis in the 1980s (Bjorkhaug and Richards, 2008). This crisis *“facilitated several new measures to reverse [the] negative effects of productivist style agriculture”* (Bjorkhaug and Richards, 2008: 99) and foremost among them was the reduction in government financial support and policy for agriculture (Wilson, 2001; Wilson, 2007). Without the aid of subsidies and other financial support mechanisms, farmers reduced the intensity of farming, adopting environmentally friendly and

sustainable farming practices (Ilbery and Bowler, 1998; Wilson, 2001; Wilson, 2007). Scholars interpreted these changes as the transition from productivism to post productivism (Wilson, 2001; Argent, 2002; Wilson, 2007; Bjorkhaug and Richards, 2008). Ambiguity still surrounds the definition of post productivism, but it has largely been defined in opposition to productivism (Wilson, 2007) to productivism as:

A loss of hegemonic dominance and a move away from agricultural fundamentalism; to comprise a wider agricultural community of policy makers; to involve new market relationships and changing consumer behaviour; to involve less emphasis on commodity production and less state support; to involve reduced intensity of farming, less environmental damage and a shift towards sustainable agriculture and conservation or restoration of valued landscapes and habitats (Jay, 2004: 152).

In Great Britain, post productivism is evidenced by the transition to less intensive farming practices and a diversification to non agricultural enterprises (Ilbery and Bowler, 1998). This included *“the development of farm tourism, on-site farm shops, horse riding centres, on site food processing, pick-your-own fruit enterprises, and craft shops”* (Woods, 2005: 55). It was expected that in general, agriculture would contribute to a reduction of the total farm income, as individuals engaged with alternative off-farm employment or non agricultural enterprises (Ilbery and Bowler, 1998).

Post productivism has not been generally accepted as a descriptor of rural change outside Great Britain and Europe and recognising this Wilson (2001: 90) asks *“how easily can the notion of post-productivism be transferred to other geographical settings?”* Argent (2002) is one such scholar who used the term to interpret rural change in Australia. Post productivism *can* be applied to the Australian context when events and processes are *“selectively interpreted so as to fit the pre-given eras, thereby lending support to the argument”* (Argent, 2002: 106). Post productivism fails to account for the farm level change that occurred in Australia. Some of the diversification strategies continue to be productivist or do not generate significant income to be considered post productivist (Argent, 2002). Diversification strategies that were interpreted as viable alternatives by British scholars would in Australia and other countries *“never be seriously considered because they are literally unthinkable”* (Wilson, 2001: 87).

Holmes (2002) is another Australian scholar who engages with post productivism and finds that the drivers of change differ from those evident in Europe or Great Britain. Holmes (2002) argued that rural change in Australia has been driven by agricultural overcapacity, emerging amenity oriented uses of the countryside, and changing societal values associated with environmental protection. These drivers of change in Australia ensure that rural areas now serve multiple functions, as part of a multi-functional countryside. Rural areas are no longer solely a place of food and fibre production, but places of landscape and biodiversity maintenance, socio-economic viability and vitality, and a generator of employment (Potter and Burney, 2002; McCarthy, 2005; Bjorkhaug and Richards, 2008). Multifunctionality becomes a characteristic of all rural properties because while they may outwardly contribute to production or consumptive values, they also have to contribute to protection as mandated by environmental or sustainable resource legislation (Holmes, 2006). At one time, multifunctionality was *“poised to succeed postproductivism as a framework within which to interrogate rural dynamics”* (McCarthy, 2005: 774) but now consumptive uses in the countryside are driving change.

3.1.2 New Zealand Agriculture

Before discussing the relevance of post productivism and multifunctionality to New Zealand agriculture, this section will first discuss New Zealand agriculture in the post Second World War period and the way it exhibited all the features of productivism. New Zealand agriculture was *“geared towards the commercial production of bulk commodities, strongly influenced by scientific research, maintained strong political influence and support, and involved enormous destruction to the pre-agricultural environment”* (Jay, 2004: 157). Jay (2004) is one of the only New Zealand scholars to have directly engaged in debates about productivism and post productivism. The remainder have focussed instead on contextual work addressing the changing nature of agriculture in a globalising and neo-liberalised environment, and the ways in which individuals and places have responded to change (Mackay *et al.*, 2009).

Evidence of productivism in New Zealand is drawn from government policy and the response of farmers to intensify production. Farmers had full financial support from the

New Zealand Government to intensify production, and when agricultural commodity prices fluctuated, were provided with a number of interventions to stabilise prices (Le Heron, 1989; Jay, 2004). Farmers, helped by subsidies on fertilisers, parasite drenches, and pesticides improved the productive potential of land. Fertiliser application, for example, increased from 1,000,000 tonnes in 1960 to 3,000,000 tonnes in 1985 (Smith and Montgomery, 2003) and encouraged by such things as the '*Livestock Incentive Scheme*' and '*Supplementary Minimum Price Scheme*' increased farm stocking rates by 150 per cent (MacLeod and Moller, 2006). Strong links were maintained between the National Party³ (the governing political party for all but six years of the productivist era) and Federated Farmers (a farmer advocacy group). This close relationship saw Federated Farmers labelled the National Party in gumboots (Gustafson, 2007). Those associated with the intensification of agriculture such as agricultural scientists, policy makers, and farmers were perceived to be kings and "*upheld as heroes*" (Jay, 2004: 158).

The New Zealand version of productivism by the 1980s was widely recognised as environmentally and economically damaging. The pursuit of productivism led to the destruction of indigenous forest and wildlife in the Waikato; where for example, 85 per cent of lowland native forest and wetlands were removed, and 800 species of animals, fungi, and plants were threatened (Jay, 2005). Concerns mounted regarding the resource exploitation of soil, water and native biodiversity (Jay, 2004). The financial price of the productivist ideology mounted, costing \$2.5 billion from 1980 to 1985, and unable to sustain these costs, the fourth Labour Government in 1984 removed all financial stimuli for agriculture and introduced strict environmental legislation (Cloke, 1989; Le Heron, 1989; Jay, 2004; Barnett and Pauling, 2005; Haggerty *et al.*, 2009)

3.1.3 Post productivist New Zealand?

Given the theorising of such changes in Great Britain and Europe, one would have expected that New Zealand agriculture and its rural areas, would transition to post productivist land uses. For without financial support from government, farmers would

³ Keith Holyoake (New Zealand Prime Minister 1957, 1960-1972 and later Governor General) held particularly strong links to Federated Farmers, serving on the board that established the organisation (Gustafson, 2007).

have been expected to be less reliant in intensive inputs and make changes or decisions regarding their land use *“in accordance with local and global market signals”* (Egoz *et al.*, 2006: 55). The short term response to these new conditions for farmers was to reduce farm inputs and cut farm spending, an example of this is the dramatic reduction of fertiliser use: from 3,100,000 tonnes in 1984 to 1,700,000 tonnes in 1987 (Smith and Montgomery, 2003). Alternatives for land use were limited by the financial conditions farmers now faced: incomes declined as time passed, interest rates increased and land values dropped⁴ (Johnson and Sandrey, 1990). As time passed, and contrary to European theory, outside areas of high amenity where tourism, amenity migration, and allied high status products such as wine have predominated, for most New Zealand farmers, economic restructuring has increased the productive pressures of farming. Instead of transitioning to post productivist land uses, they have adopted more *intensive* and *productivist* farming practices on a large scale to survive (Evans *et al.*, 2002; Smith and Montgomery, 2003; Gray and Le Heron, 2010).

Intensive dairy farming provides an excellent example of productivist intensification not only at an industry level, but also the ways it has expanded into regions that had previously been dominated by other land uses. Dairy farms are *“managed primarily for commercial value as opposed to non-material values such as cultural or natural heritage, personal or group identity, recreation or enjoyment, or quality of life”* (Jay, 2007: 268). The dairy industry itself was ‘*well placed*’ to take advantage of the new economic conditions that prevailed in the post restructuring period; with a good internal governance structure, established global marketing regimes, and increasing demand for New Zealand dairy products in Europe and developing markets in Asia (Barnett and Pauling, 2005).

⁴ South Island farms lost 62 per cent of their 1982 value by 1988 (Johnson and Sandrey, 1990).

Removed due to copyright

Figure 3-1 An interpretation of Fonterra's continued prosperity
(Source: Crump, 2011)

In earlier times, the dairy industry was predominantly concentrated in the North Island, where small farms were operated by families and produced milk for abundant small dairy co-operatives (Gray and Le Heron, 2010). These dairy co-operatives gradually merged throughout the 20th century to form two large dairy co-operatives in the 1990s (Kiwi Dairies and the New Zealand Dairy Group), culminating in the formation of Fonterra (Figure 3-1) in 2001⁵ (McCarthy, 2002; Gray and Le Heron, 2010). Fonterra now has over 10,000 suppliers and exports 95 per cent of milk produced, to be made into a wide range of products (Schilling, Zucollo and Nixon, 2010).

The last decade has been particularly prosperous for the dairy industry, driven by continued global demand for New Zealand dairy products (Figure 3-2). For the 2010/2011 dairy season, farmers were paid \$8.25 per kilogram of milk solids produced (Fox, 2011), a record high for Fonterra.⁶ These developments have enhanced the attractiveness of large scale, commercially led, dairy farming over other farming types. '*At the farm gate*' production per cow has increased by 20 per cent since 1995 (and continues to increase), at a time when: dairy herd numbers had declined annually by 160 herds and average herd sizes increased; although the current prosperity of dairy industry is reversing this trend (Gray and Le Heron, 2010; LIC., 2010).

⁵ Other dairy companies now operate in New Zealand such as Tatua and Westland, and recent arrivals Synlait and New Zealand Dairies.

⁶ The previous record was \$7.90 achieved in 2008 (Fox, 2011)

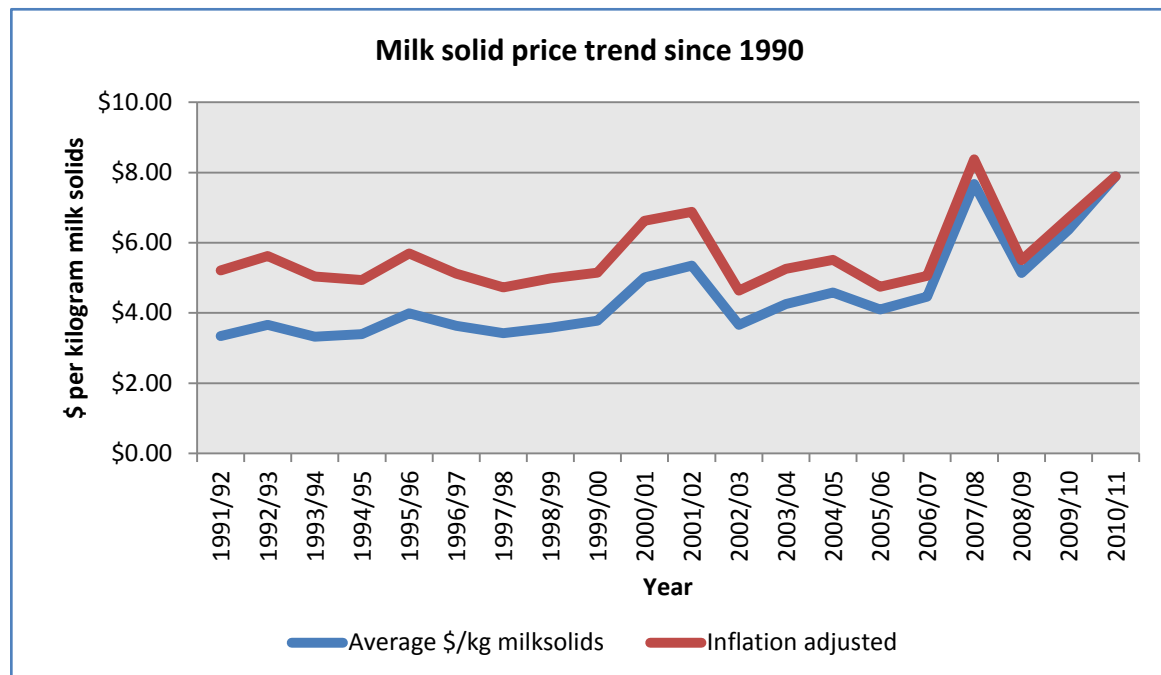


Figure 3-2 Dairy commodity price trend 1990-2011 (Source: LIC., 2011: 39)

The South Island of New Zealand is an area of recent dairy farm expansion and intensification (Gray and Le Heron, 2010). Recent theoretical discussions regarding the commodification of the countryside can be used to interpret the development of the dairy industry in this region. In these terms, intensive dairy farming has expanded as capital has sought new ways to accumulate, replacing those land uses that have become unprofitable (Perkins, 2006). The dairy industry now *“underpins the establishment of new rural geographies and ensembles of production”* (Perkins, 2006: 243). In Canterbury, in particular, freshwater irrigation is directly linked to these processes as it provides reliable and consistent pasture growth required for intensive dairy farms (see Section 4-2 for an in-depth discussion of irrigation).

The environmental practices associated with intensive dairy farming have been criticised in some quarters. The need for irrigation has placed pressure on the supply of freshwater (Barnett and Pauling, 2005; Closey, 2009), and the intensive use of fertiliser and production of large quantities of excrement has raised concerns related to fertiliser run-off, excrement disposal, and water quality (Perkins, 2006). To mitigate these concerns Fonterra has introduced stringent environmental regulations. The Clean Streams Accord (2003), for example, requires farmers to (among other things) fence off

streams and water ways from wandering dairy cattle⁷ (Jay, 2007; Gray and Le Heron, 2010). These are some of the examples of the effects of environmental political pressures on the dairy industry, and also illustrate how elements of post productivism and multifunctionality are being brought to bear on mainly intensive and productivist intensive dairy farming. In this context one imperative piece of legislation is the '*Resource Management Act 1991*', which has introduced strict environmental legislation on rural areas where previously farmers had little legislative hindrance in their use of rural areas (Jay, 2004; Barnett and Pauling, 2005). Thus while farmers in New Zealand operate in a productivist mode, they are unable to free themselves completely from some of those elements that are characteristic of post productive and multifunctional regimes.

This section has presented the frameworks through which rural change has been interpreted. Productivism and post productivism have been the two major descriptors of rural change and both can be applied in this New Zealand context. Scholars predicted that in response to economic restructuring farmers would alter their land use practices to incorporate extensive and environmentally sustainable land uses (Ilbery and Bowler, 1998; Wilson, 2001; Woods, 2005; Wilson, 2007). Economic restructuring has instead increased the productive pressures on some New Zealand farmers who have diversified their land uses to such things as intensive dairy farming, albeit in an environment with stricter environmental regulation. The next section will discuss the unique characteristics of intensive dairy farming.

3.2 Characteristics of Intensive Dairy Farming

As a rural land use, the labour requirements and modes of operation of intensive dairy farming differ substantially from traditional land uses. The purpose of this section is to identify and discuss the characteristics of dairy farming and the social influences of the land use on the surrounding community. As such, this section will delve into the

⁷ An Environment Canterbury report for the 2009/2010 dairy season found that of the 816 dairy farms in Canterbury, 8.4% were significantly or majorly non compliant of their resource consents (Tricker and Wells, 2010). For the 2008/2009 dairy season 19.3% were significantly or majorly non compliant (Tricker and Wells, 2010).

practices of dairy farming including: the day-to-day roles, responsibilities and working situations of dairy farm employees, the dairy career pathway, employee migration and the place of migrant workers in the dairy industry.

3.2.1 Labour Characteristics of the Dairy Industry

Dairy farming is a labour intensive and repetitive occupation. Dairy cows are milked twice per day (usually at 5 am and 2.30 pm) for up to 300 days per year. In a country where the standard working week is between 37 and 40 hours per week, Wilson and Tipples (2008) highlight that 61 per cent of dairy farm employees worked more than 50 hours per week. Owing to the seasonal nature of dairy farming, daily working hours fluctuate throughout the dairy season, and according to an employee's position. A recent survey of Agriculture Industry Training Organisation of New Zealand (AgITO) students from 12 regions of New Zealand, found that dairy farm employees worked (on average) 58 hours per week during summer and 64 hours per week during calving (Tipples and Greenhalgh, 2011). Dairy farm employees have scheduled days off fortnightly or weekly.⁸ The dairy industry once had a poor reputation for scheduled time off, but this is improving as employers recognise the value of regular down-time for their employees (Greenhalgh, 2010; Tipples and Greenhalgh, 2011).

Although improving, these long hours associated with a career in the dairy industry have been identified as one of the many 'turn offs' for individuals considering a career in this branch of agriculture (Kuriger, 2001; Martin, 2002). Dairy farming is perceived by secondary school students as an occupation that involves hard work, a poor social life, and required *only* a secondary school qualification. This perceived lowly education requirement and associated low status, are supported by the research findings of Wilson and Tipples (2008); where the highest educational achievement for over 50 per cent of dairy farm employees surveyed was a secondary school qualification (School Certificate or NCEA level 1 or 2). These low educational requirements expected of dairy farm employees, suggests that *"bright students shouldn't be thinking of a career in the dairy*

⁸ Tipples and Greenhalgh (2011) found there were 50 different roster combinations of the dairy farm employees surveyed. The most common were 12 days on and 2 days off, 11 days on and 3 days off and 18 days on and 3 days off.

industry” (Kuriger, 2001: 13). However, the changing nature of modern dairy farming now necessitates that an industry-related (AgITO) or tertiary education will be expected for some employees.

It should be said that this negative perception is not limited to a career in dairy farming, but also agriculture in general, perceived by young individuals as ‘*unskilled, unsexy and unfashionable*’ (Murray, 2006). There has been a 60 per cent decline in the number of individuals aged in their twenties undertaking a career in agriculture since the 1980s (Fairweather and Mulet-Marquis, 2009). This trend is predicted to continue as young individuals are put off agriculture by low incomes and abundant opportunities elsewhere (Taylor and McCrostie Little, 1995; Fairweather and Mulet-Marquis, 2009). A problem tracing patterns that may or may not be emerging in agriculture had been a lack of interest from the New Zealand government and related industries in collecting information regarding agriculture and its people (Fairweather and Mulet-Marquis, 2009). This problem is perhaps best illustrated by the dairy industry, where there is a wealth of information collected annually on individual dairy cows (on such things as production and fertility⁹), yet there is a distinct lack of information collected on the individuals involved in dairying (Tipples, Wilson, Edkins and Sun, 2004). Despite calls by Tipples *et al.* (2004) for further research into the individuals involved in dairy farming, this story about the lack of information holds true today (Callister and Tipples, 2010).

Somewhat of a contradiction to the current state of knowledge, where young individuals appear to be deterred from a career in agriculture, dairy farming is still considered a ‘*young person’s game*’ (McCrostie Little and Taylor, 2001). In their study of the Waitaki and Amuri regions (located on the South Island’s East Coast) after the introduction of dairy farming, McCrostie Little and Taylor (2001) found that the new population of employees tended to be from the lower to mid stages of the life cycle, with young children. The expansion and introduction of the dairy industry in Canterbury has brought a high proportion of employees aged in the 20 to 24, 24 to 29, and 35 to 39 age groups (Wilson and Tipples, 2008). In comparison, the Waikato region (an established dairy

⁹ This information is used by dairy farmers to decide whether to keep individual dairy cows, to sell or cull.

farming area) is poorly represented by young people, with a high proportion of employees aged over 55 (Wilson and Tipples, 2008).

3.2.2 Dairy Farm Career Pathway

Once the difficulties of employee recruitment are overcome, the dairy industry offers motivated individuals the opportunity to advance their careers very quickly. By gaining the appropriate management and practical experience, a dairy farm employee can rise from an entry level position to a management position within five years. Figure 3-3 provides an illustration of the well defined career pathway that the dairy industry offers.

Removed due to copyright

Figure 3-3 Dairy farm career pathway (Source: Go Dairy, 2010)

It should, however, be pointed out that while providing opportunities for people to advance their careers, the dairy industry is reliant on an unskilled workforce to work in positions such as farm assistants or milk harvesters. By no means can everybody reach the higher levels, and at any one time there will be a significant number of lowly skilled workers in each dairy farming district (Callister and Tipples, 2010).

Sharemilking has been an integral step for a dairy farm employee towards eventual farm ownership (Tipples, 1987; Blunden, Moran and Bradly, 1997). Sharemilking is the contractual agreement between a sharemilker and land owner, where: the sharemilker contracts labour, machinery, and contributes to a small percentage of farm costs. In

return they will receive a percentage of income generated by the sale of milk^{10,11} (LIC., 2010); the land owner will own the dairy herd, land and other related means of production. (LIC., 2010). The additional debt required to operate these agreements can be daunting or intimidating (McIntosh and McIntosh, 2009), and as such dairy farm employees may instead prefer to pursue a career in dairy farm management or investment as an alternative to sharemilking. McIntosh and McIntosh (2009) chose to pursue a career in dairy farming, after realising they may not attain land ownership as pastoral farmers, and it has taken them seven years to become 50/50 sharemilkers. This is one of the advantages of the dairy industry, that through a combination of hard work and financial stringency, dairy farm employees can progress their careers rapidly.

This advantage is however being eroded by the current prosperity of the dairy industry and associated high land values, land ownership is being pushed away from dairy farm employees (Tipples *et al.*, 2004; McIntosh and McIntosh, 2009). Tipples *et al* (2004: 11) suggest *“the prospect of future farm ownership seems more remote and less of an incentive to work up from the lower rungs of the traditional dairy career ladder than it had done”*. An increasingly popular alternative to individual land ownership is the equity partnership. This involves a group of individuals pooling their capital and expertise together to own a dairy farm, typically employing a manager to oversee the day-to-day operations of the farm (The National Bank, 2011). There is an element of risk involved in the operation of equity partnerships, especially if there is a breakdown in the personal or working relationships of the partners involved.

This contrasts with the pathway to farm ownership amongst pastoral and arable farming. The pathway to farm ownership has been typically achieved through the process known as intra-generational succession (Taylor and McCrostie Little, 1995). Families have a deep commitment to ensuring that their properties remain in family ownership: *“it [the farm] is a sixth generation property [and] we would kill ourselves to keep it in the family”* (Taylor and McCrostie Little, 1995: 121). This process involves the

¹⁰ There are two types of sharemilking agreements: lower order (21 to 44 per cent) and 50/50 (LIC., 2010).

¹¹ Contract milking is a variation to sharemilking, where contract milkers are paid a set amount per kilogram of milk solids produced. They will not benefit or be at a disadvantage from price fluctuations as sharemilkers can be (LIC., 2010).

gradual transfer of the day-to-day management, decision-making capabilities, and property ownership to a suitable successor within the immediate family (usually son or sons) (Keating and Little, 1991; Bohnet, Potter and Simmons, 2003). Without such family support land ownership is a difficult endeavour, but can be achieved through labouring on farms, gaining experience, knowledge, and financial capabilities to purchase a farm (Taylor and McCrostie Little, 1995).

3.2.3 Dairy Farm Employee Migrations

In an effort to advance their careers, dairy farm employees will move to new places of employment annually. This day, known as Gypsy day (June 1st of each year), people, possessions, and dairy cows will move to new places of employment (Tipples and Morriss, 2002; Tipples and Lucock, 2004b; Tipples and Wilson, 2005). Gypsy day coincides with the commencement of new employment contracts and the new dairy season. Wilson and Tipples (2008) used Census data (1996 to 2006) to interpret and analyse the movement of dairy farm employees within New Zealand. Figure 3-4 provides an illustration of the movement of dairy farm employees over this period. Reflecting the growth of dairy farming in the South Island, movement has been more volatile than the North Island, where movement had been quite stable (Wilson and Tipples, 2008).

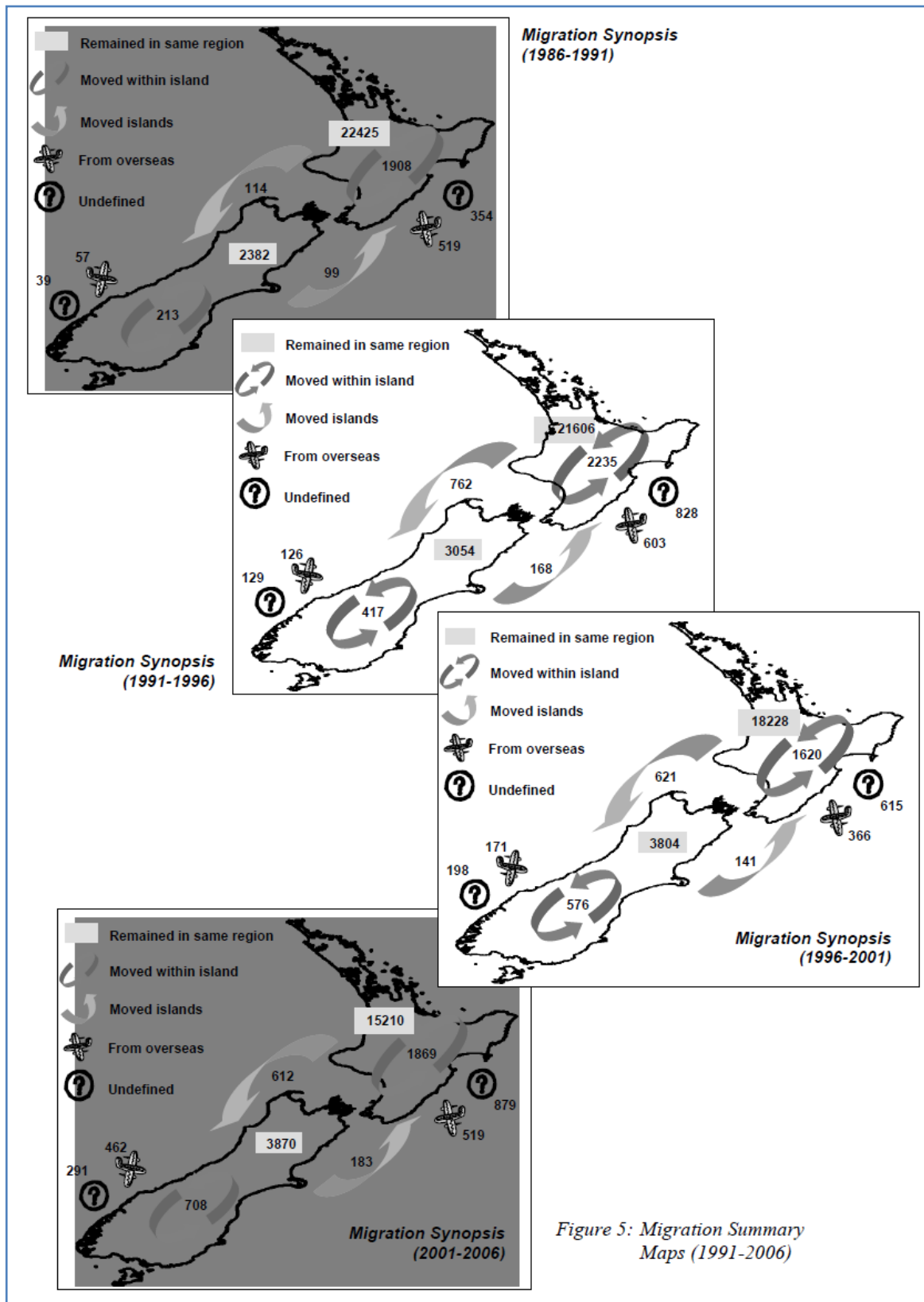


Figure 3-4 Movement of Dairy farm employees 1991-2006 (Source: Wilson and Tipples, 2008: 27)

Our understanding of the motives dairy farm employees have for leaving their place of employment has not been well understood. This is changing as forthcoming research hopes to elaborate on these processes. Tipples and Greenhalgh (2011) produced a report for Dairy New Zealand providing a baseline of dairy farm employees' experiences of people management. They identify that the average length of time of participants' employment on a farm had been 1.6 years, and the longer employed in the dairy industry, the more employers they have had (Tipples and Greenhalgh, 2011). Movement is not limited to the 'Gypsy Day' period, spring is the most active time of employee turnover outside this period¹² (Callister and Tipples, 2010). Possible factors stimulating this movement include: working conditions not matching expectations, disagreements with employer or employees, or finding a better paying job elsewhere.

Existing research suggests that the movement of dairy farm employees also has an influence on the surrounding rural community and rural schools. Rural schools, in particular, are more than a place of learning: they are the centre of community, a place of interaction for sport or cultural activities, a location for the development of community spirit, and identity (Lyson, 2002; Campbell, 2004; Witten, McCreanor and Kearns, 2007; Kearns, Lewis, McCreanor and Witten, 2009). This is particularly the case, as rural schools are often one of the few remaining places of interaction in conjunction with the small rural store, (often abandoned) post office, and petrol station (Kearns *et al.*, 2009).

As a consequence of the continual influx and exodus of dairy farm employees, the viability of rural schools is often challenged (Kearns *et al.*, 2009). This fluctuation occurs as *"share milking families' move in and out of communities, creating an uncertain equation for predicting school enrolment numbers from season to season"* (Kearns *et al.*, 2009: 137). Kearns *et al.* (2009) found that Ministry of Education lacked the understanding of the intricacies of the operation of rural schools, particularly the role of seasonal employment and rural schools. School rolls are audited, for which future funding is based, in July, at a time when rural school rolls are fluctuating. This problem

¹² Spring is a very stressful time for dairy farm employees, who work long hours during calving and then start Artificial breeding in October.

has been further exacerbated by the threat of the Ministry of Education closing small, often rural schools, in the 1990s and 2000s (Campbell, 2004).

3.2.4 Migrant Dairy Farm Employees

In recent years, a number of factors have placed pressure on the supply of New Zealand born dairy farm employees, at a time when there has been significant demand for employees and expansion of the dairy industry. Potential New Zealand born employees have been '*put off*' the dairy industry because of well publicised problems with long working hours, working conditions, salaries, treatment by employers, and poor promotion of employment opportunities in the dairy industry (Tipples and Morriss, 2002; Tipples, Trafford and Callister, 2010). This pressure has been mitigated by the introduction of temporary or long term migrant dairy farm employees, who now form a vital part of the dairy farm employee labour force (Tipples and Lucock, 2004a; McIntosh and McIntosh, 2009; Callister and Tipples, 2010; Tipples *et al.*, 2010)

Migrant agricultural labour in New Zealand has traditionally been drawn from Western Europe and Great Britain, but increasingly workers from Asia, Africa and South America are coming to New Zealand (Tipples and Lucock, 2004a; Fegan, 2009; Callister and Tipples, 2010; Tipples *et al.*, 2010). Fegan (2009) concluded that there have been three phases of migrant labour in New Zealand: firstly in the 1980s where British and Irish workers came to New Zealand after finishing university to gain experience before continuing a career at home; secondly in the 1990s when political issues in South Africa and Zimbabwe brought an older population of workers (20 to 50 years) to New Zealand. These workers had extensive experience in farming, but often no or few qualifications (Fegan, 2009). Finally the most recent phase of migrant labour has drawn from workers in Asia, a feature of the dairy industry since 2005. This group (usually males) have often left a family (wife and children) and come to "*earn money to send home to improve the life of their family*" (Fegan, 2009: 32).

Figure 3-5 provides an illustration of the increasing number of temporary work visas that have been approved for dairy farm employees, and the proportion approved for

temporary Filipino workers in recent times (Callister and Tipples, 2010). In the last eight years, the number of temporary work visas approved for migrant dairy farm employees has increased from 516 to 1957 (Callister and Tipples, 2010) and a group of Filipino workers has concentrated in the Canterbury region (Wylie, 2009; Tipples *et al.*, 2010).

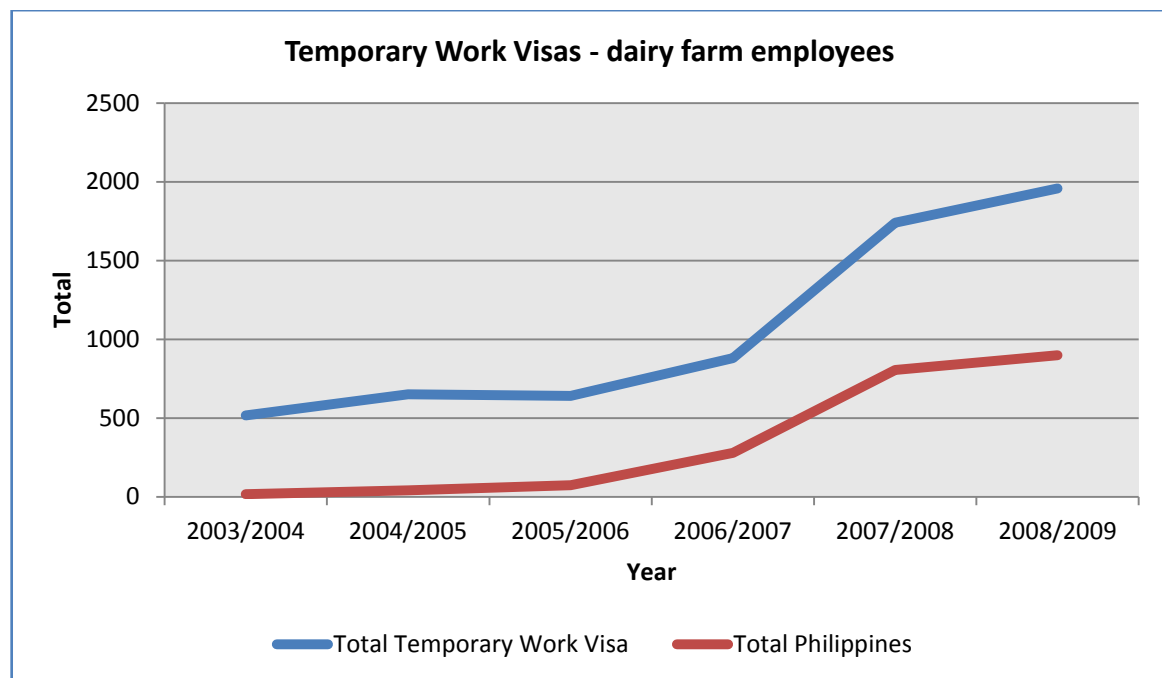


Figure 3-5 Temporary work visas for migrant dairy farm employees and proportion of Filipino applicants (Tipples and Callister, 2010: 13-14)

These migrant dairy farm employees are considered to be '*economic migrants*', attracted to New Zealand by the opportunity to earn salaries higher than those they could receive at home; but also the capacity to create a new life, better working conditions, and the opportunity to gain practical experience (Tipples and Lucock, 2004a; Tipples *et al.*, 2010). New Zealand dairy farm employers have found that these migrant dairy farm employees have a better skill set than some New Zealand workers and have made a positive contribution to their businesses (McIntosh and McIntosh, 2009). Migrant workers have been hard working, reliable and tolerant of poor working conditions (Tipples *et al.*, 2010).

An issue for migrant dairy farm employees is their ability to successfully integrate into the New Zealand community (Tipples and Lucock, 2004a; Tipples *et al.*, 2010).

Integration into a rural community is important, as the establishment of strong social networks and friendships within the area of their employer's farm can mean they are more inclined to stay in the region for the long term (Hall, Garnett, Barnes and Stevens, 2007). This strong social network can be enhanced by a concentration of workers or individuals from the same country of origin or ethnicity (Colic-Peisker, 2002; Gozdziaik and Bump, 2004; Cvetkovic, 2009). This concentration provides an '*ethnic bubble*' and acts as a "*linguistic and cultural shock absorber*" (Colic-Peisker, 2002: 156), but can also segregate, creating barriers between migrant workers and the host community (Colic-Peisker, 2002). It is possible, however, that the host community may not provide for the social, cultural, and economic needs of newcomers which necessitates some level of segregation (Chavez, 2005). Despite this, these workers report wanting increased opportunities to interact with the surrounding community, along with better access to English lessons, and help with purchasing and licensing of vehicles (Tipples and Lucock, 2004a).

Having now discussed the characteristics of dairy farming and dairy farm employees, in the next section I shall highlight the known effects of the introduction of dairy farm employees to traditionally pastoral and arable communities.

3.3 Community Change

"Friendships formed between children at school, can shape the social networks of a rural community for decades" (Woods, 2005: 101)

Pastoral and arable families have been the heart of rural communities for many generations (Smithers, Joseph and Armstrong, 2005). Such communities have been described as '*close knit*', '*cohesive*' and '*exclusive*' (Salamon, 2003; Smithers *et al.*, 2005; Bosworth and Willett, 2011). These families have held positions of authority and leadership, as well as, an extensive knowledge of important community traditions, history, and local practices (Barlow and Cocklin, 2003). While we have only a limited understanding of the community level change that occurs when dairy farming is introduced into these rural communities, it seems likely that established social patterns

are often disturbed in the process. This section will first discuss the population change that occurs with the introduction of dairy farming and then present the ways in which the dairy farm employee and host communities' are known to conflict.

3.3.1 Population Change

The conversion of pastoral and arable land to intensive dairy farming, can create the perception that the population of a region has dramatically increased (McCrostie Little and Taylor, 2001; Taylor *et al.*, 2003). The direct labour requirements of dairy farming differ from that of traditional pastoral and arable farming, and so necessitate an increase to the population (McCrostie Little and Taylor, 2001). A pastoral or arable farm, for example, may require up to two fulltime employees, whereas a 750 dairy cow farm (of similar area) will require up to four or five fulltime employees, who will live on the farm. In the Waitaki and Amuri regions, there was the perception that the population of each had 'boomed' after the introduction of dairy farming (McCrostie Little and Taylor, 2001; Taylor *et al.*, 2003). But as Table 1 illustrates after the initial boom following the introduction of the dairy farm employees population, growth thereafter is modest and mirrors growth of the New Zealand population (McCrostie Little and Taylor, 2001). Table 1 also illustrates that the introduction of dairy farming to a rural area can reverse population declines.

Table 1 Population Growth of Amuri and Waitaki Areas (Source: Taylor *et al.*, 2003: 4)

Year	Waitaki	Amuri	New Zealand
1986	4.8	-2.8	3.8
1991	6.7	-8.6	3.4
1996	4.3	6	7.2
2001	-1.1	6.7	3.3

A further indication of the transition to intensive dairy farming in the Waitaki and Amuri, was structural changes that occurred to each population. Figure 3-6 illustrates the increase in the number of dairy farm employees in the total farm worker population. At the time the research was conducted, the total dairy farm employee population in New

Zealand had been stable for 30 years, but has increased in these South Island regions. These younger dairy farm employees replaced the older generation of pastoral and arable farmers (McClintock *et al.*, 2002). The percentage of dairy farm employees aged under 30 in the Waitaki increased from 24.5 per cent in 1981 to 36.6 per cent in 2001 (McClintock *et al.*, 2002). This compares to the *total* New Zealand dairy farm employee population in which the percentage of employees under the age of 30, declined over the same period from 34.1 per cent to 22.2 per cent (McClintock *et al.*, 2002).

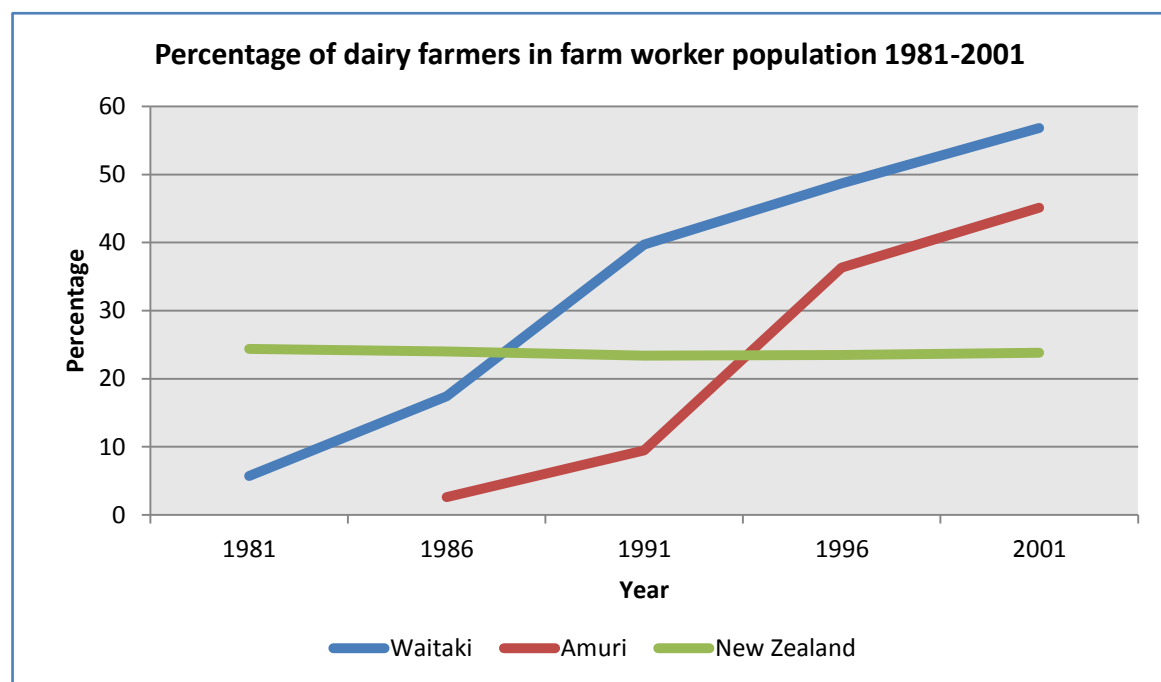


Figure 3-6 Structural changes in population (Source: Taylor, McClintock and McCrostie Little, 2003: 6)

Significantly the introduction of dairy farming can also serve to change the land ownership patterns in rural areas (McCrostie Little and Taylor, 2001; McClintock *et al.*, 2002; Taylor *et al.*, 2003). Land ownership change occurs in three waves and is in response to changing farmer ideologies with respect to the use of irrigation. The first wave comprised of farmers, who are provided with the opportunity to add irrigation to their properties, fail to do so. They find irrigation technology to be labour intensive and capital expensive, and retire from farming in favour of the next generation. This next generation or '*second wave*' will invest in irrigation staying within the same production base, before over-capitalising or realising that they have to change their production base

to be successful, believing *“that land potential lies in new land uses”* (McCrostie Little and Taylor, 2001: 5). Alternatively, these farmers may elect to sell, retire, or convert to dairy farming or horticulture. The *‘third wave’* of land ownership change occurs as dairy farmers are drawn to the area to purchase fully or partially converted dairy farms and *“create the ‘new’ dairy economy in the host district”* (McCrostie Little and Taylor, 2001: 5). In this cycle of activity, access to freshwater irrigation has provided farmers with the opportunity to sell their properties at a high value. After the addition of irrigation in the Amuri region, 60 per cent of farms were sold (McClintock *et al.*, 2002).

3.3.2 Community Conflict

The influx of a new population of individuals into previously stable rural communities can *“tip the community’s stable community structure”* (McCrostie Little and Taylor, 2001: 6). This has been a great source of dysfunction and conflict in rural communities where dairy farming has been introduced. Initial conflict seems to stem from the exodus of well known generational families and influx of newcomers where *“good community members . . . [are] lost and replaced by undesirables”* (Barlow and Cocklin, 2003: 510). The influx of dairy farm employees in the Amuri region failed to generate a good first impression with local residents, being described pejoratively as mud sticks (Edkins, 2003). Some, for example, left the area with unpaid debts at local stores (Edkins, 2003). Dairy farm employers were found to treat employees poorly and they did not stay for long: one had employed his 34th and 35th dairy employees for the season. These tales enhanced the poor image of dairy farming that was then *“unfairly applied to all those involved in dairying in the area”* (Edkins, 2003: 72), creating a situation where employers were unable to attract desirable employees *“the resulting situation of some ‘rat bag’ employees and employers . . . kept the problem alive and growing”* (Edkins, 2003: 73).

Further problems stemmed from the inexperience of dairy farm employers in dealing with the management of intensive dairy farms. The Amuri region had been the *‘first stop’* for many dairy farm employees from the North Island (Edkins, 2003). The problem of being unaccustomed to the management of large dairy herds was exacerbated as employees were living some distance from family, friends, and other support networks

(Edkins, 2003). A further source of conflict was the perceived socio-economic position of dairy farmers in the community; locals perceived that dairy farmers had a lot of money, but in reality, many of the first dairy farmers were in similar, if not worse, financial positions as local farmers (Edkins, 2003).

As the dairy industry is reliant on unskilled workers, local residents in the Amuri region did not perceive dairy farming to be a desirable occupation (McCrostie Little and Taylor, 2001). In addition, the '*dirty*' nature of some dairy farming activities can be interpreted as something that should be avoided, as if it is physically, socially or morally tainted (Ashforth, Kreiner, Clark and Fugate, 2007).

Local community members criticised dairy farm employees over their continual movement to new places of employment (McCrostie Little and Taylor, 2001; McClintock *et al.*, 2002; Taylor *et al.*, 2003). In pastoral and arable farming communities, movements out of the region are uncommon except at times of retirement or ill health. Long term residents thus view the continuous movement of dairy farm employees as a sign of limited commitment or loyalty to the local community, school, and area (McCrostie Little and Taylor, 2001; McClintock *et al.*, 2002; Taylor *et al.*, 2003). In the Amuri and Waitaki regions, the host community criticised dairy farm employees for their lack of involvement in community-based activities (Taylor *et al.*, 2003). But because of the nature of dairy farm work, many dairy farm employees did not have the time to commit to such activities (Taylor *et al.*, 2003).

The other side of this story is that the exodus of older, generational farmers can help to rejuvenate and revitalise rural communities (McCrostie Little and Taylor, 2001; Barlow and Cocklin, 2003; Taylor *et al.*, 2003; Perkins, 2006). Long term residents may lament the loss of their important traditions, history, and local practices that were important in the past, but newcomers bring with them "*new energy and fresh ideas*" (Barlow and Cocklin, 2003: 512), and new approaches to completing activities (Barlow and Cocklin, 2003). So another perspective is that the movement of dairy farm employees to new places enables the circulation of new ideas.

Chapter 4

Context

“Ten years ago, agriculture was a sunset industry in New Zealand . . . now people can’t run to it fast enough” (Barta, 2008: A1)

This chapter will outline the context of this study and comprises of four sections. The first section will address the settlement of Austen and the establishment of agriculture. The second section will focus on the regional development of irrigation. The third section will focus on the specifics of the dairy industry in the region. Finally, to conclude this chapter, an overview of the prosperity of the region and dairy farming’s contribution to this will be discussed.

4.1 Establishing Austen

Prior to the arrival of settlers from Great Britain, there had been no evidence of formal or prolonged Maori settlement in Austen (Vance, 1976). Lacking fresh drinking water, the vast area of dry land, and swampy sea-coast prevented Maori settlement; the region was instead used as part of a transit route by Maori (Vance, 1976). New Zealand was formerly annexed by Great Britain in 1840, and it was not until 1853 that land was available for purchase by settlers in the region (Scotter, 1972). The region was surveyed into 35 large farms, initially home to absent landowners and squatters, until permanent settlement was achieved in 1873 when construction of a bridge over a major river was completed (Scotter, 1972). The ensuing influx of settlers laid the foundation for the development of a mode of pastoral and arable agriculture that would dominate the rural landscape and community for the next 120 years.

4.1.1 Pastoral Sheep Farming

To enable the immediate generation of an income on these large farms, sheep were introduced (Scotter, 1972; Gardner, 1992). Suited to the dry and rough conditions

prevailing in the region, the Merino sheep breed was first introduced. Merino produced a high quality fleece in demand in Britain, with an economy focussed on industry and manufacturing (Hawke, 1985). Expansion of sheep farming was first limited by a lack of suitable men to watch flocks, suitable fencing to contain sheep, and the parasitic disease scab¹³ (Scotter, 1972). New Zealand sheep meat was also desired by Great Britain and this was first exported after being boiled, preserved, and tinned (Scotter, 1972; Hawke, 1985). Demand grew for fresh sheep meat, after the development of reliable refrigeration technology on large cargo ships in the 1880s, and the first shipment of the region's frozen sheep meat was exported to Great Britain in 1883 (Scotter, 1972).



Figure 4-1 Sheep grazing in Austen

To take advantage of the duality of sheep, alternative breeds were introduced, such as: the Lincoln Cross, Border Leicester and Southdown (Scotter, 1972; Hawke, 1985). The duality encouraged farmers to increase the size of their flocks, as illustrated by Figure 4-2, and indicative of the vast size of farms, some had sheep flocks of over 30,000 (Scotter, 1972). With increasing sheep numbers, the number of sheep farms increased from the turn of the 20th century, as large farms were subdivided and sold to employees who had worked on these farms (Scotter, 1972).

¹³ Scab is similar to fly blown sheep, in that a mite will lay eggs on a fleece, feeding on the sheep's skin. To control the spread of this disease, the Provincial Council employed inspectors to visit flocks and check for Scab. Farmers had six months to eradicate the disease from infected flocks or face a substantial fine. One farmer had a poor record with the disease and a neighbour successfully completed court action after his flock was infected by wandering sheep, receiving £2,000 (Scotter, 1972).

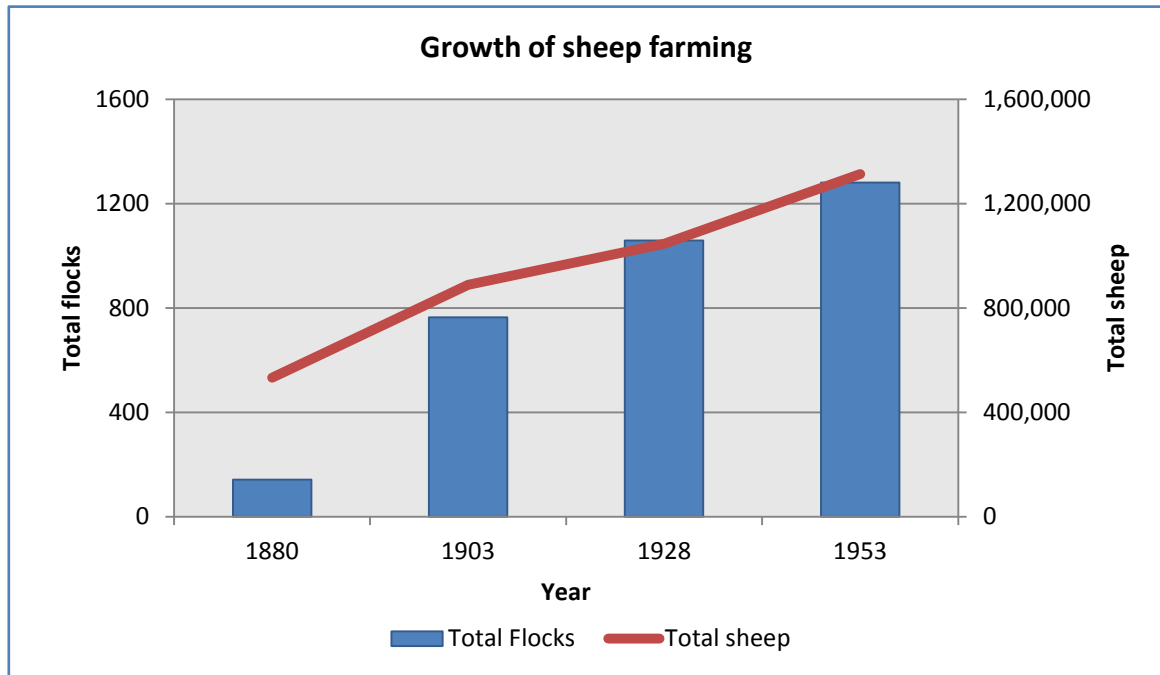


Figure 4-2 Increase of sheep flocks and total sheep in Austen (Source: Scotter, 1972: 429)

The total number of sheep in the region continued to increase throughout the 20th century. Unfavourable climatic conditions for alternative land uses, such as, arable or dairy farming ensured that farmers maintained a conservative approach to their land use. Sheep farming has been the favoured land use in the region (Scotter, 1972; Engelbrecht, 2010).

4.1.2 Arable Farming

Sheep farming provided early settlers with a source of income, but as they became more financially secure, they were able to introduce arable crops to their properties (Scotter, 1972). Wheat was the first summer crop to be introduced in 1860, followed by oats to feed horses required for arable farming (Scotter, 1972). Farm size had dictated the area of crop that was planted on these large farms. Some larger properties planted in excess of 5,000 acres of crop (Scotter, 1972). The laborious nature of crop farming, especially planting and harvesting, necessitated a substantial number of employees to be employed on farms. One farm, for example, employed 200 men throughout the year

and an additional 100 during harvest time (Scotter, 1972; Small and Blee, 1999). Consequently these large farms supported large villages of people and families.

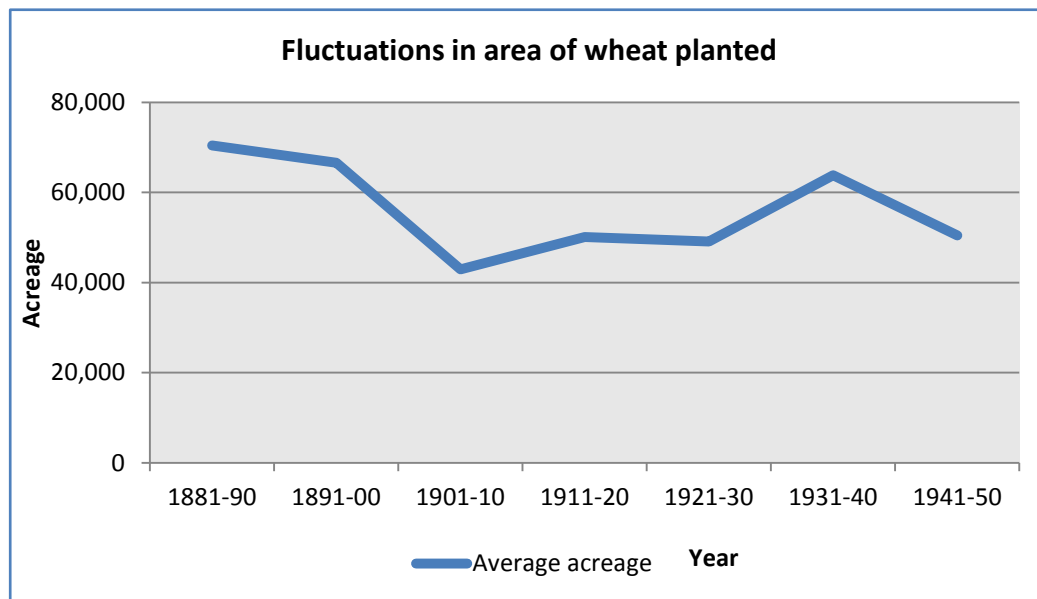


Figure 4-3 Fluctuations in wheat acreage (Source:Scotter, 1972: 429)

The land devoted to arable farming fluctuated in this early period of settlement, as Figure 4-3 illustrates. These fluctuations were influenced by the introduction of new machinery and technology for arable and pastoral farming, the unfavourable summer climate, and fluctuations in agricultural commodity prices. The introduction of the threshing mill *decreased* the labour requirements for harvesting, and *increased* the acreage of wheat planted; but the introduction of refrigeration technology on ships and duality of sheep, influenced the decision of farmers to return to sheep farming (Scotter, 1972). Annually there was the *“prospect of the realisation of that rare combination of circumstances, a bountiful harvest and good prices for grain. Farmers need[ed] all their good fortune after some five years of droughts, indifferent yields and low values”* (Scotter, 1972: 85), and a successful season for arable farming. These fluctuations in the area devoted to each land use, have been labelled by Campbell (1994) as the ‘*sheep-crop pendulum*’, a unique feature of the region.

Technological improvements to arable crops after World War One helped to increase the acreage of crops planted in the region, as did the introduction of new variations of crops including: barley, peas and small seeds (Scotter, 1972). Mechanisation and the

introduction of the tractor improved conditions for arable farming. While these factors helped to improve conditions for arable farming, the prosperity of sheep farming throughout the mid 20th century under productivism, encouraged farmers to transition to sheep farming.



Figure 4-4 Harvesting in Austen

In recent years, arable farmers have transitioned to production of niche or speciality crops, as traditional crops have declined in value (Campbell, 1994). The diversity of crops produced in the region, and its contribution to New Zealand agriculture, has seen it labelled the '*grain bowl of New Zealand*' (District Council Community Planning Team, 2009; Niblett, 2011). In 2010, the region contributed to 43 per cent of *all* arable products produced in New Zealand and:

- 60 per cent of the world requirement of radish seed
- 35 per cent of the world requirement of clover seed
- 33 per cent of the world requirement for carrot seed
- 30 per cent of the world requirement for bok choy seed¹⁴
- 60 per cent of the New Zealand requirement for pasture seed (Niblett, 2011).

¹⁴ Bok Choi is also known as Chinese Cabbage.

4.1.3 Climatic Variations

Arable farming has the potential to generate an income up to three times *greater* than the income derived from sheep farming. This income can be limited by the unfavourable effects of the region's climate. Arable farming is more susceptible to the effects of climate because crops can be destroyed by periods of, or a combination of: drought, high rainfall, nor-westerly winds or low sunshine hours (Campbell, 1994). There is a small window of ideal conditions for the production of arable crops, for example: for the period 1980 to 1992, six summers were classified as average to successful and six were classified as poor to catastrophic (Campbell, 1994). These conditions interact to create difficult conditions for intensive arable farming in the region (Engelbrecht, 2010). Figure 4-5 is an example of the climatic variations that occur in the region.

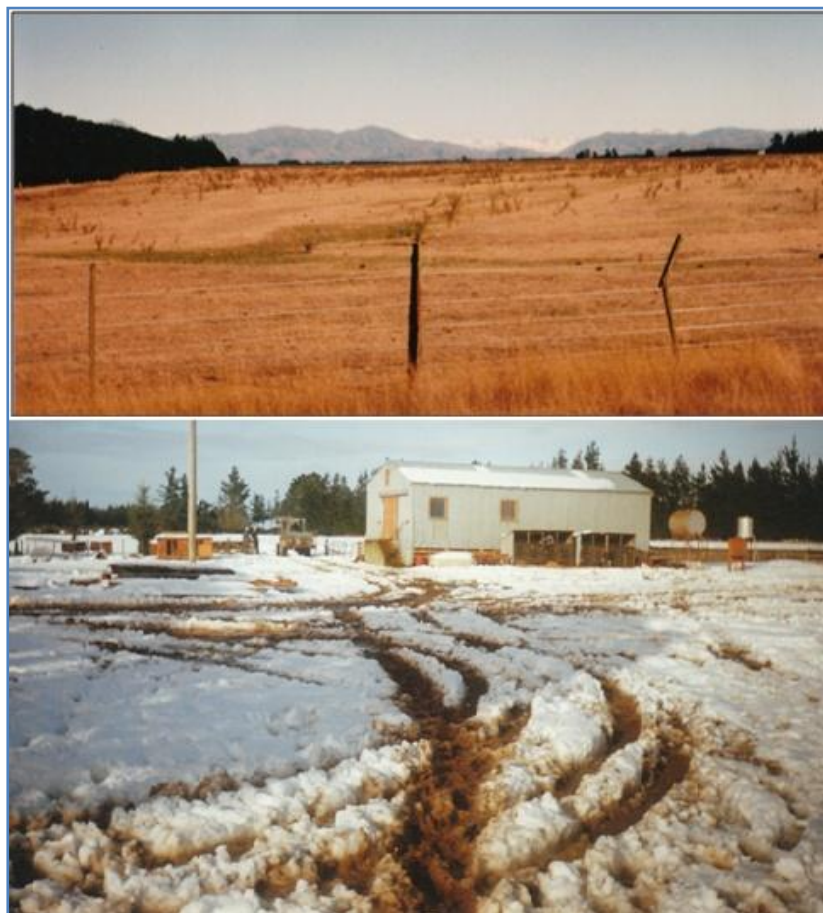


Figure 4-5 Climatic variation in Austen: drought and snowfall

4.1.4 Rural Landscape

The first settlers in Austen were confronted with a featureless landscape (Scotter, 1972; Price, 1993). Immediately, the nor-westerly wind posed a problem for settlers, who planted a network of shelter belts, trees and hedges, to protect stock, pasture, and their homes (Price, 1993; Egoz *et al.*, 2001). The first shelter belts did not ‘*stand up*’ to the effects of the gusty nor-westerly wind and were subsequently replaced throughout the 20th century (Janett, 1988). These shelter belts, hedges and trees planted, contributed to the characteristic regional landscape. Over 300,000 kilometres of shelter belts were planted in greater Canterbury (Price, 1993), as illustrated by Figure 4-6; but as I shall discuss, a requirement of modern agriculture is to sometimes necessitate the removal of these landscape features.



Figure 4-6 An example of trees, hedges and shelter belts

4.2 Irrigation

“Water is our very life’s blood on these plains” (Britten, 1991: 100)

The *potential* that the region had for irrigation, and the *importance* of developing an irrigation scheme to benefit the entire region, was realised by settlers in 1878 (Scotter, 1972). Production and income had already suffered from successive seasons of drought, and the introduction of an irrigation scheme was recognised as a solution to this perennial problem. The recently formed District Council set about investigating the

possibilities for irrigation in the region and commissioned an engineering firm to design a scheme (Britten, 1991). The two schemes presented were dismissed on the basis of cost and impracticality (Britten, 1991). Successive plans were again dismissed in 1880 and 1886, as a pattern emerged where *“dry and desolate years would be succeeded by good ones when irrigation seemed less important”* (Britten, 1991: 102).

Early settlers in the region were of the opinion that *“nature formed the Canterbury plains for irrigation”* (Britten, 1991: 101). Land formed as alluvial matter was deposited by braided rivers, falling eight metres every kilometre to the sea-coast (Campbell, 1994; Cameron, 2009). These braided rivers themselves were thought to provide an infinite source of water for irrigation, and one farmer took advantage of a braided river bounding his property by establishing an irrigation scheme in 1893, proving what could be achieved with irrigation (Scotter, 1972; Britten, 1991; Cameron, 2009). On this pioneering farm, wheat yields increased and produced six bushels¹⁵ more per acre than elsewhere (Scotter, 1972). The local newspaper visited the property and reported the success of irrigation:

Apple, pear and plum trees [all] heavily laden with remarkably fine, clean, healthy looking fruit; raspberry canes yielding what seemed like inexhaustible supplies of large luscious-looking berries . . . a small paddock of cocksfoot 4ft 6 in and 5 ft high, bearing heavy loads of splendid samples of seed (Britten, 1991: 101).

This success proved what could be achieved with irrigation, but it would be another 50 years before an irrigation scheme was completed in the region, and a further 50 years before irrigation became accepted practice. This section will outline the development of irrigation in the region.

4.2.1 Community Irrigation Scheme

The first tentative steps towards completion of a community irrigation scheme for the region were completed in 1898, at a Canterbury Irrigation conference where the government was called upon to fund such a scheme (Britten, 1991). Government was noncommittal and would have no irrigation policy per se from 1911 to 1984 (Collins,

¹⁵ A bushel is a measure of the quality of grain produced.

Kearns and Le Heron, 2001); irrigation was used as part of state assistance measures to increase the productivity of farms in drought prone areas (Lewthwaite, 1983; Collins *et al.*, 2001). The government sought to provide employment for the unemployed during the depression, and 1930 would be a watershed year for irrigation development. An irrigation farm was established in the region as a collaboration between government, local level government entities, and Lincoln College (Evans and Cant, 1981). This irrigation farm laid the foundation for the development of a regional community irrigation scheme (Evans and Cant, 1981; Britten, 1991).

Construction of the Government funded community irrigation scheme commenced in 1937 and was completed in 1945 (Evans and Cant, 1981; Britten, 1991; Hopkinson, 1997). The community irrigation scheme delivered multiple benefits such as: the generation of employment during the depression, increased the urban and rural population, and stimulated *“a recovery of economic growth”* (Evans and Cant, 1981: 59). The irrigation scheme itself was designed to provide irrigation water to farmers for seven months of the year, and generate hydro-electricity for the remainder (Hopkinson, 1997). Originally five areas of the region were to have been provided with access to this irrigation scheme, but only two were completed initially, with another added in the 1960s and it is only now that plans are finalised for the completion of the remainder (Langdon, 2008; Cameron, 2009).

Irrigation water was delivered to 64,000 hectares of the region’s land through a series of channels, and farmers were then responsible for installing irrigation infrastructure on their properties (Britten, 1991). The favoured method was border dyke irrigation and to encourage uptake, the Ministry of Works completed the first 1.6 hectares of each property free of charge (Evans and Cant, 1981) (Figure 4-7). The Government provided farmers with irrigation water, but uptake in the scheme would be limited. For the 1975/1976 irrigation season, only 26 to 28 per cent of allocated water was utilised in one of the scheme’s areas (Dodson, 2006). The availability of irrigation water coincided with post Second World War prosperity and productivist government policies which had improved the conditions for dryland farming (Evans and Cant, 1981). Dryland farming was supported by an expanding literature that was available from Lincoln College,

whereas irrigation farming was unknown and unproven (Evans and Cant, 1981). This post war generation of farmers were in a comfortable financial position and did not want to incur the additional debt required to add irrigation technology, which at the time was perceived as labour intensive: *“month after month during late spring, summer and early autumn [time would be spent] hauling heavy wooden frames and large canvas sheets up and down headraces, often day and night”* (Engelbrecht, 2010: 17).



Figure 4-7 Installing border dyke irrigation in the 1970s

4.2.2 Changing Ideologies

Farmers may not have recognised what irrigation would achieve, but the Government had great expectations about what might be achieved. Bob Semple (Minister of Public Works) proclaimed at the opening of the community irrigation scheme in 1945 that:

For the last 30 years the rural production and population of the Canterbury plains has remained practically stationary . . . we as a nation cannot afford the continued idleness of such extensive resources, not only for our own good, but the benefit of the world at large . . . let us therefore go forward into the era of hope that will follow the war, fully resolved to achieve the objectives that lie within our grasp . . . water that ran to waste was to be put to work, diverted along a thousand reticulating races, flowing gently over thirsty pastures and desiccated soil to mobilise the latent forces of nature” (Hopkinson, 1997: 10-12).

But with the region’s farmers choosing not to utilise the community irrigation scheme available, the government changed its policy regarding funding of future irrigation schemes (Cant and Evans, 1983). It had been recommended in 1953 that Government

impose some of the costs of irrigation schemes on farmers, and in 1958 this was tested when farmers were asked to contribute, the equivalent in today's currency of \$4.75 per hectare, to a proposed irrigation scheme (Cant and Evans, 1983; Cameron, 2009). This new scheme required 75 per cent farmer approval to commence, but failed (Cant and Evans, 1983). Appreciation of irrigation water evolved in the 1970s and farmers were then willing to contribute to the cost of irrigation schemes, where the Waitaki and Amuri areas benefitted (Cant and Evans, 1983; McCrostie Little and Taylor, 2001; Cameron, 2009).

By the 1980s the government vested *all* responsibility for irrigation schemes with individuals, it was no longer interested in funding future schemes (Lewthwaite, 1983; Collins *et al.*, 2001). Ownership of the community irrigation scheme was transferred in 1991 from the government, to farmers, who had access to the scheme (Hopkinson, 1997). Individuals, with an interest in securing irrigation water would have to access ground or surface water, at their own expense. However recently, in recognition of the high costs associated with implementation and construction of irrigation schemes, the government has provided a fund of \$400 million to help fund schemes and encourage third party investment (Rural News, 2011).

4.2.3 Ground and Surface water for Irrigation

For farmers wanting access to irrigation water (outside the community irrigation scheme) there are two ways in which they can access it: ground or surface water. Groundwater is extracted using a submersible pump from an underground reservoir known as an aquifer (Closey, 2009). Surface water includes water that is abstracted from rivers or a number of spring fed drains in coastal areas of the region (Dodson, 2006). It had been thought that groundwater was available in limited areas of the region, and with high demand to access irrigation water, farmers started investigating. One farmer was informed by hydrologists that *"there would not be sufficient [ground] water available for irrigation and strongly advised us against the idea"* (Cameron, 2009: 36). Groundwater was soon *'found'* in many areas of the region, however, in the 1990s and 2000s, demand increased for this resource (Sandys, 2001; Studholme, 2002).

The use of groundwater in Canterbury is regulated by Environment Canterbury. Irrigation water was first allocated on a '*first come, first served*' basis (Closey, 2009). As the potential, and importance of this resource, was realised by farmers, an ever increasing number sought access. The limitations of the resource have now been reached. Three out of four groundwater zones in the region are designated '*red*', meaning no new consents for the use of groundwater for irrigation can be allocated (Closey, 2009). Water Conservation Orders placed on rivers in the region prevent additional water from being used from these sources (Closey, 2009). Farmers within the red zones, without access to groundwater, still attempt to secure the use of the resource. A group of 78 farmers applied together for consent to use water for irrigation in 2005, the decision was presented in 2010, but is currently being appealed. Irrigation water is a '*trade-able commodity*' in the region, where water rights can be transferred or sold to other farmers within the same groundwater zone.

4.2.4 Methods of Irrigation

Methods of irrigation have evolved significantly over the last 30 years. Laborious border dyke irrigation has been superseded, firstly by spray irrigation, and now fully automated centre pivot and lateral drive irrigators. The centre pivot¹⁶ requires no human labour after installation, and increases production by 15 to 20 per cent (over other methods) providing farmers with reliability, quality, and quantity for production (Engelbrecht, 2010). The centre pivot (Figure 4-8) exhibits a number of benefits, but there are a number of environmental and financial costs also associated with the new method of irrigation. Additional debt can be required to purchase the centre pivot, but justified by production increases (Engelbrecht, 2010). Modification of the farmed landscape is required as the centre pivot cannot '*climb*' over landscape features that impede its pathway and these features will be removed or sited elsewhere.

¹⁶ The centre pivot irrigator operates from a central position on the property and pivots around this point. The most common length in the region is 400 metres, but can be up to 1200 metres long. The longest pivots in New Zealand are found around Twizel.



Figure 4-8 Centre pivot irrigator

4.3 Introduction of Dairy Farming

The availability of irrigation water in the region, and improvements to methods of water application, have removed the climatic constraints that were associated with the development of dairy farming in Austen. Dairy farms require consistent pasture growth for milk production, and as the region is drought prone few dairy farms were established. Dairy farms were first introduced in areas of the region that were associated with heavy soils, high water holding capacity, and high water tables (Dodson, 2006). One family have operated a dairy farm in the region for five generations (Scott, 2002). Generally however, dairy farming was considered an inappropriate land use in the region, and the buoyancy of arable and pastoral farming throughout the 20th century ensured there was no requirement to consider alternative land uses (Engelbrecht, 2010). Investigations were completed into the possible viability of dairy farming *with* irrigation in the 1950s, but it would be another 20 years before these findings would be acted upon by a group of North Island dairy farmers laying the foundation for intensive dairy farming we experience today (Roadley, 2009; Engelbrecht, 2010).

4.3.1 Quiet Expansion

Dairying development occurred steadily in the region throughout the 1980s and 1990s (Engelbrecht, 2010). It was aided by the introduction of two corporate companies

Tasman Agriculture and Applefields¹⁷ (Wilson, 1994) and recently Dairy Holdings and Synlait (Pangborn and Woodford, 2010), who have been active in purchasing properties for conversion to dairy farming. Development was limited by two moratoria in the 1990s, firstly to allow a local milk processing plant to expand to cope with increased supply, and secondly in 1998 when existing shareholders voted on rights for further expansion (Stott, 2000). It was the removal of this second moratorium that heralded the development of intense interest for conversions to dairy farming, with 150 applications for conversion received in the wider Canterbury region after this was removed (Stott, 2000).

It was after this time that dairy farming prospered in the region, and Figure 4-9 illustrates this continued growth. The number of dairy herds in the region has tripled and the number of dairy cows has increased by 884 per cent! In 2010, it was estimated that 45 to 50 per cent of land in the region is occupied by dairy farms (Engelbrecht, 2010). There has been a swing from traditional pastoral and arable land uses to dairy farming (Dodson, 2006).

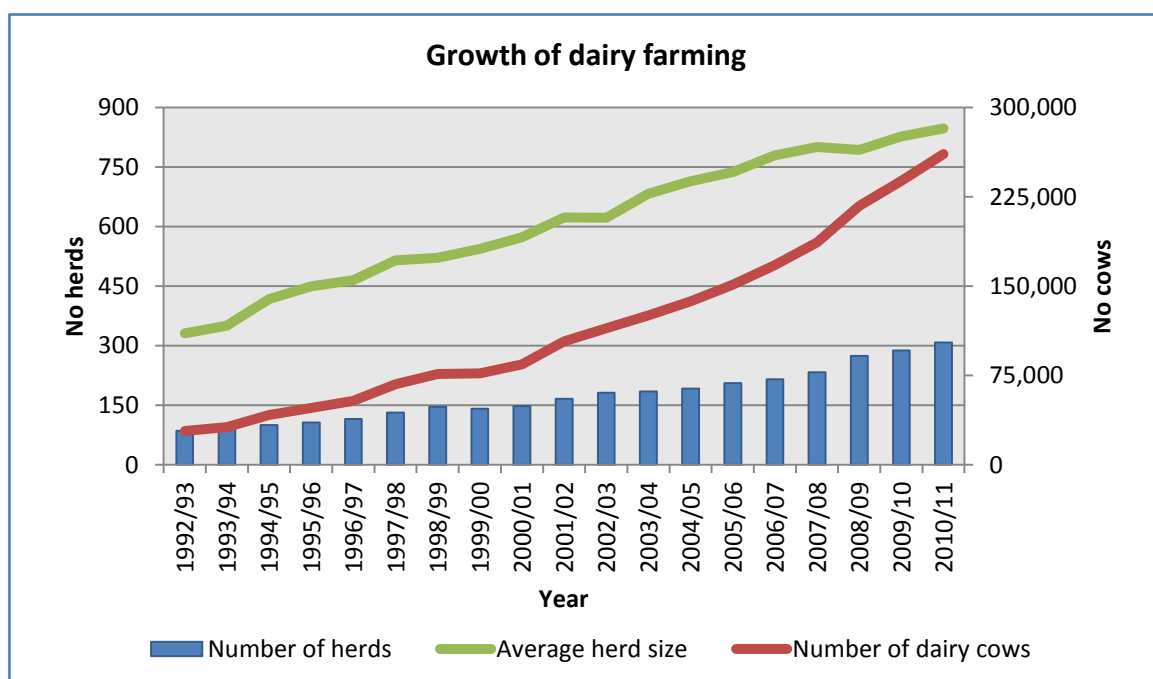


Figure 4-9 Growth of dairy farming (Source: LIC, 1993-2011)

¹⁷ Applefields was at this time a dairy farm development company.

Remarkably, the region's dairy farms are now the most productive in New Zealand. The North Canterbury region has the highest production per herd, per cow and per hectare in New Zealand (LIC., 2011). Table 2 provides a comparative analysis of the production differences between the region and dairy farms in the Waikato. The Waikato region has long been viewed as the home of New Zealand dairy farming. The region's average herd size is among the largest in New Zealand, currently 847 dairy cows (LIC., 2011), but it is not unusual to find dairy herds of 1,500 dairy cows in the region.

Table 2 Comparison of production achieved in Austen and Waikato (LIC., 2011)

Area	Average herd size	Litres per Herd	kg m/s per herd ¹⁸	Kg m/s per cow ¹⁹
Waikato	322	1,172,329	100,737	313
Region	847	3,706,949	322,694	381

4.3.2 Generator of Employment

The prosperity of the dairy industry flows through the entire region. Directly, dairy farming is the largest sector generating employment in the region, employing 8.4 per cent of the population, and contributing to 14 per cent of the region's Gross Domestic Product (District Council Community Planning Team, 2009; Brawley, 2011). The dairy industry is heavily reliant on a number of external inputs from: veterinary services, rural supply stores, fertiliser, seed and livestock representatives; and other services such as those provided by builders, irrigation engineers, and plumbers. In this way, the dairy industry has indirectly generated significant employment for individuals in the region. It is not only the rural sector that benefits from the introduction of dairy farming; new urban retail stores have been introduced including: Katmandu, Bunnings Warehouse, Mitre 10 Mega, Harvey Norman, and Dick Smith. The hospitality sector has significantly expanded with an addition of a number of new cafes, and diversified eating establishments (such as Thai, Indian and Chinese); it is believed that there are over 30 different places to eat in the township alone.

¹⁸ Kilograms of milk solids produced per herd

¹⁹ Kilograms of milk solids produced per cow

The major urban township in the region is now viewed as a *'go ahead town'* with redevelopment occurring. A multi-million dollar sports centre and swimming pool complex has recently been approved by the Council, as has a controversial multi-million dollar redevelopment of the local museum and art gallery (Sandys, 2011).

4.3.3 Population Growth

The region now has one of the fastest growing populations in New Zealand (District Council, 2008; District Council Community Planning Team, 2009). The projections for the region's population in the 1990s were to stagnate and then decline, in response to the predicted continued rural downturn. These figures were used as justification for rural school closures in the 1990s (Campbell, 2004). Figure 4-10 provides an illustration of the stagnation of rural populations and then the growth that each population in the region has had in recent years.

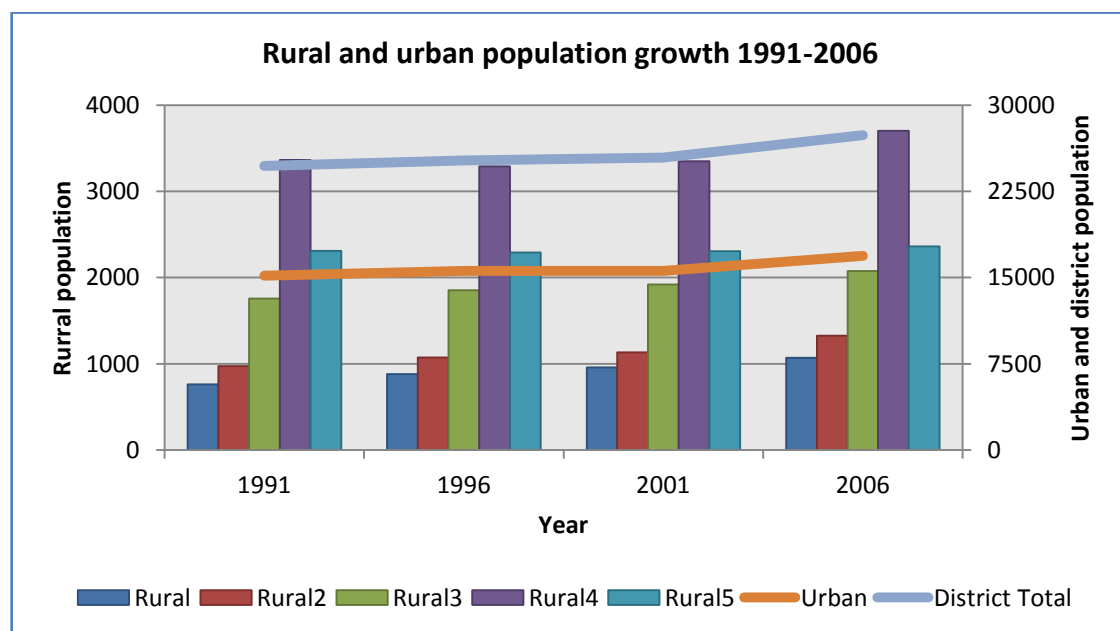


Figure 4-10 Population growth 1991-2006 (Source: District Council, 2008: 8)

The influx of newcomers has contributed to a diversification of the ethnicity of the region (District Council, 2008; District Council Community Planning Team, 2009; Wylie, 2009). In 1996, 96.9 per cent of the region's population identified itself as European

(Wylie, 2009). In 2006 the ratios have changed, as more individuals of Pacific Island and Maori decent have been drawn to the region, as well as an influx of individuals from the United Kingdom, Ireland, South Africa, Zimbabwe and Romania (District Council Community Planning Team, 2009; Wylie, 2009). In 2009, a survey of the resident population of the region found that 84 per cent of those surveyed felt that *“new arrivals were made to feel welcome and were given adequate support, 16% stated no, that new arrivals were not welcome”* (District Council Planning Team, 2011: 47). A range of services are available to newcomers to help their integration into the community.

4.4 Chapter Summary

This chapter has presented the context to this study. Pastoral and Arable agriculture was introduced by the first settlers to the region and maintained by subsequent generations of farmers. Climatic constraints have limited the productive ability of the region’s farms, and while some campaigned for an irrigation scheme from 1878, uptake of water in the community irrigation scheme, completed in 1945, was limited. A change in the ideology of farmers, and access to ground and surface water, has provided the impetus for conversion of pastoral and arable properties to intensive dairy farming. Dairy farming has expanded at a rapid rate over the last ten years, and contributed to the economic development and population increases in the region. The next chapter will present the results of this study.

Chapter 5 Results

Traditional Land Use and transition to Intensive Dairy Farming

I would never in my wildest dreams, thought that some of the highest producing [dairy] farms in the country are on the lightest land in Austen. When we were at Lincoln [College], Waikato was the home of dairying and nothing was ever going to match it. Well, we have now surpassed that” (Dave, pastoral and arable farmer).

This is the first of two chapters detailing the results of this study. This first chapter will discuss traditional land uses in Austen. It will also detail the practices and cultural traditions that have been related to these traditional land uses. Additionally the factors that facilitated the transition to dairy farming will then be introduced. The second results chapter will focus on the influence of dairy farming on the rural landscape and rural community.

5.1 Austen’s Land Uses

Pastoral and arable farming have been the dominant land uses in Austen for successive generations, without question. Pastoral farming has involved the production of pasture for stock grazing, particularly: sheep, beef, and more recently deer. Arable farming has entailed the production of four summer crops: barley, clover, rye grass, and wheat. A feature of recent times has been the move away from solely pastoral or arable farming, to mixed farming enterprises. Of my nine rurally based participants, only one could be identified as solely a pastoral farmer, the remainder operated mixed pastoral and arable properties. The income derived from pastoral farming has declined since the 1980s and influenced the decision to transition to mixed farming enterprises. In the 1970s, for example, the income derived from wool by *Tommy’s* family amounted to \$70,000, but this declined to \$10,000 in the 1980s, influencing the transition to arable farming.

Recently, stock trading has been incorporated into these properties. This practice involves the short term ownership of stock, where weight and condition are added

before sale three to six months after purchase. *Dave*, for example, traded 4,000 lambs, and *Drew* 1,000 beef cattle and 20,000 lambs. For participants, the advantage of stock trading is that they do not have the associated costs²⁰ of carrying a breeding ewe for 12 months to produce a lamb or lambs. *Dave* explains why stock trading is beneficial to his farming enterprise:

We can buy them [and] put 30 to 40 to 50 per cent on them and then sell them. The breeder has to carry a ewe for a whole year [to produce a lamb] . . . they were selling store lambs last year for \$35-40 . . . we were [then] selling them for \$60 to \$70 . . . the poor breeder has carried an old ewe for a whole year, for less than we got in the entire four months [of ownership].

As participants have become more knowledgeable about farming systems and practices, particularly the use of irrigation, they have diversified from production of traditional crops to niche and speciality crops. *Tommy* has grown radish and borage, and *Drew* grew carrots and peas for seed. This is significant, as there is now a strong vegetable production base operating in Austen, producing broad beans, corn, potatoes, and peas for commercial processing companies. This diversity of arable crops produced by farmers is one of Austen's strengths, as *Ted* explains "*we have got sheep, deer, vegetable seed production, vegetable production, small seed production, rye grass, and straw crops*". Despite this, these alternatives to the traditional arable system are perceived as *high risk-high return* by *Tommy* and *Dave* as:

Most people that grow these novelty crops will grow a good crop and then spend the next five years trying to repeat it again and [then] declare that traditional arable farming . . . is actually the most profitable and reliable.

Successful production of these arable crops does fluctuate in Austen, and is largely dependent on the climatic conditions (and Mother Nature) during spring and early summer. Drought or wet weather, in the months and days prior to harvest, can ruin a crop, wasting months of hard work involved with the production of that crop and jeopardising future income. *Tommy* wanted his last harvest to be perfect (as it was his last before the farm was sold), instead "*it was the worst season we have ever had. It was really dry [in] November [to] December [and] you couldn't keep enough water to things . . . and then it started raining at harvest time*".

²⁰ These costs include such things as shearing and feeding the animal for 12 months.

5.1.1 Irrigation

Irrigation is now used by farmers to control the deficits created by these climatic variations. The use of irrigation was not common or accepted practice until the 1970s, although available to some farmers since 1945. *Ted* (farm consultant with 47 years experience in the region) can recall visiting a farmer in 1969 seeking access to groundwater for irrigation and thought *“this guy is off his head, putting a six inch pipe down 200 feet”*. The use of irrigation has become accepted practice, and used by farmers to increase yields produced by arable crops and *“double profitability”*. Participants recall that securing rights to groundwater was easy; *Dave* applied to access a groundwater source in 1979 and found *“you had to pay your money and go through a bit of drama and [it be] publicly notified and then you were granted a 35 year right”*. Groundwater was soon found in areas of the region that *“no one knew was there”* and contributed to an increased demand for access to this resource.

At this time Environment Canterbury (the statutory authority for water applications) and *“was a bit easy oasy and a bit blasé about [the consent process]”*. As more farmers sought access to the resource *Rory* found that this is when problems started to occur, that was *“when Environment Canterbury sort of reared its ugly head”*. The consent process for access to irrigation water is now more regimented, with strict regulations and conditions regarding access and use of the resource. Not all farmers were able to access irrigation from groundwater or the community irrigation scheme in Austen and these farmers are known as dry land farmers. They are reliant on consistent rainfall throughout spring and summer for pasture and crop growth, and limited in the production that they are able to achieve.

Production limitations occur as these farmers are unable to guarantee they will get the returns on their investment on such inputs as fertilisers used to stimulate crop growth. Although in some circumstances, even the use of irrigation cannot sustain the daily losses associated with the dry heat and prevailing nor-westerly wind in Austen. *Tommy* recalls his neighbour’s unirrigated pastoral farm during the summer months *“[it was] barren [home to] sheep kicking stones around”*. All participants in this study had areas

of their farms that were unable to be irrigated, but none were identified as dry land farmers. These participants did have admiration for those who remained dry land farmers “[dry land farmer] *always has his crops in nice and early and they always look fantastic, and then at the last [moment prior to harvest] . . . it only takes a week to bugger a paddock of barley and you see that happen to him year after year*”.

Despite the obvious benefits that irrigation has provided participants with, *Tommy* questions whether the addition of irrigation is worth the extra workload and inputs associated with irrigation:

You are working for your irrigation as well. You tend to be going for the big stuff all the time, going for the high things. So you are putting lots more inputs in [and] a lot more work. I have said to guys I don't know if irrigation is worth it really. It creates a hell of a lot more work and a lot more input.

Moving spray irrigators, such as Roto Rainers (Figure 5-1), can take up to two hours per day (per unit), every day for the irrigation season (September to March).



Figure 5-1 Roto Rainer operating in Austen

5.1.2 Property Ownership

Rural land in Austen has traditionally been held multi-generationally. Rural children have been born to the land. The progression from secondary school education to employment on the family farm was part of the natural progression to farm ownership. *Rory* explains “*if you were a farmer, you were a farmer. You didn't have an education*”. There was no expectation that participants would consider or contemplate a career outside farming: farming was their future. For *Tommy*, *Dave*, *Drew*, and *Taylor* this has been the case; five generations of *Taylor's* family have owned his property. It was not until after marriage and the completion of an overseas travelling experience that *Drew* and *Taylor* committed to agriculture. Despite initial misgivings, *all* now admit that farming is a ‘*good career*’.

While farming has proven to be a good career for these participants, the next generation of farmers are a 'worry'. Only *Taylor's* and *Dave's* sons have returned to work on the family farm. In fact *Dave's* sons are the only children from their rural primary school who have returned to agriculture; others are pursuing careers in teaching, the trades, the army, and one was an All Black rugby football player. Indicative of this change, *Tommy* felt his children were too smart to be farmers and this influenced his decision to sell the family farm. This issue is not strictly confined to the next generation of farmers. *Taylor* reflected that only two of his year at secondary school (in the 1970s) returned to agriculture. Hopeful that his sons will continue farming *Dave* has continued to increase the size of his family's farm (purchasing one and leasing another) *"in conjunction with what I hope that [my sons] will carry on farming"*.

5.1.3 Productivist Agriculture

As the eldest of four sons, *Dave* was entitled to succeed his father into farm ownership. Instead, with the help of his family, and a government fund to help farmers to first farm ownership, *Dave* was able to purchase his first farm in 1978. The 'First Farm Settlement' scheme provided *Dave* with a \$90,000 loan and a favourable interest rate for repayment. *Tommy* too benefitted from a government desire to provide employment in agriculture, where the government paid his salary for the first 12 months he worked on the family farm after leaving school. He explains:

You could apply for a create a job scheme [but] I had been working there [family farm] all the time anyway. So I came back and we applied for this creating a new job scheme and we got it . . . that was seen as being helpful to the country, creating a new job.

Memories of the productivist policy era for agriculture have remained vivid for participants, though they did not have access to the full range of subsidies that some farmers did. This era was an important element of their stories and future development of dairy farming in Austen. Farm Development Loans were used by participants to increase the productive potential of farms and this included the introduction of irrigation infrastructure, improvements to fencing and storage, and use of fertilisers to improve soil fertility.

A unique feature of productivist policy for farmers in Austen was the tree subsidy. This subsidy was allocated to farmers in 1975, to replant trees, hedges, and shelter belts that had been removed by a destructive nor-westerly gale on August 1st 1975. *Taylor* explains the power of the storm:

There were these 30 tonne silos [in the] area [and] there were some of those [that] ended up out to sea. There was one sat in the trees there, just this side of [a township] that had blown in from [somewhere] and no one knew whose it was. That [storm] took a lot of trees out in Canterbury.

This storm removed landscape features that had been planted by successive generations of farmers to protect stock and pasture from nor-westerly and south-westerly storms and winds that regularly strike. The storm had created a rural landscape that older family members of participants had reported to be reminiscent of the region, prior to the development of the farmed landscape. *Tommy's* uncle explained one story:

Round the 1900s he said then you could be at their house up there [20 kilometres from town and] you could see the Catholic Church in town . . . it could get to that stage when you can see for miles on the plains. It's hard to imagine the Canterbury plains in those days.

While *Rory* can recall town features and the effect of this tree subsidy:

When I was a boy, you could see the water tower from the town at [rural town]. And trees grew up and you couldn't see it. Now you can see it again if it [water tower] was there, you would be able to see it again because all those trees are gone. When I lived up the road when I was a kid, you could come down that road past all those farms down there and there wasn't a tree on it. And then they planted the trees because the government put subsidies on it, so they treed and fenced. And then of course along come the pivots in the last few years and they have all disappeared again.

This tree subsidy was paid to farmers on the proviso that trees would remain standing for at least 25 years. The tree subsidy came under the jurisdiction of the, now defunct, Catchment Board. Figure 5-2 provides an indication of the mass tree planting that occurred using the tree subsidy.



Figure 5-2 Before and after: the difference a subsidy makes

Regardless of the benefits associated with the use of this tree subsidy and Farm Development loans, these loans placed a large financial burden on farmers once this policy was removed in the late 1980s. Favourable subsidised rates (of 7.5 per cent) for Farm Development loans were immediately increased to market rates of 14 per cent in 1987; combined with removal of other income support measures, these were very difficult times for farmers and participants. *Dave* wonders “*how the hell we survived [this time]*”. *Rory* is one farmer whose farm was not financially viable following the removal of productivist policy.

Unlike *Taylor, Dave, Drew, and Tommy*, *Rory* had no familial connection to rural land or farm ownership. His pathway to farm ownership necessitated many years of labouring and saving money. His efforts were rewarded in 1985, when he could purchase a 25 per cent shareholding in a pastoral farm. Despite uncertain conditions for pastoral farming, farm development continued, through the redevelopment of irrigation infrastructure and fencing. The stock market crash, continued market contraction, and nervousness of other farm investors forced *Rory* to sell his farm in 1991. This is *Rory's* story:

We were running Drysdale sheep at the time and we were getting up to \$6.30 per kilogram of clean wool, for our wool at times. But the whole thing just got harder and harder, and the land market collapsed, there was just nothing in it. From an investor's point of view, there was no money in the land, the capital in the land was going down and we just stagnated. There was no money coming out of the farm for their investment, so we just had to leave . . . So we went in there with \$35,000 cash put into it, and we went out with \$4,000 . . . I was 42 years old and I had \$4,000. So that was it and it wasn't a great experience . . . we had two teenage kids and \$4,000 to your name. No house, nothing.

It was expected that many farms would become unviable following the removal of productivist policy and to help these farmers, the government provided a farm exit package of \$45,000. *Rory* qualified for the scheme and had the opportunity to utilise it, but declined, feeling *"our investors are quite happy, everything is sweet"*. The scheme concluded two months before *Rory's* farm was sold. He had to *"walk away from it, so that soured us off farming for a bit"*.

Rory was the only participant in this study to lose his farm. Other participants were in a better financial position and were able to *'hold on'* until farming prospered again, or transitioned to other mixed farming land uses. Participants felt that the rules of farming had been changed, seemingly overnight. The productivist framework had provided farmers with information and financial resources to intensify production and then everything changed, as *Dave* explains:

It was about my age group. We had come out of Lincoln and we had all these ideas, we had a heap of money and the backing of the Rural Bank and MAF [Ministry of Agriculture and Fisheries] to develop irrigation and drive numbers, and then they changed the rules. A hell of a lot of farmers from my era lost their farms, they lost their hide as well, through no fault of their own.

Farmers did not take the removal of productivist policy *'lying down'*. *Taylor* recalls participating in two farmer-led protests after 1984. The first involved a peaceful march

through a main street of a nearby city, and the second involved the humane (and televised) disposal of 2,600 sheep. Urban residents did not look favourably upon these protests *“we were called bastards”*. This is far from the perception of farmers as protectors of the countryside, and it is at this time that *Taylor* feels the general perception of farmers changed. Once they were portrayed as rich, as the farmer driving the Rolls Royce, but now dumb, as evidenced by a joke told by Prime Minister Robert Muldoon in the 1980s:

[Man] can I have some brains today, what have you got?

[Cannibal butcher] I have got carpenters brains at \$5 per kilogram, I have got lawyers brain at \$10 per kilogram and I have got farmers brains at \$100 per kilogram

[Man] why are farmers brains so expensive?

[Cannibal butcher] because I had to catch 100 of them to get a kilogram!

5.1.4 Rural Community

During this period when pastoral and arable farming predominated, my participants characterised the rural community in the region as *“rural, middle, and white”*. It comprised of a collection of nuclear farming families who were close knit, like minded, and on the surface, egalitarian. *Marjorie* (school teacher) reinforced this notion by identifying that it was very unusual to find Maori or other non-European of children attending the local primary school because of the culturally homogenous nature of the region’s population. Anonymity was not possible in communities such as these. *Marjorie* can recall knowing *“who you worked for, where you worked and lived”*.

In this community, transience was unusual. Landowners and farm workers would stay in the region for many generations. *Taylor* and *Drew* can recall having employees with them for the long term; *Drew* had employed a farm worker for 14 years. This is indicative of the commitment made by employees to community and employers. This consistency of employment is reflected in the school rolls. It was uncommon for a child to attend more than one primary school *“they would start as a five year old and finish as a 13 year old, by consistency the whole time they only had one primary [school]”*. Children of these multi-generational families would often attend the same primary schools as their parents, as was the case for the children of *Tommy, Drew, Taylor* and *Dave*.

It is the rural primary school that acted to ‘bind’ the rural community in Austen. Tommy can recall the case of one family, who had lived in one of the ‘great homesteads’ built by an original settler, who had perceived themselves as ‘elite’, but when it came to school business, they and their less wealthy neighbours, were one. Austen Primary School *“bound all sorts of people together too. I meant it bound the [family] together who were very different from the rest of us, weren’t they really, and everybody was the same”*.

Farming families were heavily involved in voluntary aspects of the operation of Austen Primary school. The Board of Trustees had a high level of parental involvement, for example *“crop farmers they [all] had their turns at lining up and there was usually one village person on it . . . [and] he was usually the handyman”*. If parents were unable to help with school events, Marjorie highlighted that other family members were readily available to help. Elder family members retained contact, and an interest in helping the local school and community. Dave had fond and positive memories of the community and local primary school:

We were very typical of a small country school. We all had farming systems, ninety per cent of the kids’ parents were farmers [or] owned farms so we were very likeminded. [There was] huge cooperation if there was a working bee, everyone was there. [There was] no problem with gear or whatever . . . we were pretty supportive of the school. We were lucky.

Tommy contrasts the high level of community involvement and feeling *“it was just a great community”* at Austen Primary School, with that of the urban primary school his youngest child attended:

They call for volunteers [at urban school] to do something and no one would go. When at [rural school] everyone’s parents would turn up on a work day or whatever, you wanted cars to go somewhere there were always heaps of cars. [At urban school recently] even to [go to] that science fair there were 21 kids from 400 kids and they almost didn’t go, because they couldn’t get enough cars to take the kids down there!

To summarise, the removal of subsidies proved to be a great period of uncertainty for participants. With strained finances, the removal of subsidies enforced farm sales and provided the opportunity for farms like Rory’s to be purchased for conversion to dairy farming. Participants had found that typically, farms stay in family ownership unless there is no generational handover or the farm is not successful financially. Taylor said that the community is now benefitting from the subsidies that were used on properties

in Austen. The following section will detail the transition to dairy farming and the circumstances that enabled this transition.

5.2 Transition to Dairy Farming

“It was just about . . . a joke . . . North Islanders trying to milk [dairy] cows on border dykes, you know. It just seemed like an absolute extreme to what we had traditionally known” (Dave, mixed arable and pastoral farmer).

Dairy farming was perceived in Austen as an occupation that *“was seven days a week, 365 days per year, and not something that a lot of farmers wanted to get into”*. The 1970s saw the arrival of two pioneering dairy farmers from the North Island, who established the first dairy farms in the district, laying the foundation for the dairy development we witness today. The following years would draw dairy farmers not only from the North Island, but from the South Island’s West Coast, and Europe. This section will detail the attractions for establishing dairy farming in the region, and Austen, for these farmers.

5.2.1 Irrigation

It is recognised in Austen that *“we can do anything we want on this soil with [irrigation] water”*. The availability of irrigation water was the **major** attraction for those who first established dairy farming in Austen. The *importance, reliability, and availability* of irrigation water cannot be emphasised enough. Irrigation is a vital component of the dairy farming system in Austen providing consistent pasture growth to guarantee summer production, and therefore income. This in comparison to the North Island, which is prone to drought and without irrigation, some farmers are forced to cease milking dairy cows in February or March (See Figure 5-3). Drying off at this time, results in lost production and income. *Taylor* can recall one North Island dairy farmer who benefitted from moving to Austen *“the year after he left [the North Island] they had a*

horrendous drought and a lot of dairy farmers were dried off²¹ by the end of February . . . it was his first year down here and he had a great year". With irrigation farmers can continue milking dairy cows until May, when grass growth slows over the winter months.



Figure 5-3 Drying off dairy cows - May 2011

Areas of the region with access to groundwater and spray irrigation were purchased first by dairy farmers.²² As this land was perceived to be too expensive in the late 1980s, land was then purchased with access to the community irrigation scheme in the region that utilised the less efficient border dyke irrigation. There are a number of dairy farms in the region that were converted in the foothills area that do not require irrigation because of higher annual rainfall in the hills than on the plains. Established pastoral and arable farmers, like *Taylor* and *Dave*, were sceptical about whether the pasture growth required by dairy farming could be sustained with border dyke irrigation. In some cases, border dyke irrigation could not sustain the requirements of pastoral and arable farming. Their fears were justified in 1988, where a period of prolonged drought limited pasture growth and meant the nutritional requirements of dairy cows were not

²¹ The process of drying off dairy cows is depicted in Figure 5-3. The process involves the gradual reduction of feed to stop dairy cows producing milk, and culminates when udders are injected with a drug to ensure they stop producing milk until calving in August to October.

²² Spray irrigation was the new method of irrigation available in the late 1970s and 1980s

maintained, and their condition suffered: as *Taylor* identified “*Christ those cows used to be skinny, he [dairy farmer] just never had enough grass*”.

5.2.2 Business Opportunities

Irrigation has been the major factor attracting dairy farmers to the region. Dairy farmers were able to purchase properties in the region that were often double the size of their existing farms, for a similar price. These dairy farmers could then continue to expand the size of their properties as neighbouring properties, or parts of neighbouring properties, came up for sale. *Bobby* had found that it was difficult to expand his original property in the North Island, as there were many dairy farmers queuing to purchase the same property. He explains:

Dairying was getting very intense up there and trying to find jobs was getting very competitive, just all the farms were dairy farms . . . especially for land, like we were looking for grazing blocks and stuff up there and it is very intense.

With larger properties in Austen, dairy farmers could increase the number of dairy cows that they were milking on their properties. *Bobby* doubled the size of his dairy herd from 400 in the North Island, to 800 in the South Island.

Through purchasing an arable or pastoral property in Austen, these dairy farmers were able to design their own dairy farms. In the North Island, very few properties need to be converted and dairy farmers have to accept the status quo. In Austen, they could place cow lanes where they wished or install the latest dairy farm technology. An example of new dairy technology available to dairy farmers in the 1980s was the rotary dairy shed (Figure 5-4), which had started to replace the traditional Herringbone dairy shed (Figure 5-5). In a Rotary dairy shed, dairy cows enter a moving circular platform to be milked, whereas in a Herringbone dairy shed, dairy cows will enter two parallel races, separated by a sunken bit, from which the dairy farm employees will milk the dairy cows.



Figure 5-4 Rotary dairy shed

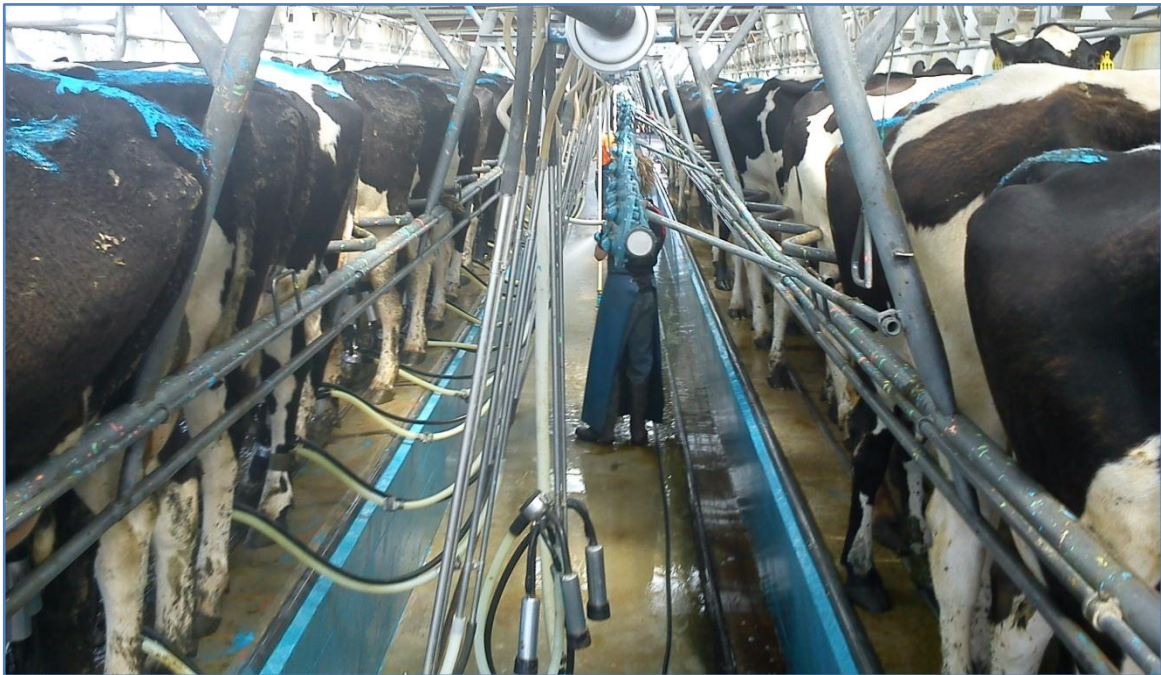


Figure 5-5 Herringbone dairy shed

Participants also recall that there was a profit to be made in the 1980s and 1990s, by dairy farmers who purchased pastoral or arable properties for conversion to dairy farming. Enterprising investors could purchase a farm, at a realistic arable or pastoral price, convert the property and then sell it to a dairy farmer, for a profit. This capital gain driven mode of conversion was cheaper than purchasing an existing dairy farm elsewhere. It also stimulated ongoing rounds of conversion. *Taylor* recalled one such farmer, who converted a nearby farm and then sold it, and continued converting dairy

farms in Southland (the other major area of New Zealand experiencing dairy farm expansion).

The expansion of the dairy industry in Austen provided locals with business opportunities. Traditionally, for instance, any crop residues produced by harvesting (such as straw) were usually burnt in the paddock. The arrival of dairy farmers created a market for straw, required to feed their dairy cows. *Brad* (a school principal) can recall two farmers (one arable and one dairy) arguing about the price of straw bales at a school camp; the dairy farmer had been protesting as he wanted to purchase the bales for free, whereas the arable farmer was prepared to sell them for a small fee.

Dairy farming generated employment for unemployed local residents, a consequence of the rural downturn in the 1980s. *Mary* is one such individual to take advantage of the opportunities provided by dairy farming in Austen. She arrived in 1992 to work as a dairy farm employee before training as an artificial insemination technician in 1995. Artificial Insemination technicians, now in high demand, are responsible for the artificial mating of dairy cows (Figure 5-6) in late October to December annually. The purpose of artificial insemination is to produce calves and stimulate milk production for the following dairy season, before bulls are sent out to serve in December. Each season *Mary* will inseminate up to 9,000 dairy cows.

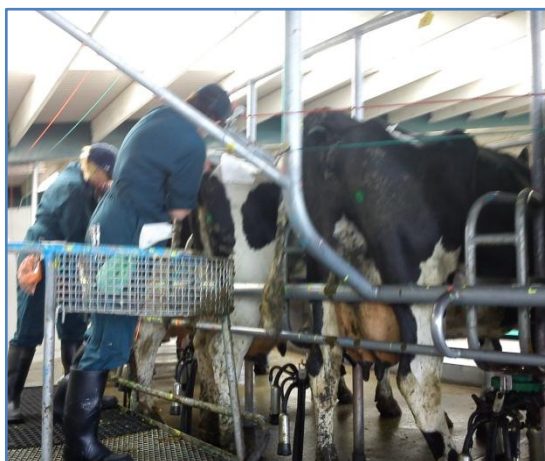


Figure 5-6 Artificial insemination of dairy cows, October 2011

5.2.3 Flat Land

A further advantage for dairy farming in Austen is the vast area of flat land. Many North Island dairy farms are located on what *Bobby* terms undulating country. Flat land is considered an advantage as dairy cows do not waste energy walking to, and from, the dairy shed or within paddocks. Fertiliser, for example, once applied, will not leach off the ground. Additionally, all paddocks within the farming system are able to be grazed in with none being considered too steep for grazing, as in the North Island. Combined with flat land, the region has more favourable climatic conditions for farming in comparison to the North.

5.2.4 Taylor's Dairy Conversion

Participants have identified that few established land owners converted their properties to dairy farming in the 1980s and 1990s. *Taylor* was one of the very few who did convert to dairy farming in 1988, after purchasing the family farm. He replaced his entire sheep flock with a herd of 105 mixed age dairy cows and entered into what he has termed a '*reverse sharemilking agreement*' with his neighbours; in conjunction with a continued arable farming component on the property. Under the agreement *Taylor* supplied the dairy cows and some land, while the neighbour supplied labour, knowledge, and dairy shed. Economic difficulties created by the removal of productivist farming support at this time, enforced the decision to partially convert to dairy farming. Finances were tight in the initial period following *Taylor's* conversion and all farm work was completed by family members. *Taylor* can remember a particularly humorous moment that occurred during the first calving on the farm, where his wife had been rearing all the calves born there:

Our oldest boy was about three [and] we still joke about the fact that she was washing the calf bucket and she heard this slurp, slurp, slurp on the other side, and it was him sucking on the teats. Because they were just the right height for him to walk straight up to!

Taylor does not regret the decision to convert to dairy farming. Finances have improved and when the reverse sharemilking agreement ended in 1995 allowing *Taylor* to build his

own dairy shed. He has since increased the total number of dairy cows milked on his property to 750 and rather than operating the dairy farm, has employed sharemilkers. *Taylor* believes that if he had stayed sheep farming he would have “*struggled away economically. I would still be bending over dagging lambs with a crook back. I think I would be a grumpy old bugger*”.

In summary, the first dairy farmers were attracted to the region because of irrigation. The first dairy farmers converted properties with access to irrigation and were able to design properties in an efficient manner, rather than accepting the status quo. It is these dairy farmers who have laid the foundation for dairy farming, and proven that there were alternative land uses that could be achieved in the region. The following section will discuss the recent facilitators of large scale and intensive dairy farming in the region after the post-2000 period.

5.3 Intensive Dairy Farming

The new millennium was the beginning of a dairy boom in Austen. New dairy farms are springing up far and wide, replacing once popular pastoral and arable properties. This recent mode of dairy farming is more intensive than ever before. In the last ten years the number of dairy cows in the region has increased by 884 per cent, the number of herds has doubled, and the average herd size in the region is among the largest in New Zealand (LIC., 2011). Participants have firstly identified that it has been established land owners who were actively converting their properties to dairy farming in the post 2000 period. What has facilitated this transition to intensive dairy farming in Austen? This section will elaborate and discuss the factors associated with conversion by this group of farmers.

5.3.1 Income

The declining incomes associated with pastoral farming, increased vitality, and prosperity associated with the dairy industry, have been highlighted by participants as the reasons established land owners converted to dairy farming. The income derived

from pastoral agriculture, in particular, has been declining since the dis-establishment of productivist policy in the late 1980s, as part of the Government's neo-liberal restructuring programme. As is illustrated by Figure 2-1, the dairy commodity price has continued to increase over this same period. In the face of this, participants explained that many pastoral farmers had '*held on*' and continued sheep farming for as long as possible because it had been their '*love*'. *Ted* (a farm consultant with 47 years working experience in the region) prepared Table 3. This table clearly illustrates the differences of income generated by each land use in the region. As is clear, dairy farming generates substantially more than previous traditional land uses, sheep and crop farming.

Table 3 Estimated income generated by land use in Austen'

Land Use	Estimated income per hectare
Dairy	\$11,700
Arable	\$3,000
Mixed sheep, beef or crop	\$1,500
Dryland sheep and beef	\$750

The continued commitment of farmers to traditional land uses was further challenged by two high milk price years. These years stimulated major interest in dairy farming: the first in 2001/2002 when dairy farmers were paid \$5.35 per kilogram of milk solids produced; and second in 2007/2008 when they were paid \$7.90 per kilogram of milk solids.²³ *Tommy's* neighbour was one farmer who had *held off* conversion since 1996, the high price year of 2001/2002 was the final push required to convert to dairy farming. This prosperity associated with the dairy industry "*couldn't have come at a worse time for sheep farmers . . . sheep were so bad and they had to bail out of sheep for pretty modest money. Their first love was sheep, but they just couldn't carry on*".

There are some farmers who will never convert to dairy farming, regardless of how prosperous the land use becomes. Pastoral and arable farming is deeply engrained in their psyche, ideology, and identity. *Dave* is one such farmer. He has stated that he will

²³ This had been a record price for dairy farmers but this has since been surpassed in 2010/2011 dairy season.

never convert his property as *“I just don’t like cows. I can put up with sheep [but] I am pretty pig headed about it”*. Ted finds that these types of farmers have an *“entrenched view, so they haven’t got an open mind to what the alternatives might like to be”*. Such alternatives include operating in a dairy support capacity, supplying winter grazing or summer crops on a contractual arrangement, or converting the property to dairy farming, but having no role in the day-to-day operation of the farm. Dave is aware of these possibilities and does operate a dairy support operation in conjunction with arable farming. While participants may openly state they have no interest in converting to dairy farming, they are aware of the financial performance of their land use, compared to dairy farming. On this basis, Dave concedes that:

*If the economics of dairying was a way above everything else and it appeared to be a no brainer that we should be involved, we would have the opportunity to convert our block . . . it would have to be a very, **very** attractive proposition . . . there is no way our crowd is going to be interested in manning it or running it. We are just not cut out that way.*

The prosperity of the dairy industry has converted long-time arable and pastoral farmers into dairy farmers overnight. Taylor recalls in the months before his partial conversion to dairy farming in 1988 *“one minute I was drenching lambs [the next] I was ordering semen [for artificial insemination of dairy cows]”*. Drew (a pastoral and arable farmer, now dairy) found that he was perceived as a ‘turncoat’ by neighbouring pastoral and arable farmers when it became known that he was converting his property to dairying. He found also at this time that some dairy farmers were cautious: they were losing a grazier and gaining a competitor for grazing. Drew has since found that *“the good ones of each [sheep, arable and dairy farmers] made relationships with each other and were quite happy, and the ones that were complaining about each other, generally deserved each other”*.

As former pastoral and arable farmers, Dave and Taylor identified that they up-skilled in aspects of the dairy industry. Taylor, for example, attended a dairy herd management course and Drew ‘crammed’ everything related to the dairy industry. These participants felt that they needed this education to communicate, not only with their employees, but provide them with credibility with other dairy farmers; as Taylor states *“if I have to talk to these fellows, I have to learn their lingo”*.

Pastoral farmers have not been the only ones to see the *'writing on the wall'*. So too have bank managers and farm consultants. *Ted* (a farm consultant) encouraged his clients, who were interested in converting to dairy farming, to commit. There was some resistance, but *Ted* has since found that *"I wouldn't have any of my dairy farmer clients now who want to even contemplate going back to what they were doing before"*. In some cases, *Ted* has had to slow the dairying development of farmers before they acquire excessive debt. He explains the case of one farmer *"the fact that [they put a] second shed [on] I didn't encourage them to do it. They just decided they were going to . . . [it is a case] of slowing them down a wee bit so they don't get ahead of themselves"*.

Ted has attempted to slow the dairying development of some farmers before they acquire too much debt, but others have been happy to *'give money out'*. *Taylor* and *Liam* have cited dubious behaviour on the part of banks and bank managers in recent years. *Taylor's* bank manager arrived unannounced one day and offered to provide additional financial resources to purchase a neighbouring property, if he wished to do so. *Taylor* felt that the bank was *'handing out'* money *"how much money do you want sir? How many zeros would you like on that? That was bloody near what it was like"*. *Taylor's* recollections and experiences of the difficult economic circumstances in the late 1980s made him cautious of the approach by the bank, labelling them *'sunshine boys'* as *"they are alright on a sunny day, but when the raincoats come out they are not very nice to know"*. Livestock agent *Liam* recalled instances where clients were told to secure a herd of dairy cows before the bank would lend money for conversion *"you possibly wouldn't find a bank that would admit it, but we were told all the time that the bank was saying, we won't lend you the money until you secure the cows"*.²⁴

5.3.2 Fonterra

The income derived from dairy farming has been a factor influencing conversion, but so too, is the well defined structure, clear leadership, and proven company performance of

²⁴ It is this attitude that contributed to drive the demand for dairy cows, which in turn increased the price of dairy cows. At the peak, some dairy farmers were paying in excess of \$2,500 per dairy cow, when they were realistically worth well less than that.

Fonterra. Once milk is harvested from cows it is then stored in a secure milk vat (Figure 5-7) to be collected by Fonterra tankers. After milk is collected, farmers do not have to worry about finding a buyer for their produce, Fonterra has this secured. For arable farmers, it can take over 12 months to find buyers for their produce, at the *'right price'*. Dairy farmers are paid monthly for milk produced. Fonterra also has a clear mandate and future direction, whereas the sheep meat and wool, and beef industries are increasingly characterised for their lack of structure. *Barney* (specialist dairy and irrigation farm consultant) explains *"the meat industry cannot get itself organised and it's stuffing them, whereas dairy farming is quite organised [and] the promotion of Fonterra [and] all that has helped, it's given people the confidence to go dairying"*. There was a recent attempt to form a Fonterra type co-operative for the Meat Industry, but the company did not have the financial resources to complete the development.



Figure 5-7 Milk harvested from cows is secured in milk vats

5.3.3 Irrigation

"Cows will follow pivots" (Ted, farm consultant).

Just as the availability of irrigation was an attraction for the first dairy farmers to Austen, the introduction an automated method of irrigation has been the *facilitator* of major dairy farming development. The centre pivot irrigator, a more efficient and effective method of irrigation (Figure 5-8), was introduced to Austen in the late 1990s. Not by an

innovative irrigation company, but an entrepreneurial farmer who had witnessed one operating in the United States of America and wanted to import a unit. *Rory explains “that [this irrigation] technology had been around for 20 to 30 years in the States and we were sitting here in New Zealand with our head in the sand, and we didn’t notice it”.* This focus on tried and tested methods, rather than innovating, was typical of local businesses when dairy farming first arrived in the area. As an insurance broker *Craig* found his company did not actively pursue the business of dairy farmers as *“they saw strong cropping properties and strong sheep properties and couldn’t see dairy farmers pushing that out”*. With the introduction of the centre pivot irrigator, that is exactly what has occurred.

Centre pivot irrigation has multiple benefits and advantages. This method of irrigation require no human labour in water application as they are fully automated (and can be controlled by the farmer’s cell phone). This method of irrigation, can double pasture growth and income. These advantages are offset by the initial and ongoing costs associated with the system, and it is these costs that have driven conversion to dairy farming for some farmers.²⁵ It is only high incomes that can justify investment in the new method of irrigation.

Drew is one such example of a pastoral and arable farmer who converted to dairy farming after the introduction of *four* centre pivot irrigators. Below is *Drew’s* story of conversion:

What drove us to dairying is irrigation . . . we were looking at border dyking it [the new farm], so converting it all into border dyke irrigation. The cost of doing that wasn’t a great deal different from putting pivots on, so the decision was made. Well we won’t border dyke it, we will pivot it. And then we will find a way to pay for it . . . the only way we could actually make it pay was convert to dairying.

*So we decided we would convert. The original number was 180 hectares to dairying of this block and put pivots [on]. We started off with one pivot on the dry land block, and that one pivot turned into two pivots . . . The bank were happy for us to do it . . . We had to take on an equity partner because we didn’t have the capital to do it all ourselves and we were going to put **two pivots on with a fifty bail rotary shed** and that was our original idea.*

We started looking for equity partners, the bank was supportive as long as we found an equity partner of a certain size and we were going to run a 700 cow unit. And then we went away . . . we started interviewing people as equity partners and we started going to irrigation companies about

²⁵ Dependent on length a pivot can cost in excess of \$250,000 to install.

the pivots. But we wanted to design in the whole block, not just half of it. We knew it would eventually have pivots on the whole lot. The irrigation company that we eventually chose offered us a deal to do all four pivots [laughs, a deal!], basically they gave us a year's interest free if we did all four and so we didn't have to pay for them for a year and they gave us quite a sizeable discount if we did all four and so that was attractive, as you can imagine. Rather than doing half, let's do the whole lot!

Meanwhile we were looking for equity partners . . . we talked to a large corporate, basically we were just going to be the passengers if we went with them. We decided we didn't want to do that and then we started talking to individuals like 50/50 sharemilkers and we got seriously talking to one couple. Um, eventually got down the track and found out that they were not the people we thought they were, we were quite uncomfortable with it.

We decided that we just couldn't find the right people. We were running into the wrong people. We didn't want to be swallowed up as a corporate and we . . . were nervous about the people that we were getting into business with. It's not like an employee, were you can say you are not performing you are fired and you find someone else. They [equity partners] are part of your business. You can't move them out, not as easy.

About that time, New Zealand Dairies started up and they were quite happy to take our milk with no shares. Because we didn't have to buy shares, shares [in Fonterra that] were going to be worth about \$3 million dollars, we didn't need the equity partner. Then we decided, right we will do it on our own, so we employed a manager to run the farm and we quickly worked out, we had four pivots, we had a dairy shed, you know the slippery slope, so I went out and bought another 500 cows [laughs]. We started milking 1300 cows year one, we milked this whole block, the whole 355 hectares was milked in year one.

In hindsight all those decisions were the right ones we didn't know that at the time. But if you look at hindsight pivots got dearer, we obviously grew a lot more of everything we had. Cows doubled in price in year two and Fonterra shares went down in value and land went up in value . . . so everything we had done had actually worked really well into our favour and for some reason we managed in year one, we got a good payout. From our point of view everything worked really well, that's financial point of views of course.

In eight months *Drew* converted from pastoral and arable farming, to dairy farming. What is remarkable about *Drew's* story is, just as *Ted* had warned, *Drew* continued with dairy development. Originally *Drew's* second property was to act as a dairy support block for the dairy farm. But six months after the conversion of the first property, the financial performance of the two were reviewed and *Drew* explains that situation “we could see what the pivots were doing . . . we had pivots growing heaps of grass and looking really good and cows doing well. I would drive down the road and see my other block that was all border dyke and going brown”. The short term solution to this problem was the installation of centre pivot irrigation and they immediately improved production. After 12 months “[we] looked at it and thought, well how much are we making out of this wheat? Sod all. And we looked at dairy and we thought **what the hell are we mucking around with this for?**” The second property was then converted.

For *Ted*, these tales of conversion to dairy farming with centre pivot irrigation are examples of land moving to its *'highest and best use'*. As a student at Lincoln College (now Lincoln University) in the 1950s, *Ted* can recall a lecturer teaching that *"land will always move to its highest and best use"* and *Ted* finds *"if dairying is more profitable than arable or anything else, then eventually that's the way it will go"*. *Barney* suggests that dairy farming may not be the final step of the evolution of land use in the region, rather a step towards an alternative:

Who knows whether the pharmaceutical thing might go? . . . There might be a tree crop that would grow and has phenomenal benefits that might grow on Lismore soil. It might not be higher income than dairy, but it might have a completely different cost structure that makes it more of an attractive alternative to dairying.

The efficiencies of centre pivot irrigation have also been noted by arable farmers, who have added this method of irrigation but remained with the same land use. The incentive to change irrigation type, from border dyke or spray irrigation to centre pivot, had not existed before. The advantages of centre pivot irrigation outlined above have encouraged all farmers to change irrigation type. *Rory* (now in his capacity as an irrigation consultant) reports that in some areas of the region there has been a wholesale change of irrigation type. One irrigation company installed 140 centre pivot irrigators in 2008. *Dave*, for example, did consider using spray irrigation but found *"you are a professional irrigator shifter and you are not a farmer"*, and on this basis, centre pivot irrigation was installed.

The installation of centre pivot irrigation provides farmers with the opportunity to redevelop existing irrigation and farm infrastructure on their properties. *Tommy* redeveloped the irrigation on his farm, completing it with the potential of dairy conversion *'in mind'*, if not by himself, then by someone else. In this sense, the property would be *'perfectly laid out'* for easy conversion to dairy farming, and provided it with a good resale value. *Dave's* brother also redeveloped his property on the basis of a potential future conversion to dairy farming *"he revamped the farm irrigation-wise. [A] total clearance and reset the farm [so it's] pretty well laid out to change to dairy if he wanted to"*. The introduction of the centre pivot has also enabled *Dave's* brother to

abandon sheep farming, and focus on arable farming and dairy support. The potential of some properties for conversion has boosted rural property prices and enabled farmers to leave the land in a secure financial position, something they may not have been able to achieve after the upheavals of the 1980s.

To provide security of irrigation water supply, a recent addition to a number of properties in Austen has been the irrigation storage pond such as the one depicted in Figure 5-8. This enables farmers to store excess irrigation water to use at a later date.



Figure 5-8 A irrigation storage pond

In summary, this chapter has highlighted the traditional land uses in Austen and the facilitators of the conversion to dairy farming and intensive dairy farming. The major attraction for the development of dairy farming in Austen has been irrigation, initially the availability of irrigation and then the change in the methods of irrigation. These factors have encouraged investment in dairy farming and the conversion of pastoral and arable properties to dairy farming. Established land owners have been driven to conversions to dairy farming because of continued diminishing returns associated with pastoral and arable farming, when compared to the continued prosperity of dairy farming. The following chapter will discuss the influence of dairy farming on the physical landscape and rural communities.

Chapter 6 Results

Influence of Dairy Farming on the Rural Landscape and Rural Community

The previous results chapter identified aspects of traditional land uses and the drivers of the change to intensive dairy farming. This chapter will present the results of this study related to the influence of dairy farming on the rural landscape and community. As part of the focus on landscape change, the first section will illustrate the physical changes that have occurred to the rural landscape and the reasons for this. The second half of this chapter will focus on the community changes that have occurred as a result of the introduction of dairy farming, discussing the role of dairy farm employees in the community, and changed community practices and introduction of a migrant workforce for the dairy industry.

6.1 Landscape Change

Dairy farming and the introduction of centre pivot irrigation, have contributed to significant physical landscape change and modification in Austen. Characteristic landscape features such as trees, hedges, and shelter belts, planted by generations of farmers have been removed to accommodate for the new demands of agriculture. Modification to the landscape is required with the addition of centre pivot irrigation because of these features are unable to '*climb*' over any impediments to its pathway, and hence such features that *can* be moved are re-homed elsewhere. The remainder are removed completely. In the process of converting his farm to dairying in 2008, *Drew* removed 12 kilometres of trees, hedges, and shelter belts. Scenes replicating Figure 6-1 occur throughout Austen. This section will outline the reaction of locals and newcomers to this landscape change and discuss the justification for such change.



Figure 6-1 A former shelter belt awaits its destiny

6.1.1 Justification for the removal of landscape features

The requirement for efficient irrigation systems to increase and guarantee production, have been used by some participants as justification for the removal of these landscape features. Participants reported that when they converted to dairy farming or added irrigation, farms were treated as ‘*blank slates*’. In these conditions, farm infrastructure surplus to requirements is demolished or moved. *Bobby* is one such farmer who treated his farm in this manner when it was converted to dairy farming:

It just had to be a blank slate. There was just nothing in the right place. The main thing we are setting up for was irrigation. We had to get that as most efficient as we could and then build the shed and infrastructure around it.

This attitude is not limited to dairy farmers. As a pastoral and arable farmer, *Dave* considered using alternative methods of irrigation on his property, but the labour efficiencies of the pivot prevailed. *Dave* concludes “to irrigate that property with anything other than a pivot would have been absolute madness . . . you are that busy chasing [other types of] irrigation [and] you haven’t got any time to do farming”.

The primary consideration on a pastoral or arable farm had been shelter. Now these landscape features are secondary considerations. The growth of luscious irrigated pastures, produce milk that generates income and these are the main priorities. Some participants have interpreted this as the transition of dairy farms to ‘*grass growing factories*’. *Rory* told me that:

Today it’s just total obliteration, what you are dealing with is a factory growing grass. If you can’t grow grass on your factory [then] you can’t make money, and if you can’t make money then you are not there doing it. So they are treated as a factory growing grass, so they have chopped everything down. That’s what it is. You are no different to a shop in town [except] you are a

factory growing milk and you turn that grass into milk, which turns into cash. As simple as that and you have to do it the most efficient way you can.

Ted (farm consultant) prefers to have a situation where farmers have abundant and intensive pasture growth, without stock shelter:

I said I would rather have the situation where we could grow quality feed and enough feed to feed our stock well and lose some of our shelter in the process. In my view the feeding quality and capabilities is more important than the shelter.

The commitment of farmers to the pursuit of production has enabled the region's dairy farms to become the most productive in New Zealand (LIC., 2010). As a consequence of this commitment there have been an ever increasing number of farms in the region that look like Figure 6-2 not a tree, shelter belt, or hedge row on the property. The red arrows in Figure 6-2 illustrate the position of the only remaining shelter belts found on this property. It is clear to see that there is little stock shelter on the property. Some participants expressed concern regarding the creation of these types of farms: *"it's more the animal health thing, they have no shelter and that's as much as when it's stinking hot as when it's cold"*. On these properties, there is nowhere for a dairy cow to shelter on a hot or cold day.

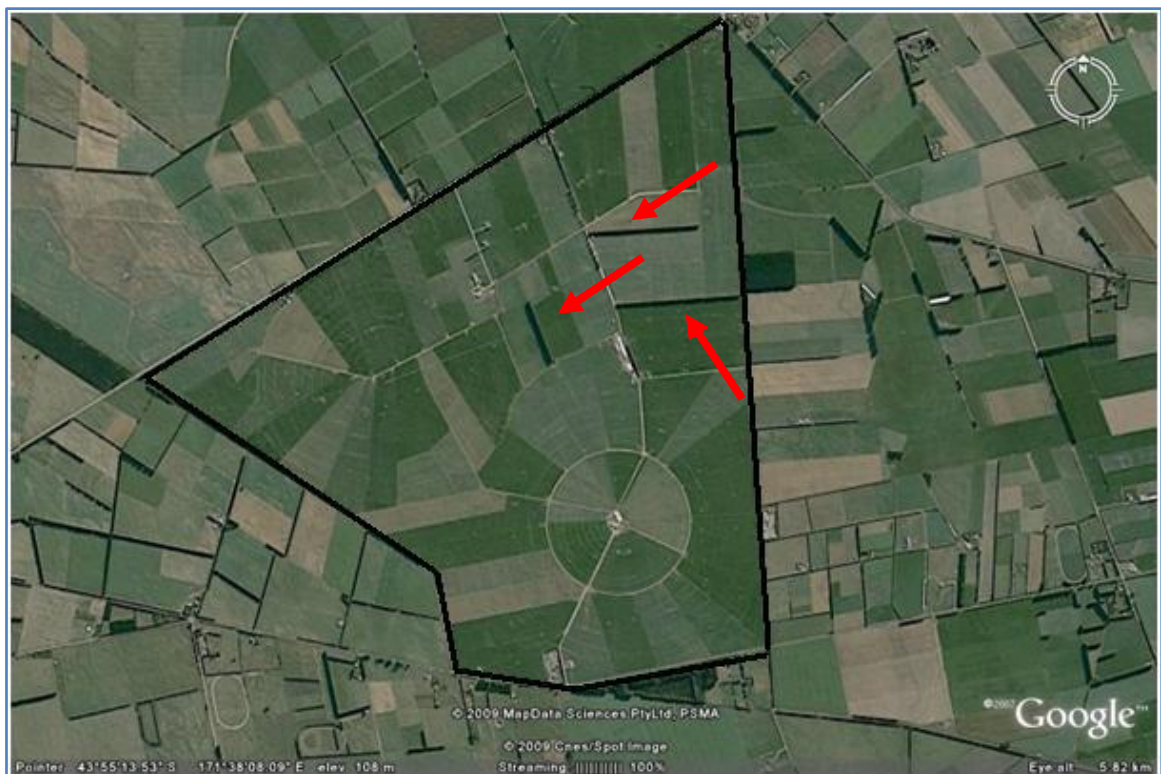


Figure 6-2 An example of a treeless property (Source: Google Earth., 2011)

Craig (an insurance broker) indicates insurance claims have increased since the removal of these landscape features. These are associated mainly with wind damage, some methods of irrigation are unable to cope with the prevailing nor-westerly winds in Austen. One such nor-westerly wind prior to Christmas in 2010 inflicted widespread damage to irrigation infrastructure in the region; with many irrigation service people busy repairing damage to enable farmers to continue irrigating. This situation is often repeated following each bad nor-westerly gale.

Recognising the benefits of trees, hedges, and shelter belts, *Taylor* is one of a handful of farmers who are taking a different approach. Instead of removing trees, hedges, and shelter belts to accommodate for the pivot, *Taylor* is attempting to accommodate his new centre pivot irrigators within his existing shelter. *Taylor* shares his plans:

My aim would be to have a square block of 400 [metres] by 400 [metres], with a pivot in it surrounded by trees and I think that would be rather innovative. It might cost me [a bit but] . . . I think down the track we might have to evolve. Farming won't be the same as we know it. It just takes someone to stick their neck out.

In this study, *Taylor's* approach is unique. Participants who removed landscape features were all asked if they intended to replant the trees that they had removed. The response was unanimous. They all intended to replant within the bounds of irrigation infrastructure. Yet, only *one* had!

6.1.2 Reaction to Landscape Change

The reaction of participants to the removal of landscape features has been mixed in this study. *Drew* found that his neighbour had been critical of his decision to remove his trees, so somewhat cheekily he suggested “*I said you can have them if you want them! She wasn't too keen on that idea*”. *Riley* (a business leader) shared the opinion of *Drew's* neighbour and found that the removal of these landscape features has changed the natural characteristics of the region:

It changes the whole character of the landscape completely. It opens it up. To me it makes it very, very bleak looking . . . It's not visually fragmented as it used to be with the removal of the shelter belts. Shelter belts gave it a more intimate type of landscape because it compartmentalised paddocks and things like that.

It is not only the physical landscape features that have changed through the introduction of dairy farming and irrigation, but the *colour* of the landscape has also evolved. Previously, during summer time, pastures landscapes without irrigation could be characterised using various shades of brown and were home to sheep and stones. The addition of irrigation has transformed the colour of spring, summer, autumn, and winter pasture, to a luscious green. For *Mary* this change has been the biggest indicator of land use change in Austen *“seeing farms that had been dry . . . [now, with] more green on there [points to dark green chair] than there was in some paddocks”*.

Liam instead perceives the removal of these landscape features as an illustration of the progress and development that is occurring in Austen. He explains *“I don’t call it destruction. It’s meant to be progress . . . if someone thinks they are improving on what they are doing, on the last generation or the last owner, then that is fine”*. He cites the example of a local farmer who had been the tree farmer of the year and had great pride in the trees on his property:

There is a pivot on his place now. I said how do you feel about those trees getting knocked over? He said I couldn’t give a stuff, I planted them and got pleasure out of them while I was there. But I have sold the farm now, it’s not mine. So he said if they want to knock them over it’s their business and I think that’s a positive way to think about it. You can’t get emotional about what you have done in the past.

Rurally based participants have questioned whether the wider population of Austen would realise the change that has occurred to the rural landscape following the introduction of dairy farming and irrigation. *Tommy* believes that *“I don’t think you’ve seen the landscape change so much in such a short time as you have seen [recently]. If you are driving around the plains it would be quite phenomenal”*. During the course of my fieldwork for this study, an exhaustive search of local newspaper archives was completed. Only *one* article was found pertaining to the removal of trees, hedges, and shelter belts (Sandys, 2007). No further publicity regarding the removal of these trees has occurred. Some participants and Sandys (2007) question whether the tree subsidy paid to farmers in the region in the 1970s should be repaid. This can only remain a vague suggestion as there is no avenue to pursue such claims. The Catchment Board is now defunct and there is no alternative government entity or department to pursue the matter.

6.2 Consolidation of Dairy Farming

“A lot of the locals . . . [because] we knew nothing about dairy [farming], it just seemed like an absolute extreme to what we had known” (Dave, arable and pastoral farmer).

In the period when pastoral and arable farming predominated in Austen, the practice of extending a warm welcome to newcomers was a traditional part of community life. *Taylor’s* wife took a batch of homemade baking to her new neighbours, as did *Mary*. These women made the effort to introduce themselves to newcomers, but the introduction of dairy farm employees has challenged this form of neighbourly relations *“initially you would make the effort to go and meet them and then you found that you had arrived at a time when they were busy with calving and I don’t know, you just never saw them again”*. It is the introduction of this community of dairy farm employees that has challenged long established norms and this section will detail the ways in which the rural community has reacted to some of the practices of dairy farmers and dairy farm employees.

6.2.1 Perceptions of Dairy Farm Employees

In the interviews, established local residents indicated that some of the first dairy farmers and their employees to arrive in the region were perceived as *‘undesirables’*. It was felt that the new land owners, in particular, were out to *‘make money and not friends’*. The first employees were often housed in single people’s accommodation, and as such, family groups were not attracted to Austen. Dairy farm employers were not considered to be *‘picky’* over the *‘type’* of people that they were employing; one participant commented that they *“were bringing in workers and basically if you could stand up and turn up for work, you could have a job”*. These features generated the perception of dairy farm employees as undesirables, which in turn, generated the perception that crime rates had increased in Austen. In response to this, *Tommy* started locking his home, something that is not frequently done in rural areas.

The type of crime committed in rural areas is changing with the introduction of dairy farming. Stock rustling was one common issue, as was the theft of farm equipment, but recently a number of cases of milk contamination and theft of animals has come to the attention of police. In response to this undesirable element in the community, participants also told of children's freedoms becoming restricted. The introduction of a roving population of employees, many whom are not known to locals, has caused some parents to become extra vigilant. In addition, *Marjorie* (local teacher) reiterated that some children were no longer allowed to ride their bicycles or horses alone on country roads. With an increase in conversions to dairy farming, there are more vehicles on rural roads. There have been a number of cases cited by participants of road accidents involving milk tankers and other farm vehicles travelling on rural roads that have killed or injured people (Figure 6-3).

Removed due to copyright

Figure 6-3 A tanker accident in Austen (Source: Bishop, 2006)

Building further on the notion of a new community of undesirable dairy farm employees, is also the perception that those involved in the dairy industry are heavy drug and alcohol users, with marijuana particularly prevalent. *Bobby* (dairy farmer) had an employee who was a regular user of marijuana and he asked him to leave the farm “we . . . packed his stuff, put the bong on top of his stuff and told his mother to come and pick him up”. It has been said that marijuana is used by dairy farm employees as a way to relax from the multiple stresses associated with dairy farming, but there have been multiple situations where employees do come to work ‘wasted’. With slower reaction times, these employees are placing themselves, other employees, and dairy cows in

danger. Pre-employment and random drug testing is now standard policy on some dairy farms in Austen to eradicate drug use amongst dairy farm employees.

In saying this, in contrast to the perception of unusually heavy drug use amongst dairy farm employees, *Suanne* (drug and alcohol counsellor) rejects the notion that drug use is more prevalent in the dairy industry than other occupations. She finds the use of marijuana is a highly publicised, society wide problem, as more community members become *aware* and are *users* of the drug.

It is more valid to say that alcohol use and abuse remains a problem for some dairy farm employees. *Juanita* (local counsellor) explained the case of a client, for who it had become accepted culture to encourage employees to *'have a few beers at lunchtime'*. Situations such as this become a problem, if employees are back to work after lunch, and dealing with heavy machinery or behaviourally unpredictable dairy cows. The necessary long hours of work on a dairy farm ensure that sleep deprivation will limit an employee's tolerance levels for alcohol. They may only be able to consume one or two drinks before they are *"blithering idiots"*. Many social conventions in rural areas are based around alcohol, for example, a *'shed shout'* where a dairy farmer will invite neighbours around after the completion of a new dairy shed or the after work drink *"[where] Joe next door sings out to have a beer at the shed"*. These examples can place pressure on employees' personal relationships.

6.2.2 Movement of Dairy Farm Employees

The nature of the New Zealand dairy industry means that dairy farm employees are highly mobile, prepared to move to new places of employment at any time. This is in complete contrast to arable and pastoral farmers and their employees in Austen, who will have moved very little (if at all). Dairy farm employee migration is not limited to intra-regional movement but involves moving *wherever* the next opportunity arises. *Bobby* moved to the South Island from the North Island. Migrations of this nature can be very expensive and stretch the financial resources of those involved (Figure 6-4).

Taylor recalls the case of a friend who moved from the West Coast of the South Island to Austen in the 1990s:

[My friend] actually came over from the [West] Coast and he drove a tractor over . . . [the mountain pass] with a couple of trailers behind him and slept in a tent in Arthurs Pass . . . it snowed that night. He couldn't afford to freight his gear over. But there used to be a lot of tractors go through on the main road. Fellows even drove them down from the North Island with a couple of trailers behind them full of gear and things like that. I can remember seeing them go through [the local township] here, with a flat deck trailer on them with a silage wagon on the back of them [and] the silage wagon was full of calf rearing gear and things like that.



Figure 6-4 Dairy farm employees moving on Gypsy Day

Dairy farmers accept that this movement is part of advancing their careers. *Bobby* and *Marshall* expect to move to new places of employment every two to five years in order to avail themselves of new opportunities to advance their careers. *Bobby* explains how he has advanced his dairy farming career from being an employee to owning multiple farms:

I left school after fifth form . . . I was just an employee on a dairy farm. I did that for three years. Then I went and did another two years at another farm as an employee . . . after that I went managing [a] 140 cow farm for two years and after that I went and share milked for about five years on a 130 cows [dairy farm at] 39 percent. Then I got married . . . we went sharemilking 200 cows for four years in Taranaki. We moved down south and bought our cows . . . and we doubled our numbers ... to about 400. We did that for five years, had our twins and we were looking for farms at that stage and then we decided to go bigger sharemilking and bought this property that we are now on. So we were sharemilking 800 cows and bought 120 hectares and then into the third year of that contract we started converting this farm . . . and came here. We have been here now for four years. When we came here to milk we also bought a 100 hectare farm run-off [dairy support property] . . . then just this last year . . . we bought into, twenty five per cent into a 150 hectare farm which we converted and were involved in with three other partners.

In 2011, *Bobby* purchased another pastoral and arable farm to eventually be converted into a dairy farm. This purchase is part of the long term goal of stepping away from direct day-to-day involvement in dairy farming. He now owns two dairy farms and a dairy support farm, and has a 25 per cent shareholding in another dairy farm.

Over 20 years in the dairy industry, *Bobby* has worked on seven different dairy farms and from his experience he has found that there is a misconception as to why dairy farm employees move frequently. The perception garnered from talking to people in the pastoral and arable farming sector, is that dairy farm employees move because they are unhappy. But as indicated, they are moving to take advantage of opportunities *“people don’t understand the movement [and] they think you are moving because you are not happy, but we are moving for opportunities generally . . . it has been hard for me to stay put”*. This creates a number of tensions, after making repeated attempts to ‘get to know’ newcomer dairy farm employees *Mary* and *Taylor’s* wife, for example, ceased making these attempts. *Mary* in particular felt that *“dairy farmers were sort of interlopers you know, we don’t need to worry about getting to know them because they will be moving on in . . . six months to a year”*.

Skeet and *Glenn* are two newcomer dairy farm employees in *Austen* who have found it difficult to form friendships with local community members. They have found locals are ‘cliquish’ and ‘standoffish’ and unwilling to develop friendships with them. *Skeet* (originally from South America) found it difficult to form friendships with New Zealanders because of two factors: poor English speaking skills and the scheduling of days off, meaning that he had few weekends off to socialise. It was only once he met fellow Latinos that he was able to form friendships with people outside his dairy farm. *Glenn* was originally hopeful that his partner (who worked in a nearby township) would *“make friends for us because she works in town, so she knows people who live in [the township] who might invite us for a barbeque or something”*. They have found it difficult for this to happen, as even their established friends living in Christchurch have failed to maintain contact with them. Feeling isolated from friends and family based in Christchurch, *Glenn* has found employment closer to them.

There are consequences for dairy farm employees if they fail to generate friendships with local residents or participate in outside farm events such as sport. *Juanita* (local counsellor) indicated that problems are more likely for those with an introverted personality. There has been an upsurge in the numbers of dairy farm employees, in the last ten years, who have sought help from this counselling service. However, counselling is not perceived by some dairy farm employers as an *essential* service like visits to doctors or dentists, but more a “*bloody waste of time*”. *Juanita* was counselling a dairy farm employee client and was interrupted by his employer, who wanted to employee to help with a problem on the farm:

I have had a guy in here and the phone rang and the irrigator had hit a tree. The guy is sitting here and the management is out there, what can this poor guy in here do? “It’s just more pressure. I am meant to be having this hour with my counsellor”.

To cater to the demand from dairy farm employees in the region, the counselling service (one of only a handful based in the region) has extended its opening hours.

Glenn and *Skeet* have identified that the ability to develop friendships with local residents has been a problem, whereas *Bobby* has instead found it refreshing to be an ‘*unknown*’ in *Austen*. This unknown quantity has enabled *Bobby* to be taken on the basis of “*how good you are, rather than who you know, whereas up there [the North Island] it was more who you knew and your past record*”. It is the development of a positive reputation that has provided *Bobby* with further opportunities to expand his dairy farming business, a feat he would not have achieved if he had remained based in the North Island. *Bobby* entered into an equity partnership that “*basically just turned up through reputation . . . which we have probably tried to maintain the whole time*”. As a land owner, *Bobby* admits that it has been easier to develop friendships with other community members, as owning land and having an established relationship with the bank exhibits that they have a level of permanence and social respectability, which other dairy farm employees do not have.

6.2.3 Dairy Farm Employees and Children

One of the points raised by my research participants was that it was important for me to note that dairy farm employees were typically young, and those with families, had young

children. *Juanita* explained that the arrival of children in families of dairy farm employees can place additional pressure and strain, not only on the interpersonal relationships, but also on their ability to find jobs and maintain their financial security.

Juanita explains:

They have got long hours and disgruntled partners, especially when a child gets introduced into the mix. It's not so bad when they are single and doing their thing and they can do the long hours and they can cope, as stressful as it. But as soon as they add a third party, not a third party, a child to the party [laughs] it just seems to upset the apple cart big time, because that limits income, it takes away for their potential for being hired, you know as a team or whatever, so that impacts on their employment and that creates the stress.

It has been the schooling arrangements for children of dairy farm employees that has generated the most comment. The movement of dairy farm employees has had a very real effect on Austen Primary School. One of the biggest effects has been the movement of dairy farm employees during 'Gypsy day' season (May to August). A result of which, *Brad* once had 30 students leave his primary school over this period. This creates problems as the school roll is graded in July, and the following years funding is established; this is a time when the Ministry of Education predicts will be the most stable period for the school roll. In these circumstances the school then has to source additional funding for any newcomers, as the school is 'graded' on the lower roll, this can be especially problematic if the newcomer children have any special needs or requirements.

Additionally, some parents do not provide the school with any forewarning of their impending arrival or departure, or of any learning difficulties or special needs that their children have. *Marjorie* (school teacher) explained an incident that occurred at the end of a school term, when a dairy farm employee and family left the school abruptly "*I don't even know if the kids knew [but] they came to the school concert and then they didn't stay for supper. They had all their belongings packed in the car and they went. That was it*". There have been cases where dairy farm employees leave schools with accounts unpaid or library books unreturned, and no forwarding address to pursue remittance.

As a result of continual movement of dairy farm employees, *Marjorie* found that children are now attending many different primary schools; and had heard of a child

who had attended 13 different primary schools in eight years! The continual movement of these employees does not make it easy for children to learn to form relationships with children their own age as *“they don’t know what it is to make a friend because they get hurt. They make a friend and then they are dragged away to another school and they have to start again”*. It is feasible that some students who continuously move, may miss out on being taught certain subjects, *Marjorie* explains:

You could almost start your teaching from after July and have it from July to July, because you would know it would get the kids doing one whole cycle. But because each school can choose, you have got a set curriculum, but you can choose which order you do it in. So conceivably a child that moves every May, June, July, could always miss out on Geometry and Maths, or Poetry and English or it just through no fault of their own.

Other difficulties with children of dairy farm employees also soon became evident. *Marjorie* and *Brad* commented that the long working hours of dairy farm employees was evident in the lack of skills of some pre-school and new entrant children. Some arrive at school lacking basic knowledge of shapes, colours, and manipulation, particularly the use of such things as scissors. At other levels of the school system some students come to school with incomplete homework or peculiar lunches:

If both male and female were working [on the dairy farm] the kids had to get themselves up and off to school and sometimes. I don’t think they ever didn’t have enough food, but kids being kids, they would make peculiar sandwiches . . . and then in the evenings they would be going back to the dairy shed at night because mum or dad might still have milking to do until 7-8 at night. And this was little five year olds. People ... perceived that dairying was ...a very uncaring environment for young children.

Marjorie and *Brad* admit these types of situations are becoming rarer, as dairy farm employees share duties with other dairy farm employees and the modern capabilities of dairy sheds reduce labour requirements. My interviews illustrated that some dairy farm employee parents were aware of these problems and did their best to mitigate them. When, for example, moving within Austen, *Bobby* kept his children at the same school in order to provide them with stability. He also informed me that while he works long hours, he is trying to illustrate to his children that *“we do work hard for our money”*.

This is only part of the story, however. While *Dave* criticised dairy farm employees for a lack of commitment to local schools, *Marjorie*, *Bobby* and *Brad* noted that dairy farmers were positively changing the operation of rural schools. At Austen Primary School, for

example, dairy farmers now form the majority of members on the Board of Trustees. They draw on their business skills and connections for the operation of the school and help with fundraising efforts. It is important to note that we are talking about resident dairy farmers, rather than dairy farm employees. This reinforces the notion that locally resident people continue to maintain a vested interest in the community and schools *“you tend to find the locals drive everything. The people who live here are the ones that do all the donkey work”*.

It is also evident that dairy farm employees realise that they are thought of as less reliable community members. *Skeet*, for example, found that getting involved in a local sports team was difficult *“I call[ed] one guy and he was away on holidays, so I left a message and he never called me back”*. Participating in sport is an important part of *Skeet’s* culture and promoted as a better way to relax or unwind than alcohol or drugs. It was not until a fellow Latino (who was good at football) became involved in a local team that *Skeet* was invited to play. *Glenn* did consider becoming involved in a local touch rugby or football team, the long working hours associated with dairy farming ensured that he was unable to fully commit to practices or games *“I only have every second weekend [off] . . . after work I can’t be bothered doing anything because by the time you do a 12 hour day you are shattered and in bed by 8-8.30 sometimes”*. *Glenn* and *Skeet* both feel that they will be able to commit to sport on a regular basis when they have advanced their careers into dairy management.

Taylor (as president of a local rugby club) admitted that it was difficult to operate a rugby club with the continual movement of dairy farm employees. He found that dairy farm employees were unavailable at the opposite end of the season to arable and pastoral farmers. These farmers are unable to play pre-season games because of harvesting whereas dairy farm employees are busy calving at the business end of the rugby season. *Marjorie* knows of children in her class that would like to participate in an after school or weekend sport, but because of the busy schedule of dairy farm employees they are unable too. *Bobby* admits that he limits the number of sports that his children participate in, because they do not have the time to take children to practices or games (which often occur during milking time).

6.3 Community Relations

The instability associated with children's education is also reflected in the changed nature of the rural community in Austen. Those of my research participants who were long established residents of the region, commented that dairy farm employees do not have the same level of commitment and involvement in community activities comparative to 'locals'. *Dave* explains "you have a roving population of people [and these] *sharemilkers* [that] *haven't got the same regard for community and the school long term, as what our traditional people had*". *Mary* found that the level of commitment from farmers to the local agricultural and pastoral show had declined since the arrival of dairy farming. Arable and pastoral farmers had formed the foundation of the organising committee, but these farmers had now left the community, and dairy farmers (who had replaced them on the land) were not getting involved. This show day was used by dairy farmers as a day off to relax or socialise. The remainder of this section will elaborate the changing community relations that have occurred as a result of the introduction of dairy farm and dairy farm employees, to Austen.

6.3.1 Community Practices and Co-operation

"I don't want to be old and fuddy duddy, but the dairy guys are a different breed" (*Dave*, pastoral and arable farmer).

As I have outlined, pastoral and arable farmers have a particular set of farm-related practices, often taken-for-granted, which have their extension in the community and have been worked out over many generations. The arrival of dairy farmers has challenged these practices as dairy farmers have different modes of operation. My research participants, particularly pastoral and arable farmers, thought that the days when the '*handshake over the back fence*' was a binding contract, no longer existed. This perception has been created as dairy farmers have reneged on contracts or deals that they entered into with local farmers. *Tommy*, for example, entered into a contract with a local dairy farmer to supply winter grazing, but seven days later the contract was cancelled, citing a better deal found elsewhere. In the farming network "*everyone*

knows everyone in farming circles [and] there is always some sort of connection”, ensuring that bad deals are well publicised and people are able to name the “good fellows, the ones that everyone wants to deal with and the ones that people won’t deal with”.

Participants cited a number of cases where dairy farmers in Austen had taken advantage of dairy graziers, many of whom were not “*up to speed with dairying technology*”. A dairy grazing agreement (also known as dairy support) entails the production of crops such as kale or silage (Figure 6-5) on a contractual arrangement for a local dairy farmer. The advantages of acting in a dairy support capacity are outlined by *Dave*:

You can grow a crop on a contract arrangement for a certain dairy farmer and you can accumulate a huge tonnage of dry matter on a given area and you programme for him to bring x number of cows in for six weeks and on a certain day they are gone. You don’t have to market them, you don’t have to buy the stock [and] you don’t have to fund it. It means that the next day you can be cultivating that for a paddock of wheat.



Figure 6-5 Cows grazing on a dairy support property

In turn however, dairy graziers are at the ‘*whim*’ of dairy farmers and their fluctuating commodity prices. The downturn of commodity prices in 2009 and global recession are recent examples of this, as *Dave* recalls: “*they [dairy farmers] screwed us back a good 25 per cent on the year before, so that cut our economies back*”. *Dave* is somewhat proud that he was then able to return the favour to dairy farmers the following year:

There has been a little bit of higher grazing prices during the high payout times. There has been a little bit of payback for some of the shit that’s been given to graziers by the dairy farmers. The dairy farmers have been very arrogant.

But what some people interpret as arrogance, other people see as passion and energy for the dairy industry. Pastoral and arable participants have found that dairy farm

employees are *“very motivated and driven, they know what they want to get. He [the dairy farmer] can tell you what he wants to do in three to five to ten years time”*. This motivation is derived from the formalised structure of the dairy industry, which participants now believe is contributing to some morally dubious behaviour of dairy farm employees, who can take short cuts to achieve success.

Marshall attempted to defend the behaviour of this and other dairy farmers by saying that *“they [dairy farmers] are cut throat, they have to be . . . they have got massive mortgages hanging over their heads. It might look like they have got heaps of money, but really it’s the banks that have got all the money”*. *Taylor* instead apportions blame for this type of behaviour on the readiness and eagerness of dairy farm employees to climb the dairy farm career ladder quicker *“there is a lot of wee steps there and I think there is a lot of making that extra buck to take that next step all the time . . . trying to rip someone off to get to the next level”*.

The commitment of dairy farmers to their careers leaves *Tommy* feeling that some will be old men or women by the age of 40. This perception is based on his interpretations of, and interactions with, dairy farmers *“[they are] stressed out and buggered . . . they are flat out . . . they have completely missed their kids growing up. They don’t go to sports days or anything like that because they haven’t got time”*. *Dave* concurs with this perception:

The owners a lot of them are highly indebted and highly motivated . . . they have probably worked their butts off, husband and wife, and they are mortgaged to the hilt to get their first property and they are working umpteen hours a day to try and make it work.

After 15 years working as a dairy farm employee, and later a contract milker, *Marshall* (in his late 30s) has walked away from dairy farming. He is now pursuing a career in real estate in a major urban centre. *Bobby*, as a dairy farm owner, has the goal of retiring from the day-to-day operation of his dairy farm by the age of 50; but as a farm owner, he also has the flexibility to change the dairy farming schedule to fit with his children’s needs. For example, recently an employee left and provided little warning, and without time to find a replacement, during the school term, *Bobby* and his wife got up an hour earlier to milk the cows so they were able to get their children off to school.

Barney and Taylor highlight that some dairy farmers lack the agricultural skills that are especially important when reaching the management stage of their careers. Some dairy farm employees now manage multi-million dollar assets, but lack the business skills “comparable with someone running a 30 million dollar business in town”. The problems associated with business management are not limited to the dairy industry. *Rory* has found that there is a lack of middle management skill developed in the irrigation industry.

Despite the lack of agricultural and business skills held by some, dairy farming is perceived by some participants as the only way that an individual can currently attain farm ownership. *Ted* and *Barney*, as farm consultants, are advising young clients that dairy farming is the only way to be financially successful in farming. As an occupation, it provides employees with the opportunity to advance their careers and build equity to purchase a farm. *Ted* cites two examples of clients who have heeded this advice:

I have said, look if you want to own your own farm [and] you want to make progress then I think you should go into dairying, and they have done that. One guy would be eight or ten years [into it] now, he is still a share milker but he owns his own cows, he has quite a big herd now and he will ultimately buy his own farm, I am sure. The other one is three years into it now and is in a managers role, not a total farm manager, but a herd manager and again he will, they will, eventually own their own farm I am sure. That's simply the way to buy a farm.

This apparent trend of dairy farming as the only viable means to owning rural land worries *Dave*. He explains:

While dairy is clearly more profitable than anything else, they are always going to pay more for land than we can. So the effect of it is that you cannot increase your business. If you can't compete for land the dairyman's always going to get it. So his business, it [is] always going to grow and we at best can only stay the same. At the end of the day you are probably going to have to give it to them, and that scares the hell out of me.

These fears of *Dave's* have some justification. *Tommy* recently sold his property and did consider the dairy industry and the numerous financial advantages that it offered him and his family, but rejected the idea “it could have been quite lucrative if we had done it, but it just wasn't what I wanted to do. The top tenders for *Tommy's* farm were dairy farmers, but the farm was subsequently sold to an arable farmer. After 25 years as a pastoral and arable farmer, *Tommy* now operates a franchise fast food business.

6.3.2 Dairy Farm Practices

Figure 6-6 is an illustration of the differing animal management practice of pastoral farmers, in comparison to dairy farmers. On a pastoral farm, every effort is made to ensure that *all* newborn animals or sick animals survive; they are future income. Sick dairy cows are provided the best opportunity to survive, but others who are not producing or performing, are sold or culled. The mantra on a dairy farm is '*if it's not making money, it's not worth keeping*'. During calving, only a small number of dairy calves are kept, usually those identified as heifer replacements, bull or cross bred calves for sale. The remainder are sold at four days old for processing. As the recent controversy regarding the practice of inductions²⁶ illustrates, few urban residents are aware of the practices of dairy farmers. Rory's colleague is one such person:

What the eye doesn't see, the heart doesn't breathe, simple as that. Until he [work colleague] found out that they were killing calves he knew nothing about it. He just thought they were being born and running out in the paddock . . . cockies [dairy farmers] don't make a point of telling people they are shooting calves, but it's just part of their business



Figure 6-6 Orphan lambs being fed - every stock unit on a pastoral farm is important

²⁶ The practice of inductions is where late in calf dairy cows (November) are induced early. They are induced to get ensure that the farm benefits from the peak milk flow of the dairy cow after calving, with the rest of the herd. Dairy cows that are not induced may be culled or sold.

Dairy farmers also work very different daily hours than those involved in pastoral or arable farming. *Drew*, as a pastoral and arable farmer, found that there were peaks and troughs in the workload *“when you had a peak you just worked, 12 to 14 hour days, but you know in six weeks it’s all over”*. The workload for a dairy farm employee is the same *“everyday, everyday, everyday”*; *Glenn’s* daily working hours were typically *“4.30 am until 5 pm”*. It is because of this daily grind that dairy farming is perceived by participants to be factory work. Daily tasks and irrigation are often mapped out in advance: *“it is factory work and if you have [irrigation] water, they have got it mapped out exactly what is happening for the next 100 or 200 days”*. *Dave* enjoys the fact that *“no two days are the same”* on an arable or pastoral farm.

Skeet told me that there are few opportunities to interact with dairy cows and the land on these large and intensive dairy farms, in comparison to the farms that he has worked on in Switzerland and Peru

Here [it is] like a cow is a number, that’s it. [You are doing] the same job sometimes [and] very repetitive for guys who have just started out. Like cups on, cups off, and then maybe weeds, maybe the guys who have more experience and stuff . . . they have a little more entertaining job because they can do different stuff.

On smaller dairy farms, employees know certain characteristics of individual dairy cows, such as for example, when she is likely to come in for milking (at the start of the herd, or end). *Glenn* highlighted cow number 792, who without fail, every milking, would require a personal escort off the platform. Participants report that there are large differences in the skill sets of arable and pastoral farmers, and dairy farmers. *Ted* reports that the regions’ arable farmers are the most skilled in New Zealand as *“they have to know a very wide range of skills and they have to be constantly learning”*; in comparison *Taylor* feels that dairy farm employees are not actually farmers, finding they lack the skills of a farmer *“[they] don’t know anything about farming . . . [they don’t] know the soil, dirt under the finger nails instead of shit [and getting to know] the agronomy side of it, the fencing side of it”*.

As the manager of a large dairy farm in Austen, *Skeet* wants to teach his employees these skills that *Taylor* has discussed. But he finds that there is limited ‘time’ available during the day for dairy farm employees to be taught these skills. *Glenn*, who recently started a career in dairy farming, found that it has been the second in charge (2IC) who has taught him about dairy farming “*she [2IC] has taught me more than [boss]*”. *Taylor* (as a former dairy division chairperson on Federated Farmers) has expressed concern about the lack of skills dairy farm employees have, to Dairy New Zealand²⁷, to no avail.

6.4 Migrant Dairy Farm Employees

“Today you will hear every language under the sun in a small rural school. We never had that . . . you had white folk who spoke Kiwi” (Marjorie, school teacher).

The rapid expansion of the dairy industry in Austen since-2000 has created a significant demand for dairy farm employees that the local New Zealand population has been unable to meet. Low unemployment²⁸ and other factors associated with a career in the dairy industry (see 3.2.1 for a discussion of these factors) has meant that migrant dairy farm employees have been used to fill this gap. These migrant dairy farm employees have come to New Zealand seeking a new life or an international working experience. This section will illustrate some of the contributions that migrant dairy farm employees have made to Austen.

6.4.1 Migrant Workers

Skeet is a migrant dairy farm employee who arrived in New Zealand in 2005, from Switzerland. Initially he was to work in the North Island, but when the position fell through, he came to the South Island where he has been employed for the last six years. The dairy industry has provided *Skeet* with the opportunity to build his career in dairy farming. In New Zealand, the dairy industry provides *Skeet* with the opportunity to own

²⁷ Dairy New Zealand is funded by dairy farmers and is the agency that aims to improve the profitability, sustainability and competitiveness of the dairy industry.

²⁸ The region’s unemployment rate was 2.3 per cent in 2001 and 1.50 per cent in 2006; New Zealand’s unemployment rate for these times was 5 per cent in 2001 and 3.40 per cent in 2006 (District Council Community Planning Team, 2009).

a large dairy farm and build a dairy farm business, something that was not achievable for him in Switzerland or Peru. *Riley* (council planner) has found that migrant workers are not limited to the dairy industry; the local council and other businesses employ a range of nationalities and is a positive factor helping to remove bigotry and providing new ideas and perceptions of the township:

[Ethnic diversity] is great, because it brings a lot of different cultures into the district and hopefully gets rid of a lot of bigotry . . . there may be someone who thinks or can see something that no one else has seen. Even though it is right before them and say 'hey look we can do this' [and] we can make this into an important tourist attraction.

Not all employers recognise the benefits of employing migrant dairy farm employees. *Glenn*, new to the dairy industry after a career working as a roofer, was quickly told by a fellow employee that *"townies don't last long in the country . . . [the second-in-charge] goes to me about a month ago, 'the only reason you got this job is because you can speak English'";* an 'interesting' start to new employment. For some employers migrant dairy farm employees have become a vital part of their businesses and they will never employ a New Zealand worker again. *Liam* explains:

I have got clients that employee Filipinos and they say they will never employee a Kiwi again, because [the Filipinos] are so cheerful and happy to work. Where the Kiwi they think they owe them something 'I don't want to work today, I'm sick'. The foreign boys don't do that, they get up every day cheerfully and they smile and call him sir and madam. They show a bit of respect.

Drew, who recently converted his property to dairy farming, employs a mixture of New Zealand workers and migrant workers. When researching the potential employment possibilities for his dairy farm, *Drew* asked other dairy farmers about their preferences for employees. One preferred clients of the same culture *"he really likes having them all from the same country because they are all happy together"*. Migrant workers are less likely to move from their place of employment as often as New Zealand workers do. *Drew*, with a mixture of New Zealanders and migrant workers, finds that they have to communicate in English.

6.4.2 Learning and speaking English

Some migrant dairy farm employees are not willing to learn to speak English. *Skeet* is employed on a dairy farm that employees 16 workers from South America. The only

New Zealanders are the farm manager and dairy support block workers. *Skeet* finds that this provides these workers with little incentive to learn to speak English, and the only language spoken on the farm is Spanish or Portuguese.²⁹ It is therefore feasible that these employees could go their entire time in New Zealand without having to learn or speak English. *Skeet* does highlight to all new employees that they will not have the opportunity to learn English on the farm *“I tell them, you want to learn English, this is not the right place”*. But the fact that employees do not have to speak English is one of the attractions of the farm – creating a clustering of migrant dairy workers in the area, and farm. Interestingly *Marjorie* (school teacher) recently had a student teacher whose first language was Spanish, not English.

Emily (*Skeet’s partner*) as New Zealander, finds it difficult living on a clustered dairy farm. Clustered migrant dairy farm employees have created their own communities and *Emily* feels like an outsider *“sometimes you sit in a room and you are the only one that speaks English”*. The problem with this situation of clustering, is that if workers do not know basic English phrases or have an understanding of the language, it is especially problematic where situations arise where they need to communicate with New Zealanders. A colleague of *Skeet’s* sustained major injuries in a car accident and doctors thought he had severe brain injuries because he could not communicate. It was not until a fellow Latino arrived to translate, that the extent of injuries was clarified. *Marjorie* (school teacher) found that it was difficult to communicate with some families at Austen Primary School, especially when they had to communicate the consequences of a punishment or problem at the school: *“their custom might be to chop off the hand, but your custom is no”*.

At Austen Primary School, the arrival of migrant dairy farm employees has meant that teachers have had to change some of the fundamentals of school operations. *Marjorie* cited that school meals on camps have been altered because of the religious requirements of students, for example, Hindu children cannot eat meat. It has also been about teaching students about elements of New Zealand culture, for example, one

²⁹ It is a very surreal experience to walk into this dairy shed and have employees not speak English. You get quite self conscious and begin to wonder *are they talking about me? What are they saying?*

Indian boy when paired with girls, would make them do all the work. The biggest challenge has been teaching migrant children English and this also influences school funding. Some students arrive with little knowledge or understanding of English, and will pick up English quickly, usually within 12 months. English language funding is an important element of school funding requirements.

The children of migrant dairy farm employees are learning English in schools, and often the male of the family (working on the dairy farm) will be able to learn English, but migrant women sometimes have few opportunities to learn the language. Without the opportunity to learn or frequently speak English, migrant workers can become isolated from the rest of the population. Church and community groups are attempting to overcome these situations by inviting them to participate in activities. *Ted* is involved in the local Rotary club, has found that while migrant workers will participate in these activities, they tend to cluster amongst themselves and not interact with New Zealanders.

Chapters Five and Six have presented the results of this study. The following chapter will present a discussion of the results of this study and literature presented in Chapter Three.

Chapter 7

Discussion

The purpose of this study has been to describe and interpret elements of the transition from traditional land uses to intensive dairy farming in Austen, and understand how this transition has influenced the rural landscape, its residents, community institutions, and activities. This chapter will thus present a discussion of the results of the study, in response to the literature that was reviewed in Chapter Three. This chapter will be split into two sections, each corresponding to the two research objectives that were outlined in the introduction of this research. Accordingly, the first section will focus on how Austen's traditional land uses were sustained by the productivist regime that prevailed in the 20th century, factors associated with the transition to intensive dairy farming, and the influence of this transition on the rural landscape. The second section of this chapter will focus on the influences of intensive dairy farming on the rural community in Austen, addressing such factors as population growth and diversification, and the influence of this on the rural community.

7.1 Rural Land Use Change

Emphasising the close ties that New Zealand has had with Great Britain, New Zealand scholars' interpretations of rural change have been framed around the analyses and literature developed by British scholars. Productivism and post productivism were presented as descriptors of rural change occurring in developed countries after the conclusion of the Second World War. It was argued that productivism faltered globally in the 1980s, followed by a transition to less intensive land uses and post productivist policy (Wilson, 2001; Wilson, 2007). The results of my study indicate that farmers were, and remain, committed to productivism, particularly the continued intensification of agricultural commodities, production, and productivity, without the aid of government protection and support. This continued commitment is illustrated in this study as farmers have adopted new, intensive land uses, aided by a number of inputs, considered

uniquely productivist. The following section will discuss the commitment to productivism for traditional land uses and intensive dairy farming, using Austen as an exemplar.

7.1.1 Pastoral Farming and Productivism

New Zealand farmers intensified production of agricultural commodities after the conclusion of the Second World War, with in particular, intensification of meat, dairy and wool production, and an increase of stocking rates by 150 per cent (MacLeod and Moller, 2006). The productive capabilities of properties in many parts of New Zealand, including Austen, have been somewhat limited by unfavourable climatic conditions, particularly drought, and until these could be mitigated further intensification of rural land uses could not occur. Farmers could only improve the productive capacity of their properties, paid for using Farm Development Loans and the use of subsidised fertiliser. Community and local level government leaders believed that community irrigation schemes were the solution to the perennial problems associated with these unfavourable climatic conditions. For Austen, the first such schemes were promoted in 1880, but it was not until 1945 that such a scheme was completed (Evans and Cant, 1981; Cant and Evans, 1983; Britten, 1991; Hopkinson, 1997; Dommissie, 2006).

Now potentially relieved of the problems associated with drought, farmers should have been queuing to access irrigation. Ironically, the uptake of this community scheme by farmers was limited by the productivist policy measures that were designed to encourage the intensification of agriculture. This policy sustained the traditional land uses in Austen, providing farmers with a secure environment where they were able to evade the laws of supply and demand (Haggerty *et al.*, 2009). This security provided by policy ensured that farmers did not need to use irrigation to intensify production.

Globally, productivist policy began to falter in the 1960s and rather than recognising that change was needed, as the Australian's did (Argent, 2002), financial support and protection was increased for New Zealand farmers. The additional financial pressure placed on the government, and negative environmental effect could not be sustained

and was alleviated in 1984 after all productivist policy was removed and post productive policy introduced. Theoretically, changes of this nature, should have encouraged farmers to be less reliant on intensive productivist inputs and they should have transitioned to less intensive post productive land uses (Ilbery and Bowler, 1998; Wilson, 2001; Wilson, 2007). Instead of doing this, sheep farmers in particular, held the belief that once they had '*weathered the storm*' prosperity would return to pastoral agriculture. As a result, farmers adopted short term survival strategies (Campbell, 1994; Wilson, 1994). This too was the case for farmers in Austen, particularly pastoral farmers.

In some cases, the adoption of these methods would not ensure the continued viability of some farms. Pastoral farmers, in particular, were heavily indebted from using Farm Development loans. Views varied, often along political party lines, regarding the number of farms that would be unviable.³⁰ One of my research participants fell into this unviable (and unenviable) position, and this was a heartbreaking conclusion for multiple generations of farmers who were provided with extensive resources to intensify production, only to have the rules of farming re-written. In the face of this, farmers have had to adapt to the new rules associated with farming in Austen. For many, this has been a difficult process, as sheep farming has been deeply engrained in the psyche, identity, and ideologies of farmers in the region for many years.

The new rules have been based around the introduction and use of new automated methods of irrigation. In this context, sheep farming with irrigation, has become an unviable source of income, a trend not only reflected in Austen, but New Zealand generally, as the national sheep flock has reached its lowest level since 1950 (Greenhalgh, 2010). It is only now, 27 years after the removal of productivist policy that prosperous times for sheep farming are returning for those who have remained. Ewes are now selling for double their 2010 price of \$100 a head, which at the time was considered '*nirvana*' (Morgan, 2011). There is a great deal of uncertainty over the future prices for sheep.

³⁰ Estimates varied as to the precise number of farmers who would be forced to sell their properties: Prime Minister Lange predicted 8,000, the Minister of Agriculture predicted 2,500 and the opposition spokesperson for agriculture 10,500 (Clope, 1989; Smith and Montgomery, 2003). Smith and Montgomery (2003) estimate that only 800 farms were sold.

7.1.2 Irrigation and Dairy Farming

We know from previous literature that the introduction of irrigation has the potential to diversify patterns of land ownership, and the power to change rural land uses, with a particular trend in New Zealand toward intensive dairy farming (McCrostie Little and Taylor, 2001; McClintock *et al.*, 2002; Taylor *et al.*, 2003). This has been evident in the Waitaki and Amuri areas, where a three-wave transition process was first identified (McCrostie Little and Taylor, 2001; McClintock *et al.*, 2002; Taylor *et al.*, 2003). In the first wave, initial investment in irrigation is not perceived as viable and under-utilised by an older generation of farmers who retire in favour of the next generation of farmers who invest more actively in irrigation. Within this second wave, there is the realisation that existing land uses are incompatible with irrigation and the productive potential of land is in new, more intensive land uses. Once this realisation is met, there is the creation of a new economy based around the new land use (McCrostie Little and Taylor, 2001; McClintock *et al.*, 2002; Taylor *et al.*, 2003).

It is clear that this model is applicable to this study, with some modifications. In my study, the waves of land ownership and land use change coincided with the introduction of more efficient methods of irrigation, firstly by *outsiders* and then by *established land owners*. The potential of irrigation had largely been ignored by the first generation of farmers in Austen. It was *outsiders* who purchased farms with access to spray irrigation for conversion to dairy farming in the 1980s, who did. The second wave of change occurred in the post-2000 period, initiated by established land owners who introduced centre pivot irrigators, funded by prosperous times in the dairy industry. It is only land uses which can generate a large income, that are able to sustain the introduction of the new method of irrigation.

It is notable that it was a group of land owners from outside Austen who realised the productive potential of land with irrigation. The increased prosperity of land uses with irrigation created a situation where there was a wholesale *rush* to secure any source of irrigation water. There is now a situation where no new irrigation can be provided to

farmers, and without access to irrigation these farmers' incomes and options for land use are limited. This is particularly evident at the height of summer, where one property will have a luscious swathe of green pasture, and a neighbouring property can be dry, brown, and featureless. Speaking from experience, the only indicators of summer on a dairy farm are hot daily temperatures, and the daily (monotonous) chore of shifting irrigation equipment to those marginal areas that are not covered by mobile irrigators. There is no obvious equitable solution for these farmers who seek access to irrigation water. Some fear that the wholesale availability of irrigation, perhaps by transporting water long distances by a canal and race system, will create a situation where there is 'wall-to-wall' dairy farming; but the results of this study illustrate, there is a group of farmers in Austen who remain staunchly committed to pastoral and arable farming, and all signs are that this will remain.

7.1.3 Dairy farming and Productivism

The mode of intensive dairy farming that exists in Austen is a clear example of how intensive productivist agriculture prevails today. It is this mode of agriculture that is very different from the anticipated transition to the post productivist land uses that were proposed by British scholars. Economic restructuring has been the catalyst for the transition to these intensive land uses (Evans *et al.*, 2002); without this, irrigation would still have been used as an insurance measure, and traditional land uses prevailed. Intensive dairy farming continues the commitment of farmers to the goals of productivism that is the *"drive to maximise food production through application of ever more intensive farming techniques and biochemical inputs"* (Wilson, 2001: 78). In the space of 20 years, the region's dairy farms are some of the most intensive and productive in New Zealand, with the largest average herd size, highest production per herd, per cow and per hectare (LIC., 2011). The following section will focus on the physical landscape change that has occurred as a result of the pursuit of productivist dairy farming.

7.2 Landscape Change

“Landscapes are representations of a range of possible ways of life. What we see in landscapes and how we appreciate them is often a reflection of our values expressed through landscape tastes” (Egoz et al., 2001: 177).

In Great Britain, the commitment of farmers to productivism contributed to significant modification to the rural landscape (Gravsholt Busck, 2002; Bohnet *et al.*, 2003; Woods, 2005). Attention in the 1970s focussed on how this modification was damaging to the rural landscape, with particular attention on *“the use of fertilisers, pesticides, energy, land improvement, livestock intensification and overgrazing, large-scale mono-crop production, widespread pollution of streams and ground waters and soil loss or degradation”* (Jay, 2004: 154). In New Zealand, from 1946 until the 1990s, some of these features were prevalent, but not on the same scale or level of intensity. In some localities, attempts were made to *improve* the rural landscape. In Austen, for example, farmers planted more hedges, shelter belts, and trees. These landscape features provided protection for stock, pasture, and property, from the damaging effects of the region’s prevailing winds. These plantings continued the contribution of generations of farmers to the rural landscape that is uniquely characteristic of Canterbury.

There is a limited literature available that theorises land use and landscape change during the productivist era, and on this basis our understandings are very limited. My study contributes to this area and illustrates the changes associated with the introduction of a new intensive land use. This section will therefore focus on the landscape change occurring with the continued commitment to productivist agriculture and illustrate how landscape values have evolved in Austen.

7.2.1 Landscape change, Irrigation, and Intensive Dairy Farming

The commitment of farmers to productivism, especially in those areas of New Zealand where centre pivot irrigators have been introduced, is evident in the physical change to the rural landscape that occurs. All features impeding the pathways of this equipment are removed. Farms are therefore treated as *‘blank slates’* by farmers and their technical advisors. Given the situation that has prevailed on many dairy farms in the

region, we have a situation where 3,000 kilometres of shelter belts, trees, and hedges may have been removed. This is equal to the distance travelled by car from Cape Reinga (the northern most point in New Zealand) to Invercargill, and back to Wellington. In very few cases, this trend is being resisted, even amongst those who have not converted to dairy farming.

7.2.2 Evolution of Landscape Values

Apparent in this study, is the evolution of farmers' attitudes towards the rural landscape. The attitudes and practices of farmers in 2011, are reminiscent of those that were evident during the high point of the productivist ideology, where "*farmers [had the] freedom to manage their land as they saw fit*" (Wilson, 2001: 79-80). In a regulatory regime with strict environmental legislation, awareness of environmental change, and damage inflicted by agriculture, farmers still remove landscape features that impede production. There is a lack of consideration for the stock shelter capabilities that landscape features such as trees, hedges, and shelter belts provide, as there once was in the past. There is a limited concern for these non-material values associated with the rural landscape such as "*cultural or natural heritage, personal or group identity, and recreation and enjoyment*" (Jay, 2007: 268).

One of the main socio-economic features of pre-dairying pastoral agriculture discussed in this thesis is multi-generational land ownership. My research participants were able to identify, with pride, the length of ownership and contribution to the landscape that their families made. The subsequent landscape change associated with intensive farming is perceived by these people to be "*destroy[ing] families' histories and render[ing] their life's work inconsequential*" (Barlow and Cocklin, 2003: 515). The introduction of a new land use, and subsequent treatment of the rural landscape as a '*blank slate*', has removed all traces of previous land uses, family history, and attachment to land. Some lament the loss of landscape history, but others do not share the same sentimental attachment to land. Rural landscape change is instead perceived as an inevitable consequence of new ways of making a living in the countryside.

A goal for farmers has been to leave land in a better condition than the previous generation and protect it for the use of future generations. Landscape modification required by intensive dairy farming and automated irrigation, is seemingly at odds with this ideology. Does this generation of farmers believe they are leaving the physical landscape *itself* in a better position, or are they more concerned with improving the short term financial situation of properties? The answer is almost certainly the latter.

7.2.3 Landscape Change and Media Attention

The changes that are taking place in the rural landscape have received scarce media attention in Austen. There is much greater *public* concern about the poor environmental performance of dairy farming, reflected, for example, in campaigns around '*Dirty Dairying*' and the overuse of irrigation water. One important reason for this lack of awareness of landscape change is that the wider urban-based population does not recognise, or see the changes that have occurred in the last 15 years. Urban residents now much more rarely partake in activities that occur in rural areas. Additionally, with responsibility for the formation of the district plan and maintenance of landscape amenity, the district council is more concerned about being perceived as part of the '*Nanny State*', rather than protecting the characteristic landscape that generations of farmers have created. Additionally, it is clear that the local political authorities have little interest in restructuring the land use that has been driving economic rejuvenation and revitalisation experienced in recent years.

There is no interest from farmers or local government in replanting the shelter trees that they have removed. Could change now be on the horizon? The Emissions Trading Scheme was introduced in 2008 to reduce the influence of climate change in New Zealand (New Zealand Government, 2010). Implementation of this policy for agriculture is currently deferred until 2015 and Fonterra has stated that it plans to pass on the costs associated with the scheme to farmers (Fonterra., 2010). To mitigate these additional costs and offset carbon emissions produced by agriculture, farmers can plant trees on unproductive land (New Zealand Government, 2010). It could now be advantageous for farmers to re-instate the landscape features that were removed in the pursuit of

renewed rounds of productivism. The next section will focus on the community related influences associated with the introduction of dairy farming.

7.3 Community Change

I have fond memories of my childhood in Austen. Residents of the pastorally based community in which I lived were *close, tight knit* and *cohesive*, just as the rural community literature identified (Salamon, 2003; Smithers *et al.*, 2005). These arrangements have been challenged by the introduction of dairy farming. This new land use has challenged a number of community based norms and created new conflicts in the community (McCrostie Little and Taylor, 2001; McClintock *et al.*, 2002; Taylor *et al.*, 2003).

7.3.1 Population Growth and Ethnic Diversification

Foremost, the introduction of dairy farming to new areas contributes to population growth. This originates from the diverse labour requirements of dairy farming when compared to traditional pastoral and arable land uses (McCrostie Little and Taylor, 2001; McClintock *et al.*, 2002; Taylor *et al.*, 2003). In this study, it has been evident that the region's population has increased following the introduction of dairy farming, but reflecting the vast size of the region, this population growth has not been evenly distributed. This inconsistency is related to the discovery of irrigation water and subsequent conversion to dairy farming. In areas where there has been no attraction for dairy farming, there has been no population growth. Population growth has reversed earlier predictions of population declines and contributed to the renewed viability of rural schools. The continued growth of dairy farming and related industries means that the region now has one of the fastest growing regional populations in New Zealand (Community Planning Team., 2011; District Council Planning Team, 2011).

What is not reflected, in a large degree, within existing literature, is the diversification of ethnicity that has occurred with the recent growth to dairy farming. Earlier studies (McCrostie Little and Taylor, 2001; McClintock *et al.*, 2002; Taylor *et al.*, 2003) were

undertaken before the demand for migrant dairy farm employees occurred. As such, the dominantly European population of Austen and other New Zealand dairy regions has diversified with the influx of migrant labour on dairy farms; and also in industries with an indirect link to dairy farming, with workers required in irrigation, administration, hospitality, teaching, and construction. This diversification has a number of benefits including the creation of opportunities for cross-cultural interaction and consequent increase on the part of locals, in levels of acceptance of cultural difference. This amounts to radical change in places like Austen, which has had a long history of mono-cultural experience.

Those few earlier studies that had discussed migrant dairy farm employees referred to a number of difficulties around social and cultural integration (Tipples and Lucock, 2004a). My research found that these issues were not limited to migrant dairy farm employees, but also all newcomer dairy farm employees to some degree. One tactic used by migrant workers to overcome these difficulties has been for people of similar cultures or ethnicities to cluster spatially, and around a series of sporting, and other recreational activities. These numerous examples cited in this study occur because the host community has not provided the social, economic, or cultural needs of these workers (Chavez, 2005). It is clear from my research that very different cultural and social needs exist between the cultural groups involved with dairy farming in Austen.

Somewhat of a contradiction to the current state of knowledge regarding the sense of community in Austen, newcomer dairy farm employees felt that the local community was not welcoming. A recent State of the Community report found that 84 per cent of the community felt that they were welcoming of newcomers (District Council Planning Team, 2011). But as this study illustrates, newcomers do not feel this way; in fact they perceive the local community in Austen as unfriendly and cliquish. The District Council believes that it provides adequate information for newcomers about becoming involved in the community and community groups being welcoming to newcomers (District Council Planning Team, 2011). However as is clear from this study, the host community needs to be more welcoming of newcomer dairy farmers and their employees

7.3.2 Rural Primary School and Dairy Farming

The introduction dairy farming both influences the growth of rural populations and contributes to the growth of rural school rolls. The Austen Primary School did not initially benefit from the introduction of dairy farming in the 1980s and 1990s, it was not until the introduction of family style accommodation that the school roll grew. This reflects the changing needs of dairy farm employers, who now want to attract more reliable families as an alternative to single workers. Also, in line with changes to New Zealand society, children attending this school are more likely to be from smaller families. It had been common for the previous generation of pastoral families to have up to four children attend the same school, now only two to three children will attend. For Austen Primary School, while more farm conversions may occur in other areas of the wider region, continued roll growth is not expected to occur, rather fluctuate at its current level.

A larger influence on Austen Primary School is the continual migration of dairy farm employees. As part of the stable nature of earlier rural communities, it had been uncommon for children to attend any more than one rural primary or secondary school; now with the migratory nature of dairy farming, rural school students attend many different schools. The influx and exodus of students is a typical feature of the Gypsy day period (May to August), but this movement influences school funding. The Ministry of Education continues the practice of '*grading*' school rolls in July, a time when *it* predicts that school rolls will be stable. This is anything but the case for Austen Primary school, and other schools in New Zealand with a school roll base on dairy farming. This period is instead typified by fluctuations and volatility.

This issue is not limited to this study. Kearns *et al.*, (2009) suggest that the Ministry of Education does not understand the dynamics of rural schools with a roll base from dairy farming. There is the potential here for the Ministry of Education to adjust their practices to incorporate the needs of such primary schools, therefore gaining a true reflection of school rolls and funding requirements. The movement of dairy farm employees is not a new phenomenon and the Ministry of Education should be more

understanding of the pressure it places on the funding of these schools. However, rural schools comprise a small proportion of the total schools in New Zealand, and any adjustment to this practice would be unlikely.

A related aspect to the migratory nature of dairy farm employees, is that they are frequently criticised by other members of the rural community for their lack of commitment to rural schools and community based activities (McCrostie Little and Taylor, 2001; McClintock *et al.*, 2002; Taylor *et al.*, 2003). Again, dairy farm employees have been criticised in this study for lacking commitment to the local community. This is often beyond the control of dairy farm employees as they work long hours and make frequent moves between districts. However, accepting the role that dairy farm employees now play in the community, school activities are diversifying to cater to these new occupational demands. Examples provided by participants include school concerts and working bees held earlier in the day, at a time judged best to gain the best rates of participation. This is a sign that the community is slowly evolving to meet the needs of the new community based demands of dairy farming.

7.3.3 The Ultimate Goal: Land Ownership

One of the main socio-economic features of traditional pastoral and arable communities was multi-generational land ownership. Dairy farming, with different, and new forms of ownership and control, introduces land ownership structures that are very different from those practiced by traditional land owners. Unlike pastoral and arable farming, dairy farming provides people with a defined career pathway (see section 3.2.2 for an elaboration of this process), and opportunity to *work* into land ownership. It is on this basis that dairy farming is challenging the long held assumption, right, and practice of multi-generational succession, and land ownership for rural farming families. Farmers and their advisors recognise the dairy industry is the only viable way for young people to currently attain land ownership. It will be interesting to see whether these individuals who have engaged in a career in dairying from a pastoral and arable background, will stay working in the dairy industry or return to arable or pastoral farming once they have

achieved land ownership. Dairy farming may be the only land use that can *pay* the necessary mortgage on land.

A problem for agriculture, in general, is that many young people are no longer interested in a career in this field (Kuriger, 2001; Searle, 2002; Fairweather and Mulet-Marquis, 2009). This too is highlighted in this study, where one participant sold his property in 2008 after realising there would be no generational handover, while another's children are the only ones from their rural primary school to return to the land. There are now multiple career options for young New Zealanders. With a lack of New Zealanders involved in agriculture, migrant workers have been used to meet demand for employees. These migrants are grateful for the opportunities that New Zealand agriculture provides them with and are willing to work hard to be successful.

The defined steps of the dairy career ladder may make it easy for one to progress their career, but the necessary commitment to this career can take a large toll on dairy farm employees' physical and mental wellbeing. To advance one's career dairy farm employees are committed and motivated to work '*umpteen*' hours per day. But this commitment can leave employees missing their children's milestones or other achievements. Examples of children of dairy farm employees with incomplete homework or lunches, and influence continual movement has on children, were abundant in this study. As dairy farm employees and their employers understand this, and dairy farm technologies (for example, automated cup removers in the dairy shed) advance and become more common place, these influences should reduce.

While dairy farming technologies are improving, one participant after 20 years in the industry, walked away from direct involved in the day-to-day running of a dairy farm. The long working hours and conditions were unsustainable on body and mind. With a career in property sales, this participant still maintains a financial interest in the dairy industry by owning a share of a dairy farm. The dairy industry provides people with the opportunity to invest in dairy farms. This includes those unskilled people working in the lower levels of the dairy industry, whose skills may limit progression through the dairy industry career ladder. The move towards equity share style land ownership is

influencing the number of sharemilking positions available (as these types of farms will typically employ a manager) and making it difficult for pastoral and arable farmers to expand their properties or attain land ownership.

A career in the dairy industry may have seemingly endless virtues for some, but the steps, and short cuts '*to the top*', have been attributed as a motivating factor for challenging some of the established and accepted conventions in the rural community. In this study, farmers had operated using the '*handshake over the back fence*' as a binding contract between two parties. However, dairy farmers and their employees, are perceived to be "*wrecking the good old-faith relationship like there is no tomorrow*" (Greenhalgh, 2010: 143). Breakdowns in contracts for dairy support have been cited by farmers has evidence for this in this study. What contributes to the short sighted nature of dairy farmers and their employees? Participants suggest that the dairy career pathway was to blame, particularly additional debt required to take the next step from farm management to share milking.

However, part of the problem may actually stem from the changing modes of operation of farms in 2011, especially dairy farms. Owing to the nature of intensive dairy farming, they are managed primarily for the commercial value (Jay, 2007). Therefore, the drive to secure the lowest price is just part of the new modes that exist in rural communities. Additionally, the employees who manage these dairy farms may not be land owners, and they are accountable to someone else for their actions and financial management. Further these employees can act with a short sighted manner because they know they will only be in the community for the short term, and they therefore do not have to generate good, and long term relationships, with local farmers. It is the dairy farm *land owners* who must stress to their employees the importance of generating good, long term relationships with neighbours and other farmers, in order for the good natured rural community to survive.

7.4 Chapter Summary

The introduction of a new rural land use to the community, landscape, and economy of Austen has a number of influences. Rural land use change in this context has been driven by the ability of farmers to intensify production of agricultural commodities through the addition of new automated forms of irrigation. This differs significantly from the forms of rural change proposed by theorists, who predicted rather than a continuation of productivist farming after 1984, farmers would transition to less intensive land uses (Ilbery and Bowler, 1998; Wilson, 2001; Woods, 2005; Wilson, 2007). The new rural land use introduced in this study, is an example of the continued commitment of farmers to productivism, particularly evident in the day-to-day management of farms, use of irrigation, and landscape modification. Landscape features, once important in the past, are now viewed as an obstruction impeding production, and are consequently removed. This landscape modification has received scarce attention from any media sources or those involved with legislating to protect landscape amenity.

This study has also highlighted a number of community based influences consistent with other literature, but also new un-recorded conflicts. The new land use has contributed to regional and school level population growth, and a diversification of the ethnicity of the region. New conflicts have been based around the differing modes of operation and ideologies of farmers in the region.

Chapter 8

Conclusion



Figure 8-1 A herd of dairy cows walking to work

Figure 8-1 depicts a situation that is now a common scene in Austen. Twice a day, 260,801 dairy cows in the region will walk to work, to produce milk that is made into a wide range of milk products for New Zealanders, and the world (LIC., 2011). This scene would have been a rarity 30 years ago, the region was dominated by traditional pastoral and arable agriculture; but over the last 15 years more farms have been converted to intensive dairy farms. This situation is not unique to Austen, and has also occurred throughout wider Canterbury, Southland, and Otago. It is my interpretations of this change in land use that have been the foundation for this research. Accordingly, I sought to understand the processes, people, and practices underlying this change, and to identify the influences that this transition has had on the rural landscape, its residents, community institutions, and activities. This chapter will present a summary of the findings of this research, limitations of the research method and recommendations for future research.

8.1 Summary of Findings

The overarching research objective for this thesis has been to interpret the transition from traditional land uses to intensive dairy farming in my study area, Austen, in the South Island of New Zealand, and understand the influence of this transition on its rural landscapes, residents, community institutions, and activities. Primary qualitative data were gathered and analysed to achieve this objective. Since settlement of the region in 1853, pastoral and arable farming has predominated. It is this set of land uses that was enabled and limited by the climate, and soil types that existed in Austen, and contributed to the creation of a community identity that prevailed over many years. The climatic limitation, namely drought, was a perennial problem for multiple generations of farmers, who conceived that a community irrigation scheme would be a solution to this problem. It was not until 1945 that an irrigation scheme was available to farmers, and as is the case when irrigation was first available, few farmers in Austen utilised its potential.

The availability of irrigation water coincided with the conclusion of the Second World War and introduction of a policy framework known as productivism. This framework would dominate in developed countries for much of the 20th century, and aimed to encourage farmers to intensify production and productivity of agricultural commodities; New Zealand farmers responded by doubling meat and dairy production, and tripling wool production. Owing to the drought prone nature of the region farmers who participated in this study used a variety of instruments established by this policy to improve the productive potential of their land. Irrigation, which could be used to do this, was perceived as an insurance measure against drought and used sparingly.

The rural change literature suggested that the productivist era drew to a close in the 1980s, globally, as financial, environmental, and ideological problems with the framework were identified. In New Zealand, the economic and environmental problems of subsidised agriculture became increasingly costly, and in 1984 the fourth Labour government revoked all productivist policy by restructuring the economy and introducing strict environmental legislation (Cloke, 1989; Le Heron, 1989; Jay, 2004;

Barnett and Pauling, 2005; Haggerty *et al.*, 2009). It was expected that without state support farmers would transition to less intensive, post productivist land uses (Ilbery and Bowler, 1998; Wilson, 2001; Woods, 2005) but as this study has illustrated, in many cases these changes have been the catalyst for the development of more *intensive* and *productivist* land uses.

This intensification of land use and continuation of productivism, albeit with stronger environmental regulation, began shortly after the removal of agricultural subsidies. It quickly became clear that prices for pastoral commodities would not recover to sufficiently high levels, and the real income derived from pastoral farming has continued to decline, at a time when the dairy commodity price has risen inexorably. Intensification required the overturning of the view held commonly prior to the 1980s that there were *no* alternatives for land use in Austen, other than pastoral or arable farming. This traditional mode of agriculture was deeply engrained and entrenched in the psyche, ideology, and identities of farmers in Austen.

The defining moment of change came when a group of pioneering dairy farmers (from the North Island, the South Island's West Coast, and Europe) arrived in the region from the late 1970s and illustrated that alternative land uses, namely dairy farming, could be achieved, and sustained in Austen. These dairy farmers were attracted to Austen foremost because of the **reliability** and **availability** of irrigation water, and secondary factors included the vast area of flat land, and new business opportunities that were provided by the new land use. Without irrigation water, dairy farming would not be able to be pursued in the region. Dairy farmers were first attracted to areas of Austen with access to groundwater, and then areas associated with the community irrigation scheme. Gradually the number of dairy farms in the region increased in the 1990s, as more farms were purchased for conversion, and a small number of established land owners converted to dairy farming. These first dairy farms operated on a small scale and had little visual influence on the rural landscape.

The start of the new millennium heralded significant land use change in Austen. This land use change was driven by the introduction of centre pivot irrigation, continual price

declines for pastoral commodities, and consistent prosperity for the dairy industry. It is these factors that encouraged conversion of an ever increasing number of pastoral and arable farms to intensive dairy farming. After 2000, the number of dairy cows in the region has increased by 884 per cent, the number of dairy herds has tripled and average herd sizes have increased from 331 for the 1992/93 dairy season to 847 for the 2010/11 dairy season.

It is this mode of intensive dairy farming that is the most obvious example of the continued commitment of farmers in Austen to elements of the productivist ideology. Increasingly, dairy farms are managed *“primarily for commercial value, as opposed to non-material values such as cultural or natural heritage, personal or group identity, recreation or enjoyment, or quality of life”* (Jay, 2007: 268). This commitment is evident in the everyday operations of dairy farmers, from the extensive use of irrigation, manipulation of natural processes for milk production, and modification to the physical landscape. Irrigation has been used to increase productivity, production, and incomes. Centre pivot irrigation and dairy farming infrastructure have necessitated significant modification to the rural landscape. Trees, hedges, and shelter belts, a characteristic and important element of the landscape, have been removed. These features are no longer valued for the protective qualities they once provided; now they are something that impedes production and therefore needs to be removed.

The removal of trees, hedges and shelter belts, has modified the farmed landscape that multiple generations of farming families have created, and contributed to. In this way, landscape histories have been destroyed and many lives' work, rendered inconsequential (Barlow and Cocklin, 2003). Dairy farming and irrigation have created a *'naked landscape'*. Trees, shelter belts, and hedges have been replaced by herds of dairy cows, dairy farm infrastructure, and irrigation. Alarmingly, there is no concern from many farmers about the removal of shelter. Production is paramount. The potential introduction of the Emissions Trading Scheme for agriculture in 2015, could act to encourage farmers to replant trees, hedges and shelter belts that they have removed.

Just as the introduction of intensive dairy farming has contributed to a change to the rural landscape, the new land use has a clear influence on the rural community. This influence is largely consistent with the findings of past social research, but there are also new arrangements and conflicts that are emerging at community level. The influx of dairy farm employees has helped to rejuvenate, and revitalise the population of the region, replicating the experiences of the Amuri and Waitaki regions. The indirect and direct labour requirements of the dairy industry have increasingly been met by the use of migrant workers, who have contributed to a diversification of the ethnicity of the region.

The introduction of a new land use such as dairy farming has contributed to the growth of rural school rolls. But the Austen Primary School has not experienced the 150 per cent growth that took place in the Amuri District. The reason for this is that early dairy farmers in Austen did not build family oriented housing, and thus attracted single staff as workers; but as more established land owners have converted to dairy farming, the school roll has grown. A larger influence on Austen Primary School is the migratory nature of dairy farm employees and the detrimental effect this has had on school funding.

Local and long established community members also fail to understand the movement of dairy farm employees, perceiving this movement as a sign that these workers lack commitment to local schools and their rural community. As a result, local community members have ceased *'getting to know'* dairy farm employees, and subsequent newcomer dairy farm employees have characterised the Austen community as *'unfriendly'* and *'standoffish'*. This is a radical departure from the perception of the rural community of the past.

Further community based conflicts have been based around the changing nature of modes of business operation. Pastoral and arable farmers have commented that where once farmers were concerned with the generation of long term business relationships, dairy farmers are only concerned with the short term. Numerous cases of disagreements between pastoral, arable, and dairy farmers have been cited as evidence

for this changing behaviour. It is the dairy farming career ladder and modern pressures of productivist farming that have been cited as the motivation for this behaviour. At the same time, this dairy farming career ladder has been promoted as the only viable way for young individuals to achieve land ownership. The introduction of intensive dairy farming has contributed to a change to the community practice of intergenerational succession for pastoral and arable farming.

For all the criticisms associated with dairy farming, there are a number of positive aspects that are associated with the new land use. Dairy farming has helped to rejuvenate a stagnating rural economy and is directly contributing to the significant economic redevelopment that is being undertaken in the main township in Austen. The dairy industry provides numerous opportunities for individuals (indirectly and directly), and provides farmers with an alternative land use and income source. The influx of new individuals has brought new ideas, and practices to the community, and to the operation of its rural school. Without irrigation, it is doubtful whether these changes to land use, landscape, economy and community, would have been achieved.

8.2 Limitations of Research

Before concluding this thesis, it is important to outline and analyse some of the limitations of this research that have arisen with the benefit of hindsight. Firstly, participant recruitment was based on the researcher's personal knowledge of the '*cast of characters*' (Lofland *et al.*, 2006) in Austen, and selected on the basis of who the researcher believed would provide the rich and in-depth information required of a qualitative study. The participants selected certainly provided the rich and in-depth information required and it was interesting to hear them tell their stories and relate experiences of change in Austen. With the benefit of hindsight, too much of my early interviews were devoted to understanding productivist agriculture, the post-subsidies period and the facilitators of the transition to dairy farming. A wider selection of participants, particularly in those areas associated with community change, would have provided a broader base to my study.

8.3 Recommendations for Future Research

My research suggests a number of avenues for future research in the region and the dairy industry in general. A major source of conflict highlighted by this study has been the different sub-cultural perspectives and modes of operation exhibited by pastoral, arable and dairy farmers. A future study could be directed at understanding the origins of these differences and why they continue to prevail today.

The population of dairy farmers and dairy farm employees is predicted to expand, as more land is converted to dairy farming. We need to understand the migratory habits of this population and find ways of ameliorating their impact on host communities. Similarly, migrant dairy farm employees from overseas are going to provide a greater source of labour in Austen and other dairy farming regions in the future. Further study of these employees has the potential to help the dairy industry better understand their needs so that they may be better integrated into rural New Zealand. This would be beneficial for the migrants, their host communities and their employers.

Appendix A

Sample Interview Questions

Questions for Pastoral and Arable Farmers

1. What kind of farm do you own?
2. Have you changed production type on your property?
 - a. If so why?
 - b. Did your neighbours change?
3. Were you farming when subsidies removed?
 - a. If yes, what was your response?
 - b. Did you consider changing the way you used your land?
4. What was the feeling in the community during this period?
5. Do you feel the community has changed?
6. When did you first notice the use of irrigation?
 - a. Who and why were they using irrigation?
7. What does the addition of irrigation do for a property?
8. What changes did you make following introduction of irrigation?
9. Can you recall when you first noticed the conversion of sheep and crop farms?
 - a. Year?
 - b. Why?
10. How did the community react to the new land use?
11. What physical changes were made to farms?
12. Did you consider conversion?
13. How do you think the introduction of dairy farming has affected the community?
14. How do you think dairy farming has affected the region overall?
15. Has the change in land use been for the better or worse?

Questions for dairy farmers

1. How did you get involved in farming?
2. What kind of property was this before conversion to dairying?
3. When did you start considering conversion to dairying?
4. Why?
5. What factors drove your decision to convert?
6. How did you feel after you made the decision to convert?
7. Can you explain the process of conversion?
8. What physical changes were made to your property?
9. What are the biggest problems that you have faced converting your property?
10. How was the decision to convert to dairying perceived by your neighbours?
11. Have you noticed changes in the community following the arrival of dairy farming?
 - a. Do you think the community change has been good for the community?
12. How do you think the surrounding community has been affected by the introduction of dairy farming?
13. How do you think dairy farming has affected the region?

Questions for Business leaders and Farm Consultants

1. What was the farming sector like when you first started working in the region?
2. When did the first dairy farmers come to the region?
 - a. What did you think were the attractions for them?
 - b. What areas of the region did they go to?
3. What did the community think of dairy farmers?
4. Was there any interest from locals at converting in the 1980s?
5. What changes were made to properties when they were first converted?
6. When was the major period of dairy expansion in the region?
7. What were the main drivers?
 - a. Did you advise conversion?
8. What changes were required to properties following conversion in the latest phase?
9. What were some of the problems associated with conversion?
10. When did the township start to feel the effects of the dairy boom?
11. What changes were made to community?
12. How has the introduction of dairy farming affected the region?

Questions for Newcomers

1. What attracted you to the region?
2. What are some of the attractions of being a dairy farmer?
3. Can you explain what you think of the area?
4. What do you think of the social amenities provided in town?
5. How have you found the services provided?
6. Did you know anyone before coming to the region?
7. Do you feel welcomed by the community?
8. How do you find the people?
 - a. What do you think prohibits you from making friends?
9. Do you participate in sports or recreational activities?
 - a. If yes, how did you get involved?
10. How long do you anticipate staying in the region for?

Questions for Community based participants

1. How long has this service been operating in the region?
2. What services does it provide?
3. Have you found there has been an increased demand/need from dairy farm employees for your services?
4. What is your impression of dairy farm employees from your experience?
5. Can you explain the consequences of dairy farm employees working long hours on a relationship/marriage/partnership?
 - a. Effect on young children
 - b. Effect on single people?
6. Do you find depression amongst dairy farm employees is high?
7. Do you think there is a better understanding between the host community and dairy farm employees?

Appendix B

Research Information Sheet

Title of Study: The influence of the Black and White tide: dairy farming, landscape, and community change

My name is Philippa Rawlinson and I am completing my Master of Social Science at Lincoln University. As part of this degree, I am undertaking data collection and research for my thesis. My supervisors for this research are Professor Harvey Perkins and Dr. Rupert Tipples. Thank you for showing interest in this project. Please read this information sheet carefully before deciding whether to participate in this study. If you decide to participate, we thank you, if you decide not to participate there will be no disadvantage to you of any kind and we thank you for considering this request.

The removal of farm subsidies during the 1980s, combined with the effects of globalisation and technological advances, has altered the way that rural landscapes are viewed and used. Large scale dairy farms have replaced pastoral sheep and mixed cropping farms that were established by British settlers. Shelter belts and hedge rows established by these settlers have been removed to accommodate for mobile irrigation units. At the community level, an older generation of pastoral and mixed cropping farmers have been replaced by a community of dairy farm employees. This study proposes to explore the transition from traditional pastoral sheep and mixed cropping farming to dairy farming, while also assessing the influence of dairy farming on the community and rural landscape of the region.

Participation in this research is voluntary and potential participants will be recruited through an initial phone call. If consent is gained from the participant, the researcher will arrange a convenient time to complete a one-on-one, semi structured interview with the participant. If preferable, this interview will be recorded and upon successful transcription, the voice recording will be deleted.

Each participant will be assigned a participant identification number to ensure that participants identities remain anonymous. This identification number will be used in place of the participants name on data received by the researcher. This number will only be known to the researcher.

Participation in this research is voluntary. You may decide to answer any or all of the questions. You have the right to withdraw from the study up until data analysis is completed. If you choose to withdraw from the study, you may do so by getting in contact with the researcher or supervisors.

This research has been reviewed by, and received approval from, the Lincoln University Human Ethics Committee.

Details of the Researchers

If you require more information, either now or in the future, please feel free to contact the researcher or supervisors using the contact details provided below:

Researcher

Philippa Rawlinson

philippa.rawlinson@lincolnuni.ac.nz

(03) 307 6457

Associate Supervisors

Professor Harvey Perkins

harvey.perkins@lincoln.ac.nz

(03) 325 3820

Dr. Rupert Tipples

rupert.Tipples@lincoln.ac.nz

(03) 325 2811, ext. 8438

Appendix C

Consent Form

Title of Study: *The influence of the Black and White tide: dairy farming, landscape, and community change.*

Researcher

Philippa Rawlinson

philippa.rawlinson@lincolnuni.ac.nz

(03) 307 6457

Associate Supervisors

Professor Harvey Perkins

harvey.perkins@lincoln.ac.nz

(03) 325 3820

Dr. Rupert Tipples

rupert.tipples@lincoln.ac.nz

(03) 325 2811, ext. 8438

I understand that:

- All of my questions have been answered to my satisfaction.
- That my participation in this research is voluntary.
- I am free to withdraw from this study up until the point when data analysis is completed.
- That personally identifiable information will be destroyed upon completion of this project

I have read the information sheet and understand what the study is about, and what will be requested of me.

☐ I agree to participate in this study

Your name: _____

Your signature: _____

My contact details are:

References

- Argent, N. 2002. From Pillar to Post? In search of the post-productivist countryside in Australia. *Australian Geographer*, 33(1), 97-114.
- Ashforth, B. E., Kreiner, G. E., Clark, M. E. & Fugate, M. 2007. Normalising Dirty Work: Management Tactics for Countering Occupational Taint. *Academy of Management Journal*, 50(1), 149-174.
- Babbie, E. 2010. *The Practice of Social Science Research*, United States of America, Wadsworth Cengage Learning.
- Barlow, K. & Cocklin, C. 2003. Reconstructing rurality and community: plantation forestry in Victoria, Australia. *Journal of Rural Studies*, 19, 503-519.
- Barnett, J. & Pauling, J. 2005. The Environmental effects of New Zealand's Free-Market reforms. *Environment, Development and Sustainability*, 7, 271-289.
- Barta, P. 2008. 'Saudi Arabia of milk' hits production limits - New Zealand Thirsts for Capital. *Wall Street Journal*, A1.
- Bishop, E. 2006. Driver injured in milk tanker crash [Online]. *Ashburton Guardian*, 29 September 2006, p.1. [Accessed 1
- Bjorkhaug, H. & Richards, C. A. 2008. Multifunctional agriculture in policy and practice? A comparative analysis of Norway and Australia. *Journal of Rural Studies*, 24, 98-111.
- Blunden, G., Moran, W. & Bradly, A. 1997. 'Archaic' relations of production in modern agricultural systems: the example of sharemilking in New Zealand. *Environment and Planning A*, 29, 1759-1776.
- Bohnet, I., Potter, C. & Simmons, E. 2003. Landscape change in the multi-functional countryside: a biographical analysis of farmer decision-making in the English high weald. *Landscape Research*, 28(4), 349-364.
- Bosworth, G. & Willett, J. 2011. Embeddedness or Escapism? Rural Perceptions and Economic Development in Cornwall and Northumberland. *Sociologia Ruralis*, 51(2), 195-214.
- Brawley, R. 2011. *Mid Canterbury Economic Update February 2011* [Online]. Available: <http://www.growmidcanterbury.co.nz/economic-update> [Accessed August 3 2011].
- Britten, R. 1991. *Between the Wind and the Water: Ashburton District Council 1876-1989*, Ashburton, Ashburton District Council.
- Callister, P. & Tipples, R. 2010. "Essential" workers in the dairy industry. New Zealand: Insitute of Policy Studies Working Paper 10/10.
- Cameron, B. 2009. *Liquid Gold: a history of irrigation development in mid-Canterbury*, Ashburton, Brian Cameron.
- Campbell, A. J. 2004. *The Mid-Canterbury Education Review: A study of the rationalisation of small rural schools in New Zealand*. Doctorate of Education, University of Tasmania.
- Campbell, H. R. 1994. *Regulation and Crisis in New Zealand Agriculture: The case of Ashburton County, 1984-1992*. Doctor of Philosophy, Charles Sturt University.

- Cant, G. & Evans, M. 1983. Plans for the plains: the irrigation debates. In: Bedford, R. D. & Sturman, A. P. (eds.) *Canterbury at the Crossroads: issues for the Eighties*. Christchurch: New Zealand Geographical Society.
- Chavez, S. 2005. Community, Ethnicity, and Class in a Changing Rural California Town. *Rural Sociology*, 70(3), 314-335.
- Cloke, P. 1989. State Deregulation and New Zealand's Agricultural Sector. *Sociologia Ruralis*, XXIX-1, 34-48.
- Closey, K. 2009. *Risk Management and the Allocation of Water Resources in the Ashburton District*. Master of Planning, Otago University.
- Colic-Peisker, V. 2002. Croatians in Western Australia: migration, language and class. *Journal of Sociology*, 38(2), 149-166.
- Collins, D. C. A., Kearns, R. A. & Le Heron, R. B. 2001. Water Pressure: irrigation, governance and land use intensification in Maungatapere, New Zealand. *Journal of Rural Studies*, 17, 29-39.
- Community Planning Team. 2011. *District Facts and Figures* [Online]. Ashburton: Ashburton District Council. Available: www.ashburtondc.govt.nz.
- Crump, D. 2011. Cash Cow [Online]. *Ashburton Guardian*, March 5, p.41. [Accessed 41]
- Cvetkovic, A. 2009. The Integration of Immigrants in Northern Sweden: A Case Study of the Municipality of Stromsund. *International Migration*, 47(1), 101-131.
- Denzin, N. K. & Lincoln, Y. S. 2008. Introduction: The Discipline and Practise of Qualitative Research. In: Denzin, N. K. & Lincoln, Y. S. (eds.) *Collecting and Interpreting Qualitative Materials*. 3rd ed. United States of America: Sage Publications.
- District Council. 2008. District Population Facts and Figures. Ashburton: Ashburton District Council
- District Council Community Planning Team. 2009. *State of the Community Report* [Online]. Ashburton: Ashburton District Council. Available: www.ashburtondc.govt.nz.
- District Council Planning Team. 2011. *State of the Community Report* [Online]. Ashburton: Ashburton District Council. Available: <http://www.ashburtondc.govt.nz/council/Community+Planning/State+of+the+Community.htm>.
- Dodson, M. 2006. Hinds plains irrigation and land use survey. Christchurch: Environment Canterbury.
- Dommissie, J. 2006. *Hydrogeology of the Hinds Rangitata Plain, and the Impacts of the Mayfield-Hinds Irrigation scheme*. Master of Environmental Science, Lincoln University.
- Edkins, R. 2003. *Dairying and Employment in the Amuri district, North Canterbury: 1983 to 2002*. Master of Commerce (Agricultural), Lincoln University.
- Egoz, S., Bowring, J. & Perkins, H. C. 2001. Tastes in Tension: form, function, and meaning in New Zealand's farmed landscape. *Landscape and Urban Planning*, 57, 177-196.
- Egoz, S., Bowring, J. & Perkins, H. C. 2006. Making a 'Mess' in the Countryside: Organic Farming and the Threats to Sense of Place. *Landscape Journal*, 25(1), 54-66.
- Engelbrecht, B. 2010. An overview of the implications and effects of land use changes and water issues in Canterbury. *Primary Industry Management*, 14(3), 16-21.

- Evans, M. & Cant, G. 1981. The Effect of Irrigation on Farm Production and Rural Settlement in Mid Canterbury: A Comparison of the Irrigated and Dryland Farming Zones in the Lyndhurst-Pendarves Area, 1945-1976. *New Zealand Geographer*, 37(2), 58-66.
- Evans, N., Morris, C. & Winter, M. 2002. Conceptualizing agriculture: a critique of post-productivism as the new orthodoxy. *Progress in Human Geography*, 26(3), 313-332.
- Fairweather, J. & Mulet-Marquis, S. 2009. Changes in the age of New Zealand farmers: Problems for the future? *New Zealand Geographer*, 65, 118-125.
- Fegan, J. 2009. The changing face of the New Zealand Dairy Farm employee. *Primary Industry Management*, 13(1), 32-33.
- Floysand, A. & Jakobsen, S. E. 2007. Commodification of rural places: A narrative of social fields, rural development, and football. *Journal of Rural Studies*, 23, 206-221.
- Fontana, A. & Frey, J. H. 2008. The Interview: From Neutral Stance to Political Involvement. In: Denzin, N. K. & Lincoln, Y. S. (eds.) *Collecting and Interpreting Qualitative Materials*. 3rd ed. United States of America: Sage Publications.
- Fonterra. 2010. A Fonterra Guide to Climate Change: facts, questions and answers part three. Fonterra.
- Fox, A. 2011. Fonterra's results break records [Online]. www.stuff.co.nz, September 22. Available: <http://www.stuff.co.nz/business/farming/5666594/Fonterras-results-break-records>
- Gardner, W. J. 1992. A Colonial Economy. In: Rice, G. W. (ed.) *The Oxford History of New Zealand*. 2nd ed. Melbourne, Australia: Oxford University Press.
- Go Dairy. 2010. *Dairy career pathway* [Online]. Available: www.godairy.co.nz [Accessed November 25 2010].
- Google Earth. 2011. Available: http://maps.google.com/maps?ftr=earth.promo&hl=en&utm_campaign=en&utm_medium=van&utm_source=en-van-na-us-gns-erth&utm_term=evl [Accessed 3 June 2011].
- Gouin, D. M. 2006. Agricultural Sector Adjustment Following Removal of Government Subsidies in New Zealand. Lincoln, New Zealand: Agriculture and Economics Research Unit, Lincoln University.
- Gozdziak, E. M. & Bump, M. N. 2004. Poultry, Apples, and New Immigrants in the Rural Communities of the Shenandoah Valley: An Ethnographic Case Study. *International Migration*, 42(1), 149-164.
- Gravsholt Busck, A. 2002. Farmers' Landscape Decisions: Relationships between Farmers' Values and Landscape Practices. *Sociologia Ruralis*, 42(3), 233-249.
- Gray, R. & Le Heron, R. 2010. Globalising New Zealand : Fonterra Co-operative Group, and shaping the future. *New Zealand Geographer*, 66, 1-13.
- Greenhalgh, I. J. 2010. *The role of the rural contractor in flexible labour use on South Island sheep and beef farms*. Master of Applied Science in International Rural Development, Lincoln University.
- Gustafson, B. 2007. *Kiwi Keith: a biography of Keith Holyoake*, Auckland, New Zealand, Auckland University Press.

- Haggerty, J., Campbell, H. & Morris, C. 2009. Keeping the stress off the sheep? Agricultural intensification, neoliberalism, and 'good' farming in New Zealand. *Geoforum*, 40(5), 767-777.
- Hall, D. J., Garnett, S. T., Barnes, T. & Stevens, M. 2007. Drivers of professional mobility in the Northern Territory: dental professionals. *Rural and Remote Health*, 7(655).
- Hawke, G. 1985. *The Making of New Zealand: an economic history*, Cambridge, Cambridge University Press.
- Holmes, J. 2002. Diversity and change in Australia's rangelands: a post-productivist transition with a difference? *Transactions of the Institute of British Geographers*, 27, 362-284.
- Holmes, J. 2006. Impulses towards a multifunctional transition in rural Australia: Gaps in the research agenda. *Journal of Rural Studies*, 22, 142-160.
- Hopkinson, G. 1997. *Water put to work: A History of the Rangitata Diversion Race*, Ashburton, Rangitata Diversion Race Management Limited.
- Ilbery, B. & Bowler, I. 1998. From agricultural productivism to post-productivism. In: Ilbery, B. (ed.) *The Geography of Rural Change*. Harlow, London.: Pearson Education Limited.
- Janett, D. S. 1988. *Shelter in the rural landscape*. Diploma of Landscape Architecture, Lincoln University.
- Jay, M. 2004. Productivist and Post-productivist Conceptualisations of Agriculture from a New Zealand Perspective. In: Kearsley, G. & Fitzharris, B. (eds.) *Glimpses of a Gaian World, Essays in Honour of Peter Holland*. Dunedin: School of Social Science.
- Jay, M. 2005. Remnants of the Waikato: Native forest survival in a production landscape. *New Zealand Geographer*, 61(1), 14-28.
- Jay, M. 2007. The political economy of a productivist agriculture: New Zealand dairy discourses. *Food Policy*, 32, 266-279.
- Johnson, W. & Sandrey, R. 1990. Land Markets and Rural Debt. In: Sandrey, R. & Reynolds, R. (eds.) *Farming without Subsidies: New Zealand's Recent Experience*. Wellington: MAF Corp.
- Kearns, R. A., Lewis, N., McCreanor, T. & Witten, K. 2009. 'The status quo is not an option': Community impacts of school closure in South Taranaki, New Zealand. *Journal of Rural Studies*, 25, 131-140.
- Keating, N. C. & Little, H. M. 1991. *Generations in Farm Families: the transfer of the family farm in New Zealand*. Christchurch, New Zealand: Agribusiness and Economics Research Unit, Lincoln University.
- Kneale, J. & Santy, J. 1999. Critiquing qualitative research. *Journal of Orthopaedic Nursing*, 3, 24-32.
- Kuriger, B. 2001. *Perceptions of a career in the dairy industry: Survey of Taranaki Secondary School Students*. New Zealand: Kellogg Rural Leadership Course.
- Langdon, V. 2008. *Cameo of the Past: Stories of Mid Canterbury, people and places 1868-2006*, Ashburton, Velma Langdon.
- Le Heron, R. 1989. A Political Economy Perspective on the Expansion of New Zealand Livestock Farming, 1960-1984 - Part I. Agricultural Policy. *Journal of Rural Studies*, 5(1), 17-32.

- Lewthwaite, W. 1983. Water resources and irrigation. *In*: Bedford, R. & Sturman, A. P. (eds.) *Canterbury at the Crossroads: issues for the Eighties*. Christchurch: New Zealand Geographical Society.
- LIC. 1993. Dairy Statistics 1992-93. Hamilton, New Zealand: Livestock Improvement Corporation, Dairy New Zealand.
- LIC. 1994. Dairy Statistics 1993-94. Hamilton, New Zealand: Livestock Improvement Corporation, Dairy New Zealand.
- LIC. 1995. Dairy Statistics 1994-95. Hamilton, New Zealand: Livestock Improvement Corporation, Dairy New Zealand.
- LIC. 1996. Dairy Statistics 1995-96. Hamilton, New Zealand: Livestock Improvement Corporation, Dairy New Zealand.
- LIC. 1997. Dairy Statistics 1996-97. Hamilton, New Zealand: Livestock Improvement Corporation, Dairy New Zealand.
- LIC. 1998. Dairy Statistics 1997-98. Hamilton, New Zealand: Livestock Improvement Corporation, Dairy New Zealand.
- LIC. 1999. Dairy Statistics 1998-99. Hamilton, New Zealand: Livestock Improvement Corporation, Dairy New Zealand.
- LIC. 2000. Dairy Statistics 1999-00. Hamilton, New Zealand: Livestock New Zealand, Dairy New Zealand
- LIC. 2001. Dairy Statistics 2000-2001. Hamilton, New Zealand: Livestock Improvement Corporation, Dairy New Zealand.
- LIC. 2002. Dairy Statistics 2001-2002. Hamilton, New Zealand: Livestock Improvement Corporation, Dairy New Zealand.
- LIC. 2003. Dairy Statistics 2002-2003. Hamilton, New Zealand: Livestock Improvement Corporation, Dairy New Zealand
- LIC. 2004. Dairy Statistics 2003-2004. Hamilton, New Zealand: Livestock Improvement Corporation, Dairy New Zealand.
- LIC. 2005. Dairy Statistics 2004-2005. Hamilton, New Zealand: Livestock Improvement Corporation, Dairy New Zealand
- LIC. 2006. Dairy Statistics 2005-2006. Hamilton, New Zealand: Livestock Improvement Corporation, Dairy New Zealand.
- LIC. 2007. New Zealand Dairy Statistics 2006-2007. Hamilton, New Zealand: Livestock Improvement Corporation, Dairy New Zealand.
- LIC. 2008. New Zealand Dairy Statistics 2007-2008. Hamilton, New Zealand: Livestock Improvement Corporation, Dairy New Zealand.
- LIC. 2009. New Zealand Dairy Statistics 2008-2009. Hamilton, New Zealand: Livestock Improvement Corporation, Dairy New Zealand
- LIC. 2010. New Zealand Dairy Statistics 2009-2010. Hamilton, New Zealand: Livestock Improvement Corporation, Dairy New Zealand
- LIC. 2011. New Zealand Dairy Statistics 2010-2011. Hamilton, New Zealand Livestock Improvement Corporation, Dairy New Zealand.
- Liepins, R. & Bradshaw, B. 1999. Neo-Liberal Agricultural Discourse in New Zealand: Economy, Culture and Politics linked. *Sociologia Ruralis*, 39(4), 563-582.
- Lofland, J., Snow, D., Anderson, L. & Lofland, L. H. (eds.) 2006. *Analysing Social Settings: a guide to qualitative observation and analysis*, United States of America: Wadsworth/Thomson Learning.

- Lyson, T. A. 2002. What Does a School Mean to a Community? Assessing the Social and Economic Benefits of Schools to Rural Villages in New York. *Journal of Research in Rural Education* 17(3), 131-137.
- Mackay, M., Perkins, H. C. & Espiner, S. 2009. The Study of Rural Change from a Social Scientific Perspective: A Literature Review and Annotated Bibliography. Lincoln, Christchurch: Department of Social Science, Parks, Recreation, Tourism and Sport, Faculty of Environment, Society and Design, Lincoln University
- MacLeod, C. J. & Moller, H. 2006. Intensification and diversification of New Zealand agriculture since 1960: An evaluation of current indicators of land use change. *Agriculture, Ecosystems and Environment*, 115, 201-218.
- Marshall, M. 1996. Sampling for qualitative research. *Family Practice*, 13(8), 522-526.
- Martin, L. 2002. High School and University Students Perceptions of a Career in the Dairy Industry - A Canterbury Perspective. New Zealand: Applied Management and Computing Division, Lincoln University
- McCarthy, I. 2002. The market for New Zealand dairy farms following the formation of Fonterra Cooperative Group. *Pacific Rim Real Estate Society Conference*. Christchurch, New Zealand.
- McCarthy, J. 2005. Rural geography: multifunctional rural geographies – reactionary or radical? *Progress in Human Geography*, 29(6), 773-782.
- McClintock, W., Taylor, N. & McCrostie Little, H. 2002. Social Assessment of land use change under irrigation. New Zealand: Working Paper 33.
- McCrostie Little, H. & Taylor, N. 2001. Social and Economic Impacts Associated with Irrigated Land Use Change. *New Zealand Association for Agricultural and Resource Economics (NZAERS) Conference*. Blenheim.
- McIntosh, C. & McIntosh, B. 2009. 50/50 Sharemilking. In: Gow, N. & Doig, K. (eds.) *resilient SIDE: South Island Dairy Event*. Christchurch, New Zealand.
- Merriam, S. B. 2002. Introduction of Qualitative Research. In: Merriam, S. B. (ed.) *Qualitative Research in practice: examples for discussion and analysis*. United States of America: Jossey-Bass.
- Morgan, J. 2011. Sheep farmers enjoy best prices for decades [Online]. [www.stuff.co.nz](http://www.stuff.co.nz/business/farming/5140871/Sheep-farmers-enjoy-best-prices-for-decades), June 14. Available: <http://www.stuff.co.nz/business/farming/5140871/Sheep-farmers-enjoy-best-prices-for-decades>
- Murray, N. 2006. Knowledge and skill 'down on the farm': Skill formation in New Zealand's agricultural sector. *New Zealand Journal of Employment Relations*, 31(1), 1-16.
- New Zealand Government. 2010. The New Zealand Emissions Trading Scheme - information for farmers and landowners. Wellington, New Zealand.
- Niblett, A. 2011. Life just gets better [Online]. *Ashburton Guardian*, 15 February.
- Pangborn, M. & Woodford, K. 2010. The rise and rise of Canterbury dairying. *Primary Industry Management*, 14(3), 3-6.
- Perkins, H. C. 2006. Commodification: re-resourcing rural areas. In: Cloke, P., Marsden, T. & Mooney, P. (eds.) *Handbook of Rural Studies*. London: Sage Publications.
- Potter, C. & Burney, J. 2002. Agricultural multifunctionality in the WTO - legitimate non-trade concern or disguised protectionism? *Journal of Rural Studies*, 18, 35-47.
- Price, L. W. 1993. Hedges and Shelterbelts on the Canterbury Plains, New Zealand: Transformation of an Antipodean Landscape. *Annals of the Association of American Geographers*, 83(1), 119-140.

- Roadley, G. 2009. The Early Years. *Large Herd Dairy Conference* Ashburton.
- Rubin, H. J. & Rubin, I. S. 2005. *Qualitative Interviewing: the art of hearing data*, United States of America, Sage Publications.
- Rural News. 2011. Water plan a major for farms [Online]. *Rural News*, 17 May 2011. Available: <http://www.ruralnewsgroup.co.nz/rural-news/rural-general-news/water-plan-a-major-for-farms>
- Salamon, S. 2003. From Hometown to Nontown: Rural Community Effects of Suburbanization. *Rural Sociology*, 68(1), 1-24.
- Sandys, S. 2001. Farmers turning to Groundwater [Online]. *Ashburton Guardian*, November 11.
- Sandys, S. 2007. Loss of shelter belts alarming [Online]. *Ashburton Guardian*, November 20, 2007.
- Sandys, S. 2011. Sports Centre gets council seal of approval [Online]. *Ashburton Guardian*, September 23.
- Schilling, C., Zucollo, J. & Nixon, C. 2010. Dairy's role in sustaining New Zealand - the Sector's contribution to the economy. Wellington: Report to Fonterra and Dairy New Zealand.
- Scott, A. 2002. A long history of dairying in Mid Canterbury [Online]. *Ashburton Guardian*.
- Scotter, W. H. 1972. *Ashburton: a History, with records of town and county*, Ashburton, Ashburton Borough and County Councils
- Searle, G. 2002. The reality of a career in the dairy industry: An Employee's Perspective, a survey of New Zealand dairy farm staff. New Zealand: Kellogg Rural Leadership Course.
- Small, J. & Blee, G. 1999. *Miles of Tiles: a journey through Longbeach and surrounding districts history*, Ashburton, Longbeach and Districts Historical Committee.
- Smith, W. & Montgomery, H. 2003. Revolution or evolution? New Zealand Agriculture since 1984. *GeoJournal*, 59, 107-118.
- Smithers, J., Joseph, A. & Armstrong, M. 2005. Across the divide (?): Reconciling farm and town views of agriculture–community linkages. *Journal of Rural Studies*, 21, 281-295.
- Stott, P. 2000. Rush of new dairy development likely [Online]. *Ashburton Guardian*, 14 December 2000.
- Studholme, A. 2002. Long wait for wells [Online]. *Ashburton Guardian*, April 4.
- Taylor, C. N. & McCrostie Little, H. 1995. *Means of survival?: a study of off-farm employment in New Zealand*, Christchurch, New Zealand, Taylor Baines and Associates.
- Taylor, N., McClintock, W. & McCrostie Little, H. 2003. Assessing the social impacts of irrigation - a framework based on New Zealand cases. *Paper presented to the International Association for Impact Assessment Annual Meeting*. Marrakech, Morocco.
- The National Bank. 2011. *Equity Partnerships* [Online]. Available: <http://www.nationalbank.co.nz/rural/specialistservices/equity.aspx> [Accessed 15 April 2011].
- Tipples, R. 1987. Labour Relations In New Zealand Agriculture. *Sociologia Ruralis*, XXVII(1), 38-55.

- Tipples, R. & Greenhalgh, J. 2011. Establishing a baseline for measuring employees' experiences of "people management" practices in dairy farming. Dairy New Zealand & Lincoln University.
- Tipples, R. & Lucock, D. 2004a. Foreign workers and dairy farming. *Primary Industry Management*, 7(4), 42-44.
- Tipples, R. & Lucock, D. 2004b. Migrations and Dairy Farming. *Primary Industry Management*, 7(1), 33-35.
- Tipples, R. & Morriss, S. 2002. The Farm Labour Crisis. *Primary Industry Management*, 5(4), 25-27.
- Tipples, R., Trafford, S. & Callister, P. 2010. The Factors which have resulted in migrant workers being 'essential' workers on New Zealand dairy farm. *Labour, Employment and Work Conference*. Wellington.
- Tipples, R. & Wilson, J. 2005. The dairy farming population and migrations. *Primary Industry Management*, 8(1), 41-45.
- Tipples, R., Wilson, J., Edkins, R. & Sun, X. 2004. Future Dairy Farm Employment in New Zealand - An application of the human capability framework. Lincoln, New Zealand: Agriculture and Life Sciences Division, Lincoln University.
- Tolich, M. & Davidson, C. 1999. *Starting Fieldwork: an introduction to qualitative research in New Zealand*, New Zealand, Oxford University Press.
- Tolich, M. & Davidson, C. 2011. *Getting Started: An Introduction to Research Methods*, Auckland, New Zealand, Pearson.
- Tricker, J. & Wells, T. 2010. Canterbury Region Dairying Report 2009/2010 season. Christchurch, New Zealand: Environment Canterbury, Regional Council.
- Vance, W. 1976. *Bush, bullocks and boulders: story of Upper Ashburton*, Ashburton, Alford Forest Bushside Springburn District Centenary Committee.
- Wilson, G. A. 2001. From productivism to post-productivism . . .and back again? Exploring the (un)changed natural and mental landscapes of European agriculture. *Transactions of the Institute of British Geographers*, 26, 77-102.
- Wilson, G. A. 2007. *Multifunctional Agriculture: a transition theory perspective*, England, CABI.
- Wilson, J. & Tipples, R. 2008. Employment Trends in Dairy Farming in New Zealand 1991 - 2006. New Zealand: Agriculture and Life Sciences Division, Lincoln University.
- Wilson, O. 1994. 'They Changed the Rules' Farm Family Responses to Agricultural Deregulation in Southland, New Zealand. *New Zealand Geographer*, 50(1), 3-13.
- Witten, K., McCreanor, T. & Kearns, R. A. 2007. The place of schools in parents' community belonging. *New Zealand Geographer*, 63, 141-148.
- Woods, M. 2005. *Rural Geography: Processes, Responses and Experiences of Rural Restructuring*, London, Sage Publications.
- Wylie, S. 2009. Research into the Needs of and Relating to Newcomers and Migrants to the Ashburton District. Ashburton.