Social dimensions of plantation expansion in north east Victoria

A report to Plantations North East Inc.

October 2007

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Disclaimer
The views expressed in this report are solely the authors, and do not necessarily reflect the views of Charles Sturt University, Plantations North East Inc., or any other individual or organisation consulted during the research.

Cover photos
A collection of general rural scenes from Victoria (Hugh Stewart).
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Overview

Plantations North East Inc. (PNE) commissioned research to:

1. Explore changes in the social values underpinning rural land use, and the impacts of these trends on north east Victoria as an economic wood supply zone for forest plantations, and in particular on a selected area of the region — the Towong shire Local Government Area.

2. Interpret the impact of current trends for the achievement of forest plantation industry targets, including the strategic goals of PNE.

The Institute for Land, Water and Society (ILWS), Charles Sturt University, undertook the study using a research method that:

- analysed a wide range of secondary data to identify social, economic and agricultural change in rural landscapes;
- conducted in-depth interviews with 44 people representing a range of stakeholders; and
- involved a comparative analysis of the characteristics of the Green Triangle — a region renowned for its high level of investment in plantation forestry.

The research was conducted during November 2006 to March 2007.

Plantation forests and farming

PNE has a target of 25 000 hectares for the expansion of plantation forests in north east Victoria by 2020, which represents about three per cent of the land in the region assessed by Borschmann (1998) as capable of growing Radiata Pine plantations. However, achieving expansion in line with this target has proved particularly challenging.

The Towong shire’s planning scheme discourages plantation forestry from prime agricultural land — the Farming Zone. However, there is some concern that the information on which the Towong shire has mapped agricultural land quality, and therefore determined the Farming Zone, is dated (mapping conducted in 1985) and limited in terms of the range of land-use activities considered. Nevertheless, the Towong shire has recently requested changes to the planning scheme including:
a change to the Shire’s Timber Plantations and Timber Processing Industries policy (one of the local planning policies) to discourage timber plantations in the proposed Farming Zone and Rural Conservation Zone;

- a requirement in the proposed schedule to the Farming Zone that timber production obtains a permit where the land is greater than 40 hectares; ¹

- a requirement in the proposed schedule to the Rural Activity Zone that timber production obtains a permit where land is in areas covered by the Significant Landscape Overlay and the land is greater than 40 hectares.

A key planning issue identified by the Towong shire is the balancing of development against the desire to protect high quality agricultural lands and natural resources.

**Changing demographic composition**

This research has identified that considerable demographic change is occurring in parts of north east Victoria, with important implications for the scale and nature of plantation forestry. While the landscape in north east Victoria may outwardly look the same as an ‘agricultural production’ landscape in that agriculture is the dominant land use, in some districts the role and importance of agriculture is diminishing. In other districts, the specific enterprises are changing yet the overall value of agricultural production remains important.

Where forestry companies are most interested in expanding plantations in the Towong shire (Statistical Local Area Part B), population density has declined to 0.6 people per square kilometre. In addition, despite the total population in the Murray Valley increasing by 5.4 per cent during the 10-year period of 1991–2001, the total population in the Towong shire declined by 8.0 per cent.

Following this period of decline (1991-2001), the total population in the Towong shire has recently stabilised; however, it appears to be ‘ageing’ — with the median age in the two Towong Statistical Local Areas (SLAs) increasing by between seven and eight years during 1991-2001. It was 42 years in both SLAs in 2001, which was five years more than the median age in non-metropolitan Australia in that year, and is older than the median for all SLAs in the Murray

¹ The schedule to the existing Rural Zone includes a permit requirement for timber production where the land is within the Environmental Significance Overlay or the Significant Landscape Overlay, and the land is greater than 40 hectares (O’Neill & Kirsch 2006, p. 78).
Valley and Green Triangle regions. Also, there was a decline by 23.8 per cent in the size of the population of children (0–14 year old cohort), and a decline by 24.0 per cent in the size of the youth population (15–24 year old cohort) in the Towong shire during 1991–2001.

**Employment and farming**

Towong shire as a whole experienced a slight decline in the number of people employed in ‘agriculture, forestry and fishing’ during 1991-2001. However, agriculture still accounts for nearly 29 per cent of employment in the Shire — the single largest employment category in the Shire.

The area of farms in the Towong shire was 213 000 hectares in 2001, representing 32 per cent of the total land area of the Shire. There appears to have been little change in the area of farms during 1997-2001, although the number of farms appears to have declined — supporting the view that there has been some farm amalgamation.

In the Towong shire, beef production is the most common farm enterprise (60 per cent of farms in 2005), followed by dairying (24 per cent). This balance has remained relatively stable during 1997-2005. The concentration on these two enterprises is more pronounced than in the wider Murray Valley and Green Triangle regions. Beef production is playing an increasing role in the agricultural sector of the Towong shire; however, this is largely undertaken by enterprises of ‘small’ economic size — which tend to find it difficult to maintain growth in real income.

Beef farms in Victoria, on average, did not make a business profit over the decade 1996-97 to 2005-06. Expressed as per farm averages, the age of the owner manager of beef farms was 63 years, compared with 59 years for all agricultural industries in 2004-05.

For forest growers, the mill-door price minus payments for harvesting and transport represents the price paid for the standing plantation timber, known as the ‘stumpage’, and is the closest equivalent in the forest industry to the ‘farm gate’ value of agricultural production. In the Towong shire in 2000-2001, the stumpage value of plantation products per hectare of plantation land was about...
30 per cent higher than the farm gate value of agricultural commodities produced per hectare of farmland.

**Purchase of rural property**

It would appear that land in the Towong shire was purchased primarily for its agricultural value during 1997-2005 — evidence of an ‘agricultural production’ landscape. In contrast, the results for Local Government Areas closest to Melbourne (e.g. Mitchell, Murrindindi) indicate that land prices on average appear to be beyond reach of a viable agricultural enterprise, and ownership of rural land is uncoupling from agriculture.

Local people were the dominant group of purchasers of rural properties 10 hectares or more in area in 2005 in the Local Government Areas (LGAs) of Alpine (37% of all properties purchased), Benalla (44%), Indigo (49%), Towong (47%) and Wangaratta (53%). By contrast, Melbourne purchasers were the dominant buyers in 2005 of rural properties in all LGAs closest to the metropolitan area — Mansfield (50%), Mitchell (64%), Murrindindi (65%) and Strathbogie (54%). However, buyers from Melbourne had least influence in the Towong shire, the most distant LGA from Melbourne.

Melbourne purchasers of rural property in the Green Triangle peaked in the year 2000, when they comprised 23 per cent of all properties purchased. The driver of this shift was Managed Investment Scheme (MIS) forestry companies entering the land market, whose funds are reportedly drawn largely from high income urban investors. The influence of MIS forestry companies has not occurred to any appreciable degree in north east Victoria.

**Results from in-depth interviews**

**Viable farming**

Farmers in the Towong shire regard it as a productive and reliable farming area mainly because of its rainfall, however the isolation was the main disadvantage identified. Given the Towong shire’s support for reserving prime agricultural land for farming, it was seen to be relevant to define the characteristics of a viable farm. However, there is a difficulty in defining a ‘viable farm’, because of the different contexts in which farm enterprises are operated and of the varying aspirations of the operators. In a client base of a financial institution of more
than 200 farm businesses in north east Victoria and southern New South Wales (mainly beef and dairy enterprises), about 70-80 per cent of clients had off-farm income, most of which would earn more off-farm than on-farm. A senior staff member of another financial institution operating in the same general area reported that off-farm income was increasing.

Despite increasing land prices, farmers were active buyers of rural property in the Towong shire. A farmer observed that land was mainly being purchased by local people and absentee landholders — hence, not many people were coming to live in the district. Some farmers are getting off-farm work by managing lifestyle farms for absentee landowners.

**Planning for future farmland**

Views about the future of agriculture in north east Victoria were both optimistic and pessimistic. Farmers held the view that beef production would continue to be the predominant form of agriculture in the foreseeable future. Three farmers interviewed were optimistic about the future of the beef industry, because of such factors as increasing demand for quality-assured product in the Asia-Pacific region. Views within the Department of Primary Industries about the future of agriculture in north east Victoria were both optimistic and pessimistic.

Other interviewees reported that older farmers tended to depreciate the capital value of their farms — they let pastures and fences run down, and do not carry out the necessary environmental works. In addition to the ageing demographic of farmers, the increasing demands on young farming families to maintain a lifestyle comparable to their non-farming peers are putting pressure on the ability of these farmers to maintain the capital base of their assets.

A senior staff member of the Towong shire was concerned in the short term about the impact of recent drought on the resilience and resources of the farming community. The broader view held by the interviewee about farming in the Shire was that it is very much a traditional agricultural area, was only a marginal land use in many parts of the Shire, had little innovation save for some trials of alternative crops, and has difficulty maintaining parity with other areas because of the large distance to markets and the nature of the terrain that often precludes the use of modern transport systems.
There were reservations amongst farmers in the Towong shire about the approach to land-use planning by local government. One commented that local government “… should not be overly prescriptive about land use”. Another said that restricting land uses other than agriculture in large parts of the Shire limited opportunities for ‘lifestyle’ properties which were a means of attracting people to the region — an outcome sought by council and community. However, one farmer — who was disillusioned by agriculture — believed that local government should zone rural areas exclusively for farming.

**Plantation forestry in Towong shire**

Plantations in the Towong shire are a softwood resource. Planting was started by the State in 1961 and the resource is centred on the Shelley-Koetong plateau where average rainfall is more than 1 000 millimetres per annum. The plantation estate in the Shire was mostly established during the 1960s to the mid-1980s. In this period, land used by the State for plantation development was public land cleared of native forest and purchased farmland. It was government policy to use ‘marginal’ farmlands for softwood plantations wherever possible.

The government’s commitment to phase out by 1987 the clearing of native forest for softwood plantations, and community concern about the purchase of farmland for softwood expansion, led to the decline and ultimate cessation of softwood plantation expansion by the State in north east Victoria.

There has been little investment in new industrial-scale softwood plantations in north east Victoria since the early 1990s when the State divested management of its plantations. Forestry companies reported that a significant impediment was the difficult regulatory environment related to plantation expansion in Victoria.

Towong shire had 16 747 hectares of plantations in 2005 — 99 per cent was softwood, and three-quarters was owned by one industrial grower. Towong shire has a significant area of farm forestry softwood plantations — at 2004, 23 owners had 1 475 hectares of plantations mostly established under a range of incentives offered by government and industry. However, farm forestry softwood growers (i.e. individuals with a total plantation estate of usually less than 1 000 hectares) in the Towong shire have experienced great difficulty in accessing softwood markets.
Towong shire has no processing of plantation wood products because the scale of plantations in the Shire is not sufficient to support local processing — all plantation logs are hauled to processing centres in other Local Government Areas in Victoria and New South Wales. It is most unlikely that any significant investment in local processing would develop, even if the plantation estate expanded in line with the vision of PNE — it is more likely that existing industries elsewhere would increase their capacity at their present locations.

Managed investment schemes (MIS) have become the dominant source of private investment in new plantations in Australia, and since 1997 it is estimated that growers participating in such schemes have financed about 70 per cent of all new plantations in the national estate.

The aim of most forestry MIS that are seeking to develop plantations in the Murray Valley region is the establishment of Radiata Pine to be managed on long rotations (approximately 25 years). Most of the region is too far from an export woodchip facility to attract MIS for short rotation woodchip plantations — the dominant form of new forestry investment in the Green Triangle region.

There was widespread concern in the rural community about MIS — particularly the perception that the tax arrangements for MIS create market distortions for land and water resources at the expense of farmers.

**Perceptions of plantation forestry**

The over-riding concern was the impact of plantations on local communities — loss of farms and employment, causing families to move away. The loss of only several families in a small farming valley was regarded as sufficient to have a significant effect on the social capital of the community.

Many of the concerns raised about plantation expansion are similar to those raised when the Victorian government established The State Plantations Impact Study (SPIS) in 1988, in response to community opposition to the government’s program for expanding softwood plantations on farmland in north east Victoria.

The Towong shire formed the ‘Towong Shire Plantations Committee’ in 1996, in response to community concern about plantations. The Committee has been an effective community forum, with little concern about plantation forestry at
present — but there were views that there would be concern if plantations expanded markedly.

**Opportunities for plantation forestry**

The main purpose of softwood plantations is sawlog production for conversion to sawn timber, primarily for use in the domestic housing and timber market. There is increasing demand for softwood logs from primary processors in the Murray Valley, but the major primary processors generally do not invest in plantation wood production under their current business models. However, the increased demand for softwood logs by processors is reflected in the plantation expansion plans of major industrial growers of softwoods in the Murray Valley region.

A number of forestry companies are establishing new softwood plantations in the Murray Valley. Most activity is financed by forestry MIS and this is most likely to remain the main source of new investment in the short term. Nearly all new plantations are being established in southern New South Wales in LGAs adjacent to the Towong shire.

There are significant areas of suitable agricultural land for conversion to plantations in the Towong shire based on the productive capability of the land and the economic haulage distances to major regional processors.

However, accessing land in the Towong shire is currently considered too challenging for plantation expansion by MIS companies because of experience with, and perceptions of a relatively difficult planning environment (i.e. controls on land use and clearing native vegetation) for plantation development.

While there is a perception amongst plantation companies that plantation forestry is not a preferred land use in the Towong shire, the forest industry is likely to focus its expansion activities in other regions where the planning environment is relatively supportive of their activities.
1 Introduction

1.1 Research context

The findings from research commissioned by Plantations North East Inc. (PNE) are presented in this report. The study first involved analysis of secondary data for the purpose of identifying indicators of social change in rural landscapes in north east Victoria. This was followed by semi-structured interviews with 44 people during November 2006 to March 2007, to explore the experiences of farmers and forestry people in the region and other key stakeholders relevant to the agriculture and forestry industries.

The study was the social research component of the Towong Shire Plantation Development Plan project conducted by PNE. As one of 21 Private Forestry Development Committees spread across plantation regions in Australia, PNE’s role is to work with local and regional stakeholders, industry and government to assist the development of the plantation forestry industry at a regional level (Department of Agriculture, Fisheries and Forestry [DAFF] 2005).

1.2 Purpose of this research

1. Explore changes in the social values underpinning rural land use, and the impacts of these trends on north east Victoria as an economic wood supply zone for forest plantations, and in particular on a selected area of the region — the Towong shire Local Government Area.

2. Interpret the impact of current trends for the achievement of forest plantation industry targets, including the strategic goals of PNE.

2 Structure of the report

The following chapter three presents an overview of the project including more detail on the role of PNE and the context of agriculture and forestry in the north east region of Victoria.

This is followed by a chapter on methodology used for the research including the rationale for the choice of indicators of social change, the sources of secondary data used, the selection of respondents for interviews, the interview process, the approach to analysis of the results, and the limitations of the research.
The findings of the research are presented in two chapters. The first of these shows indicators of change in communities and land use in north east Victoria based on analysis of data from a range of secondary sources. This is followed by a chapter that presents the findings from the interviews, structured around the main themes discussed during the interviews: changes in the role and importance of agriculture; the nature and perceptions of forestry; and opportunities for forestry.

The final chapter discusses the implications of the findings for the achievement of plantation industry targets, including the strategic goals of PNE.

3 Overview of project

3.1 Plantation expansion targets and forecasts

Plantation forestry policy in Australia is driven by the ‘Plantations 2020 Vision’ launched in 1997 by government and the plantation industries, with a national target of trebling plantations from one million hectares to three million hectares over the period 1997–2020. The strategy aimed to convert the annual $2 billion trade deficit in wood and wood products into a trade surplus (Plantations 2020 Vision Implementation Committee 1997). The Murray Valley region (Figure 1), one of 15 National Plantation Inventory regions that comprise the national plantation estate, includes all of north east Victoria and the Tumut and Tumbarumba areas of southern New South Wales. The Plantations 2020 Vision does not set regional targets for plantations, as commercial considerations will determine the locations and nature of new plantations (Wareing et al. 2002), but notional targets at a regional level for plantation expansion were reported in an analysis of wood availability from plantations over the period 2001 to 2044 (Ferguson et al. 2002). This work drew on estimates made by the commonwealth agency, the Bureau of Rural Sciences, in 2001, in which ‘low’, ‘medium’ and ‘high’ estimates were prepared, with the high estimate being at the level required to achieve a trebling of the plantation area in line with the Plantations 2020 Vision. The analysis showed that the high estimate of plantation expansion for the Murray Valley was 91 800 hectares over the planting years 2000 to 2019 (Ferguson et al. 2002, p. 85), compared to the plantation estate of nearly 175 722 hectares at 1999 (Wood et al. 2001, p. 86). Thus, the high estimate of plantation expansion for the Murray Valley was equivalent to increasing the regional plantation area by about 50 per cent, meaning that other regions
combined would need to increase plantation areas at a rate above the overall national target if the Plantations 2020 Vision was to be achieved.\(^2\)

\[\text{Figure 1 Murray Valley region as defined by the National Plantation Inventory showing the distribution of plantations at 2005.} \]
\[\text{Source: Parsons, Gavran and Davidson (2006).}\]

\(2\) Trebling the plantation estate from 1 M ha to 3 M ha requires an increase in the plantation area of 200%.
A subsequent study (Wareing & Baker 1998)³ considered three scenarios for plantation expansion in north east Victoria — a 50 per cent increase in plantation area by 2030, a tripling of plantation area by 2020 (the Plantations 2020 Vision), and a six-fold increase in plantation area. Given the then and foreseeable economic and social conditions, they concluded that the most likely outcome was an expansion of the estate by approximately 50 per cent by 2030, with most new plantations being softwoods.

Plantations North East Inc. (PNE), the private forestry development committee for the north east region of Victoria, commissioned a socio-economic assessment of the timber industry in north east Victoria (Wareing et al. 2002).⁴ The assessment assumed that by 2020, the area of plantations in the region would increase by 50 per cent, increasing the total area of the estate from 67 741 hectares to 101 612 hectares or by almost 34 000 hectares across the 13 Local Government Areas (LGAs) in the region (Wareing et al. 2002, pp. 71-72).

PNE has adopted a more modest vision, supporting plantation expansion towards a goal of 25 000 additional hectares in north east Victoria from 2006 to 2020. Expansion of the estate is regarded as important for the economic development of the region, as it brings new investment and jobs, and provides a sustainable land use option — the strategic goals of PNE (Plantations North East [PNE] 2005).

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³ The study area was the North East Victoria Comprehensive Regional Assessment region, that concords with most of the Victoria part of the Murray Valley region defined by the National Plantation Inventory.

⁴ The study area was the area of activity of Plantations North East Inc, which includes the Victoria part of the Murray Valley region defined by the National Plantation Inventory.

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**Plantations North East (PNE) is the private forestry development committee for the north east region of Victoria. This region is part of the Murray Valley region defined by the National Plantation Inventory. PNE supports plantation expansion towards a goal of 25 000 additional hectares in north east Victoria from 2006 to 2020.**

**Areas identified with potential for expansion of plantations**

The terms ‘land capability’, ‘land suitability’ and ‘land availability’ have been defined in relation to the identification of potential forestry land in Australia. Land
capability is the identification of land where the biophysical growth requirements of a particular tree species are satisfied for a given management regime. Land suitability involves the integration of biophysical factors and social and economic factors affecting the fitness of land for plantations, and the most commonly used attributes of suitability are land use, land price and distance to existing or notional markets. Finally, land availability is the area of suitable land ultimately available for plantation development, assessed by gauging the willingness of landholders to plant trees themselves, or make their land available to growers through outright sale or joint venture for plantation development (Stephens, Sun & Tickle 1998, pp. 5-6). While many regard land availability as the most informative for the future forest industry planning, arguably it is the most complex and expensive to obtain given it draws together the biophysical, economic and social dimensions of land use.

An assessment of the capability of land in north east Victoria to grow commercial plantations was conducted in 1998. About 810 000 hectares of land in north east Victoria (the Victorian part of the Murray Valley national plantation inventory region) was assessed to have the capability to grow Radiata Pine plantations, on the basis of geology, climate (mean annual rainfall at least 650 millimetres), slope (less than 30 degrees) and land tenure (cleared agricultural land in private ownership) that would support a plantation mean annual increment (MAI) or growth rate of at least 16 cubic metres per hectare per year (Borschmann 1998, p. 17). Of this land base, approximately 132 000 hectares is estimated to be in the Towong shire (National Forest Inventory [NFI] 2007).

Results from the study of land capability by Borschmann (1998) were used in a study of land suitability for plantations in the North East Victoria Comprehensive Regional Assessment region. In this region, the area of land capable of growing Radiata Pine plantations with an MAI of at least 16 cubic metres per hectare per

Approximately 132 000 hectares of cleared agricultural land in the Towong shire was assessed to have the capability to grow Radiata Pine plantations.

5 A region defined for the joint Commonwealth-Victorian North East Regional Forest Agreement process. It is part of the Murray Valley plantation region and includes all of the shires of Alpine, Indigo and Towong, and parts of the shires of Benalla, Mansfield, Mitchell, Murrindindi, Strathbogie and Wangaratta (Borschmann 1998, Wareing & Baker 1998).
year was estimated to be 647,000 hectares. A discounted cash flow analysis was then used to estimate the net present value (NPV) of a plantation investment exclusive of land costs. Results were presented in a matrix showing effects on NPV of steepness of land, plantation productivity class and distance to market. Land was considered to be economically suitable for industrial plantations if the NPV was greater than the current market value of land (1997 data from the Office of the Valuer General, Victoria on land sales for properties at least 20 hectares in area, excluding those used for intensive agriculture, with average prices per hectare estimated at a shire level). The analysis indicated that about 290,000 hectares was economically suitable for Radiata Pine plantations, and that the shire with the largest area of potentially suitable land was Towong shire where land prices were relatively low (Wareing & Baker 1998, p. 24). Another study using a similar approach but more recent estimates of land value (based on municipal revaluation returns in January 2004 for cleared agricultural land) confirmed the economic suitability of land in 10 parishes in the Towong shire for Radiata Pine plantation development (Poynter 2005, p. 19).

In a separate study of all the plantation regions in Australia, about 1.8 million hectares of cleared agricultural land in the Murray Valley was assessed as productive for Radiata Pine plantations (Burns, Walker & Hansard 1999). The suitability of this land base for plantation development was then analysed using a linear programming model to estimate, under various forest industry scenarios, areas where the value of land under plantations would exceed or match the estimates of existing agricultural land values. Estimated values of agricultural land were derived using ABARE survey data on farmers’ estimation of the per hectare value of their land. The analysis for the forest industry scenario in which there were no constraints on new processing capacity indicated that in the Murray Valley region, there was 128,000 hectares of land potentially suitable for plantations (Burns, Walker & Hansard 1999, pp. 127-135) — considerably less than the 290,000 hectares estimated for north east Victoria, which is part of the Murray Valley region (Wareing & Baker 1998). A comparison of the assumptions used in the studies suggested that the use of different methods for estimating agricultural land value was the main reason for the large difference in the estimates of the area of land suitable for forestry development.

Another study used a different approach to estimate land suitability from an estimate of land capability for Radiata Pine plantations in north east Victoria.
An index of ‘attractiveness for plantation development’ was prepared, based on the premise that plantations would be unattractive to industry if more than 75 kilometres from a processing site, because of the cost of log haulage, and that industry itself must locate close to a skilled workforce and supporting infrastructure. Accordingly, the analysis centred on zones within 50 kilometres, and from 50 to 75 kilometres of such regional centres as Benalla, Myrtleford, Seymour, Wangaratta and Wodonga. Key features in each zone (workforce, existing plantation resource, property size, proximity of capable land to wood processing industries and infrastructure, and proximity of centre to retail markets for wood products) were scored on a scale from one to three and the total scores were then scaled to produce five levels of attractiveness for investment across the zones. This analysis suggested that only the western part of the Towong shire was attractive for plantation development because the remainder of land in the shire with capability for plantations was more than 75 kilometres from the nearest regional centre (Wodonga) included in the analysis (Margules Poyry 1998, pp. 68-76). However, this analysis did not consider a major softwood processing facility located at Tumbarumba in New South Wales, which was less than 75 kilometres distant from parts of the Towong shire with capability for plantations.

The expansion target of PNE (25 000 hectares) is about three per cent of the land assessed by Borschmann (1998) as capable of growing Radiata Pine plantations in north east Victoria, and about nine per cent of the land assessed by Wareing and Baker (1998) as economically suitable for Radiata Pine plantations. The authors are not aware of any studies that have assessed land availability for plantations in north east Victoria. However, a review of studies of the potential for plantation development in Australia suggested that it was reasonable to assume that the amount of available land was 20 per cent of the amount of suitable land (Stephens, Sun & Tickle 1998, pp. 13, 25). Under this assumption, the expansion target of PNE would appear to be achievable.

The expansion target of Plantations North East (25 000 hectares) is about three per cent of the land assessed as capable of growing Radiata Pine plantations in north east Victoria.
Fostering plantation development

There are 21 Private Forestry Development Committees (PFDCs) in the main plantation regions in Australia. The PFDCs are funded through the Australian Government’s Natural Heritage Trust in partnership with state governments to deliver the following national goal for private forestry development: ‘To support sustainable, commercial private forestry development providing economic, environmental and social solutions to Australia’s long-term production and land-use issues.’ (DAFF 2007, p. 1).

PNE, the PFDC for north east Victoria, has been operating since 1996. Its broad charter is described in Box 1.

<table>
<thead>
<tr>
<th>Box 1 Charter of Private Forestry Development Committees</th>
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<tr>
<td>In the revised ‘Plantations 2020 Vision’ launched in 2004, the PFDCs were acknowledged as fundamental to the ongoing implementation of the national plantation strategy. The role of the PFDCs in relation to the Plantations 2020 Vision includes:</td>
</tr>
<tr>
<td>□ Planning, infrastructure and industry coordination.</td>
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<tr>
<td>□ Development of regional feasibility studies for plantation investment.</td>
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<tr>
<td>□ Development of regional plantation and farm forestry strategies to encourage forest-based industries.</td>
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<tr>
<td>□ Formulating marketing, investment and wood flow plans.</td>
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<tr>
<td>□ Facilitating communication between stakeholders.</td>
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<tr>
<td>□ Improving information flows on marketing and management of plantations and private forests.</td>
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3.2 Planning scheme in the Towong shire

The Towong shire is one of the 13 municipal councils in the Victorian part of the Murray Valley plantation region. The shire comprises the Statistical Local Areas (SLAs) of Towong shire (Part A) and Towong shire (Part B) (Figure 2). The population of the Towong shire in 2001 was 5,972 with 38 per cent in the SLA of Towong shire (Part A) at a density of 3.9 persons per square kilometre, and 62 per cent in the SLA of Towong shire (Part B) at a density of 0.6 persons per square kilometre (Australian Bureau of Statistics [ABS] 2003a). In 2001, the
largest towns were Corryong (population 1,139) and Tallangatta (population 923), and the rural balance was 53.5 per cent of the total population of the shire (Department of Sustainability and Environment [DSE] 2006). Key issues facing the Towong shire are shown in Box 2.

**Box 2 Key issues facing the Towong shire**

**Environment**
- The sustainable development of the shire’s natural resource base.
- The balancing of development against the need to protect high quality agricultural lands, water catchment areas and significant natural areas.

**Settlement**
- Ensuring that the existing and proposed populations are located in attractive and well planned urban and rural areas.

**Economy**
- Maintaining and expanding the diversity of the shire’s industries and building on existing strengths.

*Source: TSC (2005, p. 21).*

The planning scheme is the central instrument that controls the development and use of land in the Towong shire. The Victorian *Planning and Environment Act 1987 s. 12B* requires that a municipal council must review its planning scheme at least once every three years to ensure, amongst other things, that it sets out effectively the policy objectives for use and development of land. In December 2005 the Towong shire prepared a proposal to amend its planning scheme that included a comprehensive review of the rural zone. The C14 amendment (the Amendment) was exhibited in early 2006 and a planning panel (the Panel) appointed in May 2006 to hear and consider approximately 50 submissions.

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6 The rural balance is the population in all areas outside urban centres (a population cluster of 1,000 or more people) and localities (generally a population cluster of 200 to 999 people), with each urban centre and/or locality composed of one or more whole Census collection districts.

7 Anyone can lodge a submission about a planning amendment. If submissions have been received, council must consider them and decide on a course of action. One of three options is that a council may make a written request for the Minister for Planning to appoint an independent panel. Panel members are appointed from Planning Panels Victoria and are experienced planners and other professionals with skills relevant to the particular amendment. The panel’s main role is to review the submissions and provide advice to council and the Minister about the amendment and the submissions referred to it (DSE 2005).
Although the Panel generally supported the Amendment, it made a number of recommendations in response to submissions. The Towong shire met on 28 August 2006 and resolved to support the recommendations in the report of the Panel and to submit the amended planning scheme to the Department of Sustainability and Environment and the Minister for Planning with a request that the Amendment be incorporated into the Towong planning scheme (O’Neill & Kirsch 2006; Towong Shire Council [TSC] 2005, 2006). The Amendment has been submitted and final negotiations are being conducted for its incorporation into the planning scheme (Laugher, pers. comm. 8).

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Figure 2 Murray Valley region and its concordance with Statistical Local Areas as at 2001. Source: Wood et al. (2001, p. 84), ABS (2003a).

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8 David Laugher, Chief Executive Officer, Towong shire council, 14 March 2007.
Proposals regarding rural areas

The planning proposals for rural areas in the Amendment to the Towong planning scheme are provided in the documentation accompanying the Amendment (TSC 2005) and in the Panel’s report (O’Neill & Kirsch 2006). The Amendment proposes to apply the Farming Zone\(^9\) to land currently zoned Rural Zone that has been identified as higher quality agricultural land, and to apply the Rural Activity Zone to land currently zoned Rural Zone that has been identified as lower quality agricultural land.\(^{10}\) The proposed zones in the exhibited Amendment are shown at Appendix 1.

The Panel considered these zoning proposals in the context of the advisory note relating to new zones for rural Victoria (DSE 2004b), that described how new zones are to be applied. Specifically, the Farming Zone replaces the Rural Zone and the main feature of the new zone is its recognition of agriculture as the dominant land use in rural Victoria. The Rural Activity Zone is designed to be applied in selected areas where agriculture and other land uses can co-exist — while agriculture has primacy, other uses may be established if they are compatible with the agricultural, environmental and landscape attributes of the area. After consideration of the advisory note and submissions to the proposed Amendment, the Panel supported the Towong shire’s use of the agricultural quality mapping conducted in 1985 as the basis for applying the Farming Zone and the Rural Activity Zone. However, the Department of Primary Industries, Victoria provided a written submission to the Amendment that raised a concern about the land capability analysis upon which the Amendment was based; ‘The land capability analysis is out of date … and did not consider an adequate range of land use activities including timber production.’ (O’Neill & Kirsch 2006, p. 76).

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The C14 amendment to the Towong shire planning scheme proposes to apply the Farming Zone to higher quality agricultural land and the Rural Activity Zone to lower quality agricultural land.

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\(^9\) The new zones for rural Victoria are: Farming Zone, Rural Activity Zone, Rural Living Zone, and Rural Conservation Zone (DSE 2004b).

\(^{10}\) Based on agricultural quality mapping done in 1985 by the former Department of Agriculture, Victoria, that identified five classes of agricultural quality: very high, high, average, low, and very low. The C14 amendment seeks to apply the Farming Zone to land currently zoned Rural Zone and identified as high or very high agricultural quality, and the Rural Activity Zone to land currently zoned Rural Zone that is identified as average, low and very low agricultural quality (O’Neill & Kirsch 2006, p. 29). To date, the authors (Stewart et al.) have been unable to cite the original study.
Proposals regarding the use of land for timber production

The Amendment to the Towong shire’s planning scheme proposed a number of changes that affect the use of land for timber production (O’Neill & Kirsch 2006, p. 75). The Towong shire sought changes, including:

- A change to the shire’s Timber Plantations and Timber Processing Industries policy (one of the local planning policies) to discourage timber plantations in the proposed Farming Zone and Rural Conservation Zone.
- A requirement in the proposed schedule to the Farming Zone that timber production obtains a permit where the land is greater than 40 hectares.11
- A requirement in the proposed schedule to the Rural Activity Zone that timber production obtains a permit where land is in areas covered by the Significant Landscape Overlay and the land is greater than 40 hectares.

In considering the proposed changes to the use of land for timber production, the Panel noted that the framework for the state planning policy in Victoria invited planning authorities to ‘identify areas which may be suitability used and developed for plantation timber production’, and the panel was satisfied that the proposed controls in the Amendment prepared by the Towong shire responded to this opportunity (O’Neill & Kirsch 2006, p. 78).

The Panel then considered the Practice Note ‘Timber Production in the Rural Zone’, which established the position that there will usually be no justification for requiring a permit for timber production in that zone.12 However, the Practice Note, written in 1999, qualified the general view:

... the option to require a permit for timber production on areas above 40 hectares continues to be available for those situations where there is reasonable question about whether a location is appropriate for timber production. (Department of Infrastructure 1999, p. 2).

The Panel concluded that these important qualifications supported the approach taken by the Towong shire to timber production, and the Panel supported the shire’s strategy in the proposed Amendment to its planning scheme to exercise

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11 The schedule to the existing Rural Zone includes a permit requirement for timber production where the land is within the Environmental Significance Overlay or the Significant Landscape Overlay, and the land is greater than 40 hectares (O’Neill & Kirsch 2006, p. 78).

12 A Practice Note is prepared under the Victorian Planning Provisions (i.e. statewide standard provisions for planning schemes). The purpose of the Practice Note ‘Timber Production in the Rural Zone’ is to give guidance to planning authorities about the preparation of a schedule to the Rural Zone (RUZ) as it relates to timber production (Department of Infrastructure 1999).
control over the location of timber plantations, specifically in areas of high quality agricultural land and in areas that have high environmental and landscape values (O’Neill & Kirsch 2006, pp. 79-81).

The independent panel appointed in May 2006 to consider submissions to the proposed Amendment supported the Towong shire’s strategy to exercise control over the location of timber plantations, specifically in areas of high quality agricultural land and in areas that have high environmental and landscape values.

However, the Panel noted that a restrictive approach to timber production ‘... is unfortunate given the importance of the industry to the Shire’ (p. 81) and that further revision of the strategic intent needs to occur over the location of timber plantations. The Panel also recommended that in the longer term, the Towong shire should continue to work with PNE and other stakeholders to identify appropriate areas for timber production and to implement outcomes of such work through an amendment to the planning scheme (O’Neill & Kirsch 2006, pp. 79-81).

Implications of the Amendment for plantation forestry

Under the proposed Amendment, the majority of the Rural Zone is rezoned to Farming Zone (FZ) and Rural Activity Zone (RAZ). The approximate area of the FZ is 58 800 hectares, and that of the RAZ 162 500 hectares.13 Approximately 132 000 hectares of cleared agricultural land in the Towong shire is considered to be capable of supporting commercial plantations of Radiata Pine (NFI 2007). It would be expected that the cleared land in the FZ — the prime agricultural land — would be part of the 132 000 hectares of land with commercial forestry capability; however, in the FZ it is Towong shire policy that timber plantations are discouraged and the Amendment requires that a permit is needed to change land use to timber production if the land area exceeds 40 hectares.

Towong shire policy does not discourage timber plantations in the RAZ. In the shire’s report accompanying the proposed Amendment, it noted that the vast majority of existing timber plantations were located in areas proposed to be part

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13 Sue Holzman, Planner, Towong Shire, 15 March 2007.
of the RAZ, and that this fact would encourage future forestry activity to be concentrated in this zone rather than in the FZ. It also argued that the RAZ was delineated ‘... so as to encourage activities, which whilst still agricultural in nature, do not require prime agricultural lands to ensure the uses are successful.’ (TSC 2005, pp. 162-163). From a forestry perspective, however, this zone has a number of issues. The land in the RAZ was identified as lower quality agricultural land whereas that in the FZ was identified as higher quality agricultural land using a combination of edaphic factors (e.g. soil type, slope) (O’Neill & Kirsch 2006, p. 25). In north east Victoria, beyond the alluvial valley bottoms, there is a broad positive correlation between the pasture productivity of farmland and the biophysical capability of the land for Radiata Pine plantations (Trapnell & Lavery 1989, p. 9). Some of the farmland in the FZ appears to have the capability to support highly productive Radiata Pine plantations (Trapnell & Lavery 1989). Also, much of the land in the RAZ could generally be expected to have a lower biophysical capability for Radiata Pine plantations. This is likely to reduce the attractiveness of the RAZ compared to the FZ to forestry companies identifying land for Radiata Pine plantations, because the intent is to locate the best available land in terms of biophysical and infrastructure factors (Willmott Forests 2005, pp. 20, 22), and to invest in regions on the basis of high quality land and proximity to softwood processing industries (Gunns Plantations 2006, p. 26).

Whilst both the proposed FZ and RAZ are intended, in the main, to provide for the use of land for agriculture, the key differences between the zones lie in the remaining defined purposes. For the FZ, the other purposes are to encourage the retention of productive agricultural land, and to ensure that such non-agricultural uses as dwellings do not adversely affect the use of land for agriculture. On the other hand, the RAZ has the other purpose of providing for ‘...other uses and development, in appropriate locations, that are compatible with agriculture and the environmental and landscape characteristics of the area.’ (TSC 2005, p. 162). This is consistent with the Practice Note ‘Applying the Rural Zones’ (DSE 2007a), which emphasises that the main feature of the RAZ is that it provides flexibility for farming and other land uses to co-exist, by supporting the continuation and growth of farming but providing opportunity for non-farming uses (e.g. tourism, recreation facilities) to be considered in appropriate locations. However, the Practice Note suggests that possible FZ areas would be ‘forestry plantation areas’ without specifically identifying these as possible areas within the RAZ. Further, the Practice Note suggests that possible FZ areas are ‘Areas
where non-farming uses and development need to be strictly controlled so that potential land use conflicts can be avoided.’ (DSE 2007a, p. 11).

The Amendment proposed by the Towong shire is directing expansion of timber production into the RAZ — along with many other activities — which may not be the most economically prudent location for forestry. Historically, plantations have been established in areas now proposed to be classified as RAZ due to earlier government policies that led to planting of public land cleared of native forest or marginal farmland (Land Conservation Council [LCC] 1981, 1984). However, given plantation forestry is now largely undertaken by corporate entities focussed on the profitable production of timber, the land desired for plantation expansion is high quality — and may include land in the FZ.

**Under the proposed Amendment, timber plantations are discouraged in the Farming Zone and a permit is needed to change land use to timber production if the land area exceeds 40 hectares.**

**Land use in the Towong shire**

The proposed Amendment to the planning scheme will affect land use on about 30 per cent of the area of the Towong shire. A profile of the land use in the Towong shire, drawn from various sources, is presented in Box 3.

**Box 3 Profile of land use in the Towong shire**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total land area</strong></td>
<td>667 340 hectares</td>
<td>ABS (2003a)</td>
</tr>
<tr>
<td><strong>State forests and reserves</strong></td>
<td>426 000 hectares</td>
<td>Margules Poyry (1998, p. 36)</td>
</tr>
<tr>
<td><strong>Area of land in the proposed Farming Zone and Rural Activity Zone</strong></td>
<td>~221 000 hectares</td>
<td>Sue Holzman, Towong Shire, 15 March 2007</td>
</tr>
<tr>
<td><strong>Area of farms</strong></td>
<td>213 000 hectares in 2001</td>
<td>ABS (2007a)</td>
</tr>
</tbody>
</table>

Social dimensions of plantation expansion in north east Victoria 15
3.3 Context of agriculture and forestry in the north east region

Trends in agriculture - Victoria

Trends in agriculture are an important consideration for this research because it is policy at the national and Victorian state levels to increase commercial plantation development on agricultural land, thus displacing agriculture (Commonwealth of Australia 1992, Department of Primary Industries [DPI] 2005a).

Key trends in Victorian agriculture (Taylor, Ha & Fisher 2006) include:

- The contribution of agriculture, forestry and fishing to the Victorian economy over the past 15 years has mainly been in the range of 3-4 per cent of gross state product.
- Employment in agriculture is decreasing in absolute numbers and as a proportion of total regional employment.
- The average farm size has increased from 296 hectares in 1976-1977 to 420 hectares in 2003-2004 while the number of farms has decreased from 48 000 to 33 000 over that period.
- For the period 1988-1989 to 2003-2004, Victoria had a productivity growth of three per cent per annum for broadacre and dairy industries combined, the highest overall growth amongst the states, but this was driven by the cropping industries and the Victorian beef and dairy industries had low productivity growth compared to the national averages.

Trends in agriculture - north east Victoria

Agriculture in the Towong shire was assessed in 2004 as part of an inventory of agribusiness in the Alp Valley region delineated by six shires (the shires of Alpine, Indigo and Towong and the rural cities of Benalla, Wangaratta and Wodonga) in north east Victoria (The Regional Development Company [TRDC] 2005). Towong shire is known for its traditional agricultural industries of beef production and dairying. Alternative enterprises include cropping and seed production. Trends in agriculture in the Towong shire were:

- A decrease in the number of farms from 523 in 1997 to 491 in 2001, a reduction of 6.5 per cent, thought to have been through consolidation of existing farms in the shire (data derived from the 2001 Agriculture Census conducted by the Australian Bureau of Statistics).
An increase in the gross value of agricultural production from $51.9 million in 1997 to $66.2 million in 2001, an increase of 22 per cent.

Research into, and trial plantings of alternative crops including essential oils, potatoes for seed production and onion seed production.

Across the Alp Valley region as a whole, it was found (TRDC 2005) that:

- In 2001, beef production was the dominant industry in terms of gross value of agricultural production ($105.6 million) and the number of farms (74 per cent of farms assessed). Dairying was the next most important enterprise in terms of gross value of agricultural production ($69.2 million).
- The horticultural industries had much larger growth, in terms of the proportional increase in the gross value of production, than the grazing, dairying and cropping industries from 1997 to 2001.
- There is fragmentation of larger beef herds as lifestyle producers increase in number in the industry, though it was estimated that about 20 per cent of producers still controlled about 80 per cent of cattle numbers.
- There is an increasing trend for sub-division of rural land closer to growth centres (e.g. Wodonga, Wangaratta) and for higher land values throughout the region driven mainly by lifestyle farmers and people paying a higher price for the amenity of the landscape in the region.
- There are trends of both consolidation and fragmentation of rural land in different locations in the Alp Valley region. In the Upper Murray (i.e. the Towong shire), land appears to be more tightly held with purchasers likely to be neighbouring farmers.
- Water is recognised as the most limiting resource for further development of agribusiness in the region.

*Towong shire is known for its traditional agricultural industries of beef production and dairying. In north east Victoria, there is an increasing trend for sub-division of rural land closer to growth centres (e.g. Wodonga, Wangaratta) and for higher land values throughout the region driven mainly by lifestyle farmers.*
Trends in plantation forestry - south east Australia

Data for recent plantation expansion (2001-2005) in three of the national plantation inventory regions in south east Australia—the Green Triangle, Central Victoria, and the Murray Valley—are shown in Table 1. The Green Triangle has exceeded its notional target under the Plantations 2020 Vision and Central Victoria has achieved around half its notional target. Of concern, the Murray Valley (Figure 2) has achieved just 22 per cent of its notional target, and industry sources indicate that most of this has occurred in the New South Wales part of the region.¹⁴

As it stands, the plantation resource in the Murray Valley region (184 602 hectares at 2005) is dominated by softwoods (96 per cent of the total area). Most of the small amount of expansion from 2001 to 2005 was from the development of softwood plantations. Nationally, most new plantations are hardwoods, and the majority are financed by managed investment schemes (Parsons, Gavran & Davidson 2006).

### Table 1 Plantation estate and notional expansion targets under the Plantations 2020 Vision

<table>
<thead>
<tr>
<th>Region</th>
<th>Total area at September 2000 (ha)ᵃ</th>
<th>Total expansion estimated from Sept 2000–2019 (ha)ᵇ</th>
<th>Average annual rate of expansion required (ha/yr)</th>
<th>Actual annual expansion [2001–2005] (ha/yr)ᶜ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green Triangle</td>
<td>224 184</td>
<td>262 950</td>
<td>13 839</td>
<td>14 930</td>
</tr>
<tr>
<td>Central Victoria</td>
<td>49 517</td>
<td>105 886</td>
<td>5 573</td>
<td>1 534</td>
</tr>
<tr>
<td>Murray Valley</td>
<td>179 454</td>
<td>88 068</td>
<td>4 635</td>
<td>1 030</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>453 155</strong></td>
<td><strong>456 904</strong></td>
<td><strong>24 048</strong></td>
<td><strong>17 493</strong></td>
</tr>
</tbody>
</table>

ᵃ Wood et al. (2001).
ᶜ Derived from total plantation area at 2005 (Parsons, Gavran, & Davidson 2006, table 07) and total area at September 2000 (Wood et al. 2001). Some of the change is due to adjustments to previously reported areas.

**Plantedations in the Murray Valley region (184 602 hectares at 2005) are dominated by softwoods. Plantation expansion during 2001-2005 (1 030 hectares per year) was small compared to the Green Triangle region (14 930 hectares per year) — the largest plantation region in south east Australia.**

¹⁴ David Buntine, Forest Officer, Towong Shire, 1 October 2007.
4 Methodology

4.1 Background to this research

Apart from timber production, forests confer important environmental benefits. Forests in Australia have long been recognised by some as the best cover for water catchments (e.g. Commonwealth Scientific and Industrial Research Organisation [CSIRO] 1970, Australian Government 2006). New planted forests in agricultural landscapes, at both farm and catchment scale, are advocated as a means of reversing the salinisation of rural lands, especially in the Murray–Darling basin (Kile 2000, Marcar & Crawford 2004) where salinity is a basin-wide issue (Murray–Darling Basin Commission 1999a, p. ii). New plantations are also recognised as a positive component in any greenhouse gas amelioration strategy (CSIRO 2004, Turner et al. 2004) and can enhance biodiversity (CSIRO 2004, p. 2; Race & Freudenberg 2003).

Against these benefits, however, the public has long been concerned about the social and environmental impacts of plantations developed on agricultural land in Australia (Petheram et al. 2000; Schirmer 2001; Spencer & Jellinek 1995; State Plantations Impact Study [SPIS] 1990; Williams, Nettle & Petheram 2003; The Senate 2004). This is despite studies that have demonstrated that the industry makes an important contribution to a regional economy in regions with a significant plantation resource and/or processing base (Centre for International Economics [CIE] 2005; Econsearch 2005; Schirmer et al. 2005a, 2005b; URS Australia 2004; Wareing et al. 2002).

More recently, the public has expressed concern about impacts of new plantations on catchment water yield when pastures and crops are replaced by plantations; such concerns are supported by a body of evidence (BRS 2003, CSIRO 2004) and this issue is being addressed in the National Water Initiative (Council of Australian Governments 2004).

Tensions about plantation forestry are also exacerbated by the coincidence of economic wood supply zones and the more densely settled areas of the ‘populated coastal’ and ‘populated inland’ regions of Australia where populations are generally increasing (Haberkorn et al. 2004, Wood et al. 2001). These social
landscapes\textsuperscript{15} are undergoing change in terms of demographics, employment, land tenure and management, (e.g. Alston 2004; Barr, Wilkinson & Karunaratne 2005; Gray & Lawrence 2001; Pritchard & McManus 2000). These new settlers have different values and, whilst the landscape may outwardly look the same in that agriculture is the dominant land use, these differences in values underpin different approaches to land management (Curtis & Robertson 2003). Evidence of this trend is the decoupling of land prices and the agricultural returns from that land as new settlers enter the rural property market (Race et al. 2005). These trends have also been observed in western Europe and the United States of America (e.g. Gobster, Haight & Shriner 2000; Potter, Barr & Lobley 1996).

4.2 Need to conduct the research

Expansion of the plantation estate in north east Victoria is important for the economic development of the region, as it brings new investment and jobs, and provides a sustainable land use option (PNE 2005). However, despite these benefits, and the environmental benefits of plantations, the rate of expansion in the region has been low compared to other plantation regions in Australia in the past five years (Table 1).

The economic wood supply zone in north east Victoria (effectively east of the Hume highway) coincides with a social landscape undergoing change. This landscape is changing in terms of demographics, employment, land tenure and management, and it is evident that new settlers are bringing different values to those held in traditional agricultural communities — considered by some to be ‘new’ or ‘post-agricultural’ landscapes (Race & Stewart 2007).

The Victorian government perspective on the changes in rural landscapes is informed to a large extent by the substantial ongoing social research in Victoria, summarised in Barr (2005). This research described four rural landscapes in Victoria: ‘agricultural production landscapes’, ‘rural amenity landscapes’, ‘transitional landscapes’, and ‘irrigation landscapes’ (Box 4), derived from a cluster analysis of socio-economic attributes at the spatial level of SLA (Barr, Wilkinson & Karunaratne 2005, p.13). Most of the north east region of Victoria was considered to be a rural amenity landscape, with other parts transitional landscapes, including most of the Towong shire (Figure 3). No part of north east

\textsuperscript{15} In Australia, the appearance of most catchments is as much defined by the activities of people (e.g. farming, urbanisation) — that is, ‘social landscapes’ — as it is by the natural environment (Race et al. 2007, p. 36).
Victoria was considered to be an agricultural production landscape as dominates in north west Victoria (Barr 2005). Within the Towong shire, the Towong Part A SLA (that includes the town of Tallangatta) was considered to be a rural amenity landscape, and the Towong Part B SLA (that includes the town of Corryong) a transitional landscape (Barr 2005, p. 3).

Box 4 Socio-economic features of rural landscapes in Victoria

Barr (2005) has summarised the rural landscapes in Victoria according to the social and economic changes that have occurred over the past 20 years.

Agricultural production landscapes are characterised by:
- Declining terms of trade for agricultural commodities.
- Some farms getting larger to increase productivity of their businesses.
- More small farms and fewer large farms.
- Large farms dominate agricultural production and account for most productivity growth.
- Lack of competition from other land purchasers is a factor allowing broadacre farmers to expand their businesses.
- Farm aggregation occurs at the rate of retirement from farming.
- Population decline of the hinterland and growth of regional centres
- Many small towns with an increasing proportion of aged residents.

Rural amenity landscapes are characterised by:
- Increased demand for landscape amenity as a consequence of urbanisation, causing a high price for rural land in the more amenable and accessible landscapes.
- Farms become smaller because high land prices prevent expansion.
- More intensive farming (e.g. horticulture, tourism) or off-farm work is required to maintain viability of small farms.
- The potential for economic growth by way of increased agricultural productivity is restricted by social transformation (i.e. a shift to non-farming landholders).
- Beef production fits well with off-farm employment or on-farm semi-retirement and is the predominant agricultural industry.
- Younger farmers will generally undertake off-farm work.
- Older farmers with high business equity can absorb the declining terms of trade and remain in farming so long as they are healthy and wish to farm.
- When farmers retire, inter-generational transfer is unlikely and properties will often be purchased by new residents from provincial centres or Melbourne.
- A farming community with commuters, semi-retirees and retirees and farm intensification can provide a positive future for small towns (i.e. through a more diverse local economy).
Socio-economic features of rural landscapes in Victoria (continued)

Transitional landscapes are characterised by:

- Decline in the dairy and wool industries, and increased demand for sites of amenity in parts of the landscape.
- Diversification, in parts of the landscape, of traditional agriculture — mainly a shift from wool production to prime lambs or raised-bed cropping.
- New land uses (i.e. non-farming) — sheep properties purchased for blue gum plantations or leased as wind farms for electricity generation, which may attract controversy.
- New settlers on land, not always as affluent as new settlers to amenity landscapes - includes people who engage in small-scale farming and non-traditional land uses.
- Migration of some new settlers to small towns driven by reduced access to affordable housing in Melbourne.
- Planning processes to mediate and arbitrate conflict between the diversity of new land uses are often required. The transitional zone is where future landscape uses and values are most uncertain. Mediating these conflicts while maintaining the social cohesion of the community can be challenging.

Barr (2005) considers north east Victoria to be ‘rural amenity’ and ‘transitional’ landscapes. No part is regarded to be an ‘agricultural production landscape’.

A fourth rural landscape (irrigation landscapes) was described, but not included here as it is not relevant to the region where this research is focussed.

For each landscape, an indicative map was produced, based on a cluster analysis of landscape function at the spatial level of SLA (Figure 3).

Figure 3 Indicative social landscapes of rural Victoria, mapped at the spatial level of Statistical Local Area. Source: Barr (2005, p. 3).
In another construct, parts of north east Victoria have been described as ‘peri-urban areas’ (Box 5, Figure 4). These areas are rural in appearance and an important contributor to the value of agricultural production, but are characterised by a mix of land uses and residents, many of whom will commute to nearby urban centres for employment (Houston 2005, Victorian Government 2005). Thus, whilst the landscape in north east Victoria may outwardly look the same as an agricultural production landscape in that agriculture is the dominant land use, different values held by new settlers may require a different approach to land management, perhaps also including forestry.

**Box 5  Socio-economic features of peri-urban regions**

Peri-urban regions are those areas that are within the sphere of influence of adjacent urban centres. The term is usually applied to the fringes of large metropolitan centres, but it is also being applied to large regional centres.

*Peri-urban regions in Australia are characterised by:*

- The continuing practise of broad-scale agriculture in parts of the landscape.
- Intensive agriculture remains important on the fringes of many cities.
- 20-25 per cent of the gross value of agricultural production in the five mainland states comes from peri-urban regions.
- Changing land use is the most visible evidence of a peri-urban area, the most obvious example being a proliferation of residences on allotments that either do not support agriculture, or are related to what are variously termed rural residential, rural living, hobby farm or sub-commercial farming enterprises.
- The influence of urban centres includes effects on the productivity of the land, land prices, habitat and the maintenance of biodiversity.
- The peri-urban area is supporting a rapidly growing population and is expanding in its geographic extent.
- An important factor in their expansion is the capacity of those who choose to locate in peri-urban areas to retain their social and economic links with the metropolitan area.
- Problems of land use conflict involving agriculture are most evident in peri-urban regions.
- Peri-urban landscapes tend to be associated with amenity landscapes (described by Barr 2005), though they are not necessarily identical spatially.

Areas were mapped at the spatial level of Statistical Local Area (at 2001) as subject to peri-urban influence if the population density of private non-urban land was more than 1.6 persons per hectare and the employment rate in non-agricultural industries was more than 60 per cent.  


Figure 4 Peri-urban regions in Victoria.

A key planning issue identified by the Towong shire is the balancing of development against the need to protect high quality agricultural lands and natural resources. The primacy of agricultural land to the shire is clearly shown in the proposed Amendment to its planning scheme. However, if the connection to agricultural production is diminishing due to changes in the composition of the community, there is a need to understand the implications for planning authorities and primary industries (including forestry) regarding approaches to land use and development.

There is a need to explore these issues because to date, social research in Australia examining planted forests in rural areas has largely focussed on community perceptions of the negative social impacts of plantations (e.g. Spencer & Jellinek 1995, SPIS 1990, The Senate 2004) and, more recently, on the regional socio-economic benefits of plantation expansion (e.g. CIE 2005; Econsearch 2005; Schirmer et al. 2005a, 2005b).
4.3 Task of the project

PNE contracted the Institute for Land, Water and Society (ILWS), Charles Sturt University, which formed a research team to conduct research into changes in the social values underpinning rural land use, and the impacts of these trends on north east Victoria as an economic wood supply zone based on plantations, particularly in the Towong shire which is part of the region.

The findings were to be interpreted to predict the impact of current trends for the achievement of government and industry targets for plantation expansion, and for the achievement of the strategic goals of PNE. Secondly, the findings were to be used to inform PNE and the stakeholders in the Towong Shire Plantation Development Plan project.

Drawing on existing knowledge generated by previous studies of the plantation industry in the north east region (e.g. Margules Poyry 1998, Poynter 2005, SPIS 1990, Wareing et al. 2002), the ILWS research team designed research to investigate the following key questions:

- To what extent are there ‘new’ or ‘post-agricultural’ landscapes in those selected areas of north east Victoria identified for the expansion of plantations?
- Where ‘new’ landscapes exist or are emerging, to what extent will this trend impact on key regional policies for plantation expansion?

4.4 Research approach

The ILWS research team used a number of research techniques to collect quantitative and qualitative data. Quantitative data was analysed to identify the proportion, scale and trends of selected demographic, agricultural and commercial characteristics of rural landscapes. Qualitative data was used to understand the underlying causes of these trends, and to further explore the experiences of 44 people identified as having experience relevant to this research. This included exploration of the drivers of change and opportunities for forestry in the north-east Victoria generally and the Towong shire specifically.

The main elements of the research methodology were:

- A literature review to identify indicators of change in social landscapes.
A study using secondary data (e.g. from the Australian Bureau of Statistics), to test the efficacy of selected indicators of social and agricultural landscapes in north east Victoria.

Analysis of rural land values in the region, obtained from secondary data (e.g. Valuer General, and other reports), against its estimated value to agriculture and forestry, to identify where these values are diverging.

In-depth, semi-structured interviews with selected landholders, to explore the values held by these people in relation to the ownership and management of their land, and to planted forests.

In-depth, semi-structured interviews with natural resource managers, forest company staff, and senior policy makers, to understand the range of views relevant to the key research questions, and explore with them ways of resolving key issues.

Interpretation of these empirical findings in terms of how they could be expected to impact on the achievement of government policies and programs, including The 2020 Vision, on the practice of planted forests, and on the role that these forests could play to meet contemporary community values.

4.5 Choice of indicators

Defining an indicator

The Australian Bureau of Statistics (ABS) regularly reports such statistics as gross domestic product, building approvals, and employment levels, which are examples of ‘main economic indicators’ that provide measures of economic activity (ABS 2003b). Social indicators, on the other hand, are regularly collected statistics which can be used to provide indication of changes in the general state of society (e.g. health and mortality statistics). They have parallels with economic indicators, but there has been considerable debate in Australia and internationally on the merits and construct of social indicators (Jary & Jary 2000, Lockie et al. 2005). Such indicators are, however, an important part of the social statistics program developed by the ABS — the main collector of social statistics in Australia (ABS 2001a, 2006f). In essence, social statistics are counts of units (e.g. individuals, family units) with particular characteristics (e.g. age, income) that are aggregated and combined in various ways to produce indicators of the status of groups in society, or of society as a whole (ABS 2001a). Thus, in simple
terms, an indicator is a quantitative measure of a characteristic and, although there is debate about what distinguishes an indicator from a statistic, the ABS takes the view that ‘any statistic, either simple or derived, may be regarded as a social indicator if it reflects a social issue or idea or tells you something about social conditions’ (ABS 2001a, p. 10).

The Australian Bureau of Statistics takes the view that any statistic, either simple or derived, may be regarded as a social indicator if it tells you something about social conditions.

Development of indicators

Effective indicator sets require a conceptual framework that specifies an overall objective (Chesson 2002). A range of frameworks has been used to develop social indicators and environmental indicators (Newton et al. 1998). Causal frameworks (e.g. the ‘pressure–state–response’ model that introduces the idea of cause and effect relationships) have been used extensively to develop indicators.16 This includes indicators used in reporting on the state of Australia’s environment (around the themes of atmosphere, coasts and oceans, land, inland waters, biodiversity, natural and cultural heritage, and human settlements) (Australian State of the Environment Committee 2001), and indicators used in reporting international environmental and social benchmarks (e.g. Organisation for Economic Co-operation and Development [OECD] 2003, 2005).

The methodology used by the ABS for reporting social trends (ABS 2001a, 2006f) uses a framework in which the central concept is the wellbeing of both individuals and society. Key dimensions of the framework include population, family and community, health, economic resources, housing, and culture and leisure. Within this framework, expert opinion guides selection of indicators. Where possible, 10 years of statistical data are provided for a particular indicator to give a long-term overview of social trends.

Social profiles have been reported for rural and regional Australia in sporadic publications. The Victorian government produced an atlas in 2002 and 2005 to

16 Human activities exert pressures on the environment and affect its quality and quantity of natural resources (state); society responds to these changes through environmental, general economic and sectoral policies and through changes in awareness and behaviour (societal response) (OECD 2002, p. 9).
highlight issues of the impact of change on regional areas (Victorian Government 2002, 2005). The 2005 atlas presented social, economic and environmental indicators under eight themes: changing populations, community wellbeing, servicing communities, industry and skills, water, land and people, coastal development, and energy. It drew on some of the indicators developed by Barr (2005) and Barr, Wilkinson and Karunaratne (2005) to describe the changing social landscape of rural Victoria.

Similarly, a social atlas (Haberkorn et al. 2004) presented 70 social measures for non-metropolitan Australia grouped in the six broad themes of population and demography, labour force and employment, education, family and household information, income and income support, and other topics including housing and computer use. Many of the indicators were derived statistics; for example, ‘natural resource dependency’ was the persons employed in agriculture, fisheries, forestry and mining as a proportion of all employed persons. Social atlases provide a useful ‘snapshot’ of the spatial distributions of social; however, for the purposes of in-depth analysis of regions, underlying statistics including longitudinal data are required. In regard to agriculture, socio-economic indicators for broadacre farms (e.g. hours worked on farm/off-farm, age profiles of farmers) are reported on a periodic basis, but only as state averages (e.g. Australian Bureau of Agricultural and Resource Economics [ABARE] 2003).

The idea of ‘thresholds’ for indicators has been suggested as a way of making practical use of indicators, though Pannell and Glenn (2000) argue that threshold levels for indicators must be determined in an economic context if they are to be used to guide management strategies.

Once a set of indicators has been selected, it is theoretically possible to create a single figure index to reflect the intensity of the overall phenomenon being studied. This would require an appropriate weight being assigned to each indicator, using a generally agreed model that defines and prioritises key elements of the subject. However, it has been argued that a single index can be an over-simplification and possibly a misleading representation over time (ABS 2002c).

The characteristics of a good indicator are that it should (ABS 2001a, 2002c, 2006e):
- be relevant to the characteristic it is intended to describe;
be supported by timely and reliable data;
be available as a time series;
be sensitive to changes in the underlying phenomenon it purports to measure;
be intelligible and easily interpreted by the general reader;
be summary in nature;
preferably be capable of disaggregation spatially and/or by demographic groups; and
able to be related to other indicators in a meaningful way.

In summary, indicators should be relevant, timely, reliable, sensitive, intelligible, and available for several time periods.

A good indicator is based on timely and reliable data, is available as a time series, and is easily interpreted by the general reader.

Indicators for this research

The plantation forestry sector is seeking to expand its plantation estate on agricultural land in regions that have differences in their bio-physical and socio-economic settings. It is hypothesised that in some of these rural regions, the role and importance of agriculture is diminishing. In such cases, it is expected that there will be impacts on the capacity of the forestry sector to achieve its expansion plans.

The objective in developing indicators for this research was to provide insight to trends in farming and socio-economic conditions in rural regions. The outcome sought is a set of indicators that can be used to rank regions according to the extent that agricultural production has primacy in the region and that values other than agricultural production influence land ownership and management. These indicators could then be used to characterise regional attractiveness for traditional forestry investment, and to identify those regions where forestry might need to adapt to meet changing community values. The preference was to identify indicators that could be used at a spatial level of one or more SLAs, but
it was recognised from a preliminary review of data sources that the minimum spatial scale of some indicators would be at the level of Local Government Area.

Indicators for this research have been developed using the framework shown in Table 2 and by drawing on indicators reported in the literature and the expert opinion of the research team. The framework has:

- Two themes related to regional change, with each theme containing elements relevant to social, environmental and economic issues.
- Dimensions within the themes that can be used to characterise socio-economic and farming trends within regions.
- Potential indicators to describe each of the dimensions.

**Table 2 Framework for the development of indicators**

<table>
<thead>
<tr>
<th>Theme</th>
<th>Dimension</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human settlements</td>
<td>Population</td>
<td>Population density</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Change in total population</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rural balance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Median age</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Change in population cohorts</td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td>Persons employed in rural industries</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Change in persons employed in rural industries</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wages and salaries</td>
</tr>
<tr>
<td>Housing</td>
<td>Rural residential building permits</td>
<td></td>
</tr>
<tr>
<td>Rural land</td>
<td>Farm physical characteristics</td>
<td>Agricultural use of land</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Number of farms</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Property size</td>
</tr>
<tr>
<td>Farm business characteristics</td>
<td></td>
<td>Farm enterprise</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Value of production</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Farm cash income</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Farm business profit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Agronomic value of land</td>
</tr>
<tr>
<td>Rural property sales</td>
<td>Locality of buyer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Size of properties sold</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Value of properties sold</td>
<td></td>
</tr>
<tr>
<td>Farm household characteristics</td>
<td>Age of farmer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Off-farm income</td>
<td></td>
</tr>
</tbody>
</table>
This research will rely on secondary data that are publicly available for the development of indicators. Where appropriate, geographic information system techniques will be used to show the spatial and temporal attributes of selected data, and to explore coincidence and correlations of some of the variables examined. This analysis will be supported by the Spatial Analysis Unit at Charles Sturt University. Determination of the scope of the data sets will be governed by consideration of the coincidence of SLAs (the primary spatial unit used by the ABS to disseminate data), the Murray Valley national plantation inventory regions, and the Local Government Area (LGA) of the Towong shire.

These indicators may be useful in exploring changes in other regions over time. For example, if the indicators are robust and portable, they may provide Private Forestry Development Committees a framework to monitor regions in terms of attractiveness for forestry. However, while recognising the contribution of work on indicators by other researchers, particularly Barr (2005), it is felt that most indicators based on secondary data sources need to be validated with in-depth interviews. Further, analysis of secondary data at the SLA and LGA spatial levels may be too coarse to accurately inform the research of the diversity of change and its impacts.

4.6 The interview process

Qualitative data for this research was collected by way of interviews. It is recognised that there is not a single view or experience that can encapsulate the whole region. The research team therefore identified key groups with a stake in rural land use and management in north east Victoria. The stakeholder groups were:

- Farmer — long-term resident
- Farmer with farm forestry experience
- Forestry company
- State agency
- Catchment management authority and Landcare
- Regional forestry group
- Agribusiness professional

The number of respondents from the eight stakeholder groups ranged from one to 12 (Figure 5).
With the assistance of PNE and its business networks, the research team identified people from the stakeholder groups as potential subjects for an interview. This approach, known as ‘purposive sampling’ or ‘purposeful sampling’ (Nieswiadomy 1987, p. 166; Patton 2002, p. 40), in which subjects selected are believed to be ‘typical’ or representative of the accessible population that the researcher desires to sample. The farmers identified for this research were well-established and were considered by peers as ‘good’ farm operators within the Towong shire. The research team believed it was important to interview credible farmers who were long-term residents (at least 15 years farming in Towong shire), and who hold views relevant to our understanding of the policy of the Towong shire to preserve prime agricultural land through the proposed Amendment to the planning scheme. Leading farmers with farm forestry experience were identified to understand opportunities for forestry outside the mainstream plantation forestry industry. Forestry companies were identified to represent the range of scale operating in the region (regional to international) and to cover all aspects of the sector from plantation development to processing and marketing of the finished product. Candidates from the other stakeholder groups were identified as people who influenced opinion and were experienced in their field of activities. Interviewees from state agencies included staff responsible for the delivery of private forestry programs. For the agribusiness
stakeholder group, the interviewees included people involved in property valuation, livestock and real estate trading, research and rural finance, and it was believed that such people would provide insight to trends in agriculture and regional communities.

The research team used an approach for the conduct of semi-structured and in-depth interviews that is consistent with accepted social research methods for collecting qualitative data (Giddens 2001, Minichiello et al. 1995). Candidates identified for an interview were sent a personalised letter that described the research project and sought their participation in the research. Three people approached were either unavailable or unwilling to be interviewed. Forty four people were interviewed during the period November 2006 to July 2007. The farmers were from the Towong shire, the farmers and farm foresters from the Murray Valley and Central Victorian regions as delineated by the national plantation inventory, all but one of the forestry companies were operating in the Murray Valley region, interviewees from state agencies were based in regional or Melbourne offices, and agribusiness professionals were likewise operating from regional or Melbourne offices.

The technique of semi-structured interviews uses the broad topic to guide the interview, and an interview guide is developed around a list of topics without fixed wording or ordering of questions, to focus the content of the interview on the issues central to the key research questions (Minichiello et al. 1995). Using this approach, an interview guide was specifically prepared for each stakeholder group. The topics in the interview guides (Appendix 2) included:

- Benefits and disadvantages of living and farming in the region.
- Property plans in the medium term (3-5 years) and longer term.
- Changes in the role and importance of agriculture and forestry.
- Changes in local and regional communities.
- Characteristics of people moving into regions, and of the properties being purchased.
- Attributes of regions attracting investment in plantations and processing.
- Forestry company plans in the medium term (3-5 years) and longer term.
- Benefits and disadvantages of forestry partnerships.
- Importance of plantation policies at national, state and regional levels.
Perceptions of plantation forestry as an industry and land use.

Role of managed investment schemes in plantation expansion.

Five interviews early in the research were conducted by two members of the research team, with one person interviewing and the other person scribing notes of key points discussed. This allowed the researchers to refine the interview technique and reflect on the suitability of the topics discussed during the interview. The other interviews were conducted by one member of the research team who made handwritten notes of the key points discussed during the interview that typically was 45 to 60 minutes long. No interviews were taped, and the identity of the interviewees was not recorded on the interview notes to maintain confidentiality.

Interviews were semi-structured — meaning that the interview was based on a list of topics without fixed wording or ordering of questions, to focus the content of the interview on the issues central to the key research questions.

Most interviews were done at the place of business of the interviewee. At the conclusion of each interview, interviewees were asked to provide information about themselves and their business to allow compilation of the profile of the respondents from different stakeholder groups. The identity of interviewees was not recorded on these profile notes.

4.7 Data analysis

Soon after the interview, the handwritten notes were entered into an electronic file according to topic in the interview guide. This qualitative data — the primary source of information for this research — was then analysed by the principal researcher using content analysis. This was done by reviewing every interview transcript and identifying main themes and findings, and using key word searches to explore particular issues. The transcripts were then reviewed by another researcher and the main themes and findings were discussed and refined. Quotes without attribution from interviewees were selected to illustrate the main findings. [Quotes in this report are presented in italics.]
Quantitative data obtained from various secondary sources and the qualitative data collected during interviews was compared in the process of triangulation (Giddens 1993, Berg 1995) to provide a means of cross-referencing and interpreting results. The use of multiple methods, including the combination of qualitative and quantitative data in the same study, is an accepted research strategy (Patton 2002, p. 68).

Preliminary findings were discussed with PNE, prior to the research team sending a copy of the draft report to each person interviewed. All interviewees were invited to review and comment on the draft report. The comments were then considered and discussed with PNE before submitting a final report in October 2007.

Analysis of the response of different stakeholder groups to the main issues identified is useful in predicting how groups may respond to policy alternatives (Commonwealth Forests Taskforce 1998, p. 129).

4.8 Limitations of this research

Choice of indicators

The choice of indicators to be examined by way of secondary data analysis is a subjective process guided by theory about the attributes of good indicators and the perceived availability of data. Any set of indicators has its strengths and weaknesses. In this study, problems were encountered in harmonising data because of different spatial boundaries, and obtaining information for different indicators across similar time periods. Other data may be available and may provide more informative indicators than those selected for this research.

Secondary data

An important source of data is the national census of Population and Housing (the Census) conducted by the ABS. While the most recent Census was conducted in August 2006, the first data to be released was in late June 2007 and only covered some of the statistics relevant to this research. Most data is expected to be released by December 2007. In addition, unlike previous censuses, the focus of population and housing statistics from the 2006 Census will be on ‘place of usual residence’, whereas statistics from previous censuses were usually reported on the basis of ‘place of enumeration’. Therefore it is
difficult to present longitudinal data prior to 1996 with that collected from the most recent Census.

Another important source of data is the agricultural census conducted by the ABS. Statistics at the level of SLA were obtained for the agricultural censuses of 1997 and 2001 using the services of an agricultural consultant with specialist skills in analysing this data. The most recent agricultural census was conducted in June 2006 and preliminary statistics for 2005-06 were released in May 2007 at the state and national level. Final estimates for major agricultural outputs and activity at the state and national level are expected in November 2007, after which the ABS will be in a position to provide customised data services prepared on a ‘fee for service’ basis for small area statistics at SLA and SD levels (ABS 2006l).

This study also revealed the difficulty of trying to cross reference and integrate data compiled, managed and administered by different organisations. For instance, it is challenging to integrate the data base on rural land held by the Towong shire and that of the ABS agricultural census for the same area (e.g. number of rateable rural properties compared to number of farms).

**Sample size for interviews**

The use of face-to-face interviews means that information was collected from a smaller number of respondents than would have been the case if a mail survey had been used as the research instrument. The use of semi-structured interviews allowed in-depth discussion of research themes with respondents and provided the opportunity to use follow-up questions to explore issues in more detail. This data is complemented by statistical analysis of a limited range and the opinions of a specific stakeholder group may not represent those of the group as a whole.
5 Research findings from secondary data analysis

5.1 Population changes

The Social Atlas of Rural and Regional Australia (Haberkorn et al. 2004, p. xvi) defines four regions outside metropolitan areas: regional city, populated coastal, populated inland and remote, to describe the people and communities of regional Australia. Populated coastal describes the more densely populated areas of Australia generally within 80 km of the coastline, whereas populated inland refers to all areas inland of coastal regions but excluding the remote (i.e. sparsely populated) areas of Australia. In the Murray Valley, all plantations are in the populated inland region whereas in the Green Triangle, more than half of the plantations are in the populated coastal region and the remaining plantations are in the populated inland region (inferred from Haberkorn et al. 2004, Map A, p. xvii).

Population density

The census counts people where they were on the night of the census, and this count of population is referred to as the ‘place of enumeration’ count or ‘location on census night’ count, which may or may not be their usual place of residence. For censuses of population and housing up to 2001, many of the census products presented data based on place of enumeration counts (ABS 2006j), which is the data used in this research.

Twenty Statistical Local Areas (SLAs) in Victoria and 11 SLAs in New South Wales had either complete or partial coincidence with the plantation areas mapped in the Murray Valley by the National Plantation Inventory in 2001. The total population within these 31 SLAs in 2001 was 317 285, representing a population density of 5.1 people per square kilometre. In the Green Triangle region, nine SLAs in Victoria and eight in South Australia had either complete or partial coincidence with the plantation areas mapped by the National Plantation Inventory, and the total population within these 17 SLAs in 2001 was 113 309, representing a population density of 2.4 people per square kilometre. In the Towong shire, the SLA of Towong Part A (centred on Tallangatta) had a population density of 3.9 people per square kilometre, and the SLA of Towong Part B, covering approximately 90 per cent of the shire, had a population density of 0.6 people per square kilometre (ABS 2003a).
It is noteworthy that the population density of the Green Triangle has declined from 2.6 people per square kilometre in 1986 to 2.4 people per square kilometre in 2001; in contrast, the Murray Valley has increased from 4.4 to 5.1 people per square kilometre over the same period. Towong Part A SLA has the same trend (increased from 3.7 to 3.9 people per square kilometre from 1986 to 2001); however, Towong Part B SLA has decreased from 0.7 to 0.6 people per square kilometre from 1986 to 2001.

The Towong shire comprises two Statistical Local Areas (SLAs). Plantation forestry is mostly located in the SLA of Towong Part B which is sparsely populated (0.6 people per square kilometre in 2001) compared to the SLA of Towong Part A (centred on Tallangatta) that had a population density of 3.9 people per square kilometre in 2001.

Total population

The total population of the Murray Valley increased by 5.4 per cent during the 10-year period of 1991–2001, while the total population in the Towong shire declined by 8.0 per cent over the same period. In the Green Triangle, the decline was 2.9 per cent (Appendix 3). The Victorian part of the Green Triangle region showed the most decline in population - the population decreased in each of the shires of Glenelg, Moyne, Southern Grampians and West Wimmera during 1991-2001. In the Victorian part of the Murray Valley (i.e. north east Victoria), the population increased in all shires during 1991-2001 except in the shires of Indigo and Towong, though in the case of Indigo the population decreased from 1991-1996 and then increased in the following five-year period (albeit for a net loss over 10 years), whereas in Towong the population decreased in each of the five-year periods.

The annual rate of population change was less during 1996-2001 than the previous five-year period in both the Murray Valley region (0.4 versus 0.6 per cent per annum) and Green Triangle (-0.1 versus -0.4 per cent per annum), in contrast to metropolitan Victoria (1.3 versus 0.7 per cent) and rural Victoria (0.7 versus 0.2 per cent) (Table 3). Nationally, the population growth rate was an average of 1.1 per cent per annum during the period 1996–2001 (ABS 2004).
Results for the annual change in population during 1991-2001 are presented spatially at Appendix 4.

Table 3  Annual change in the total population in the Murray Valley region, the Green Triangle region, the Towong shire and Victoria during 1991–2001

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Murray Valley region(^a)</td>
<td>0.6%</td>
<td>0.4%</td>
</tr>
<tr>
<td>Towong shire</td>
<td>-1.2%</td>
<td>-0.5%</td>
</tr>
<tr>
<td>Green Triangle region(^b)</td>
<td>-0.4%</td>
<td>-0.1%</td>
</tr>
<tr>
<td>Metropolitan Victoria(^c)</td>
<td>0.7%</td>
<td>1.3%</td>
</tr>
<tr>
<td>Rural Victoria(^d)</td>
<td>0.2%</td>
<td>0.7%</td>
</tr>
</tbody>
</table>

\(^a\) Region as defined in the National Plantation Inventory (Wood et al. 2001, p. 84), which concords approximately with 31 Statistical Local Areas at the 2001 census (20 in Victoria and 11 in New South Wales).

\(^b\) Region as defined in the National Plantation Inventory (Wood et al. 2001, p. 58), which concords approximately with 17 Statistical Local Areas at the 2001 census (9 in Victoria and 8 in South Australia).

\(^c\) Melbourne Statistical Division.

\(^d\) All Victoria outside the Melbourne Statistical Division.

The Victorian state government has projected the resident population across the state. Over the period 2001 to 2021, the projections for average annual growth were 1.0 per cent for the whole state, 0.8 per cent for regional Victoria (all areas outside the Melbourne Statistical Division, and -0.2 per cent for the Towong shire. The Towong shire was the only LGA in north east Victoria whose population was projected to decline over the period. In contrast to north east Victoria, the populations of the Victorian shires in the Green Triangle (Glenelg, Moyne, Southern Grampians, West Wimmera) were projected to decline over the period 2001 to 2021 (DSE 2004a).

The first statistics from the 2006 Census of Population and Housing were released on 27 June 2007.\(^{17}\) The statistics (based on the location on Census night count) show that the population of Towong shire continued to decrease, falling from 5 972 in 2001 to 5 774 in 2006 - an average annual decline of 0.7 per cent. In contrast, the population in the adjacent Indigo shire grew at an average annual rate of 0.6 per cent during 2001-2006. At a regional level, the population

\(^{17}\) Unlike previous censuses, the focus of population and housing statistics from 2006 census will be on 'place of usual residence', though statistics based on place of enumeration will be available to compare with previous censuses (ABS 2006j).
of the Ovens-Murray Statistical Division grew at an annual rate of 0.6 per cent during 2001-2006 (ABS 2007b). However, statistics based on ‘place of usual residence’ for Towong shire, updated on 13 August 2007, showed that the population declined at an annual rate of 1.5 per cent during 1996-2001 but increased at an annual rate of 0.4 per cent during 2001-2006. On the other hand, another statistic, the ‘estimated resident population’, indicated that the population in the Towong shire declined slightly during 2001-2006 (ABS 2007c). On balance, the statistics indicate that the population in the Towong shire has become more stable in the last five years.

**Despite the population in the Murray Valley increasing by 5.4 per cent during 1991–2001, the population in the Towong shire declined by 8 per cent. Recent statistics indicate that the population in the Towong shire became more stable during 2001-2006.**

**Rural balance**

Rural balances are those parts of LGAs that are not regarded to be a town or city, based on an analysis of the lowest level of data collected by the census — the data for census collection districts. These rural balance areas may contain very small towns (less than 200 people) and have dispersed rural settlements. The general trends in change in the rural balance populations of LGAs in regional Victoria have been strong growth during the 1980s followed in the 1990s by reduced growth, caused in part by planning changes to restrict low-density housing in poorly serviced areas and the expansion of town boundaries into former rural areas (DSE 2007b, p. 37).

The rural balance populations of four LGAs in the Victorian part of the Murray Valley region have followed the trend of strong growth during the 1980s followed in the 1990s by reduced growth (i.e. Alpine, Benalla, Indigo, Strathbogie). The other LGAs including Towong shire followed the other general trend observed for regional Victoria - strong growth in the rural balance population during the 1980s followed in the 1990s by population decline. For the Towong shire, the rural balance population increased from 3 546 to 3 680 during 1981-1991, then decreased to 3 460 in 1996 and 3 195 in 2001 (DSE 2006).
In contrast, for the LGAs in the Victorian part of the Green Triangle (Glenelg, Moyne, Southern Grampians, West Wimmera), the rural balance populations decreased for every five-year period during 1981-2001, save for the period 1981-1986 in Glenelg. The result was that the rural balance population for each LGA decreased in absolute number during 1981-2001, ranging from a 7 per cent decrease (Glenelg) to a 32 per cent decrease (West Wimmera). Of note, Towong was the only shire in the Victorian part of the Murray Valley region to do likewise (a 10 per cent decrease) (DSE 2006) (Appendix 5).

The statistic of the rural balance population as a proportion of the total population for an LGA was examined. Results did not reveal any geographical patterns within the regions. The range of proportions in 2001 was 30-65 per cent in the Victorian part of the Green Triangle, and 6-65 per cent in the Victorian part of the Murray Valley region. Towong shire had a rural balance in 2001 that was 54 per cent of the total population (DSE 2006) (Appendix 5).

<table>
<thead>
<tr>
<th>The rural population (the population in those areas not regarded to be a town or city) in the Towong shire declined during 1981-2001 by 10 per cent, which is similar to trends for Local Government Areas (LGAs) in the Victorian part of the Green Triangle region. By contrast, the rural population in the other nine LGAs in the Victorian part of the Murray Valley region increased during 1981-2001 (range 7%-85%).</th>
</tr>
</thead>
</table>

**Median age**

The population is becoming older in the Murray Valley region and the Green Triangle region (Table 4). In the Murray Valley, the median age of the population increased from 33 years in 1991 to 38 years in 2001, and had a range of 31 to 44 years across the SLAs of the region in 2001. The region-wide median age of 38 years in 2001 was more than the median age of the population in non-metropolitan areas of Australia in that year (37 years), a contrast to the median age of 34 years across all of Australia’s metropolitan areas (ABS 2003a, Haberkorn et al. 2004). The median age in the Towong shire was at the high end of the range of median ages across the Murray Valley over the period 1991-2001.
If age is increasing, it may indicate a declining confidence in the prospects for families with young children and/or a decreasing turnover (family succession or sale of property) of rural properties to younger people.

**Table 4 Median age (years) of the populations of SLAs in the Murray Valley region, the Green Triangle region and the Towong shire, and Australia during 1991–2001**

<table>
<thead>
<tr>
<th>Region</th>
<th>1991</th>
<th>1996</th>
<th>2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murray Valley region SLAs&lt;sup&gt;a&lt;/sup&gt;</td>
<td>33</td>
<td>36</td>
<td>38</td>
</tr>
<tr>
<td>Towong Part A SLA</td>
<td>34</td>
<td>37</td>
<td>42</td>
</tr>
<tr>
<td>Towong Part B SLA</td>
<td>35</td>
<td>39</td>
<td>42</td>
</tr>
<tr>
<td>Green Triangle region SLAs</td>
<td>33</td>
<td>35</td>
<td>38</td>
</tr>
<tr>
<td>Australia</td>
<td>32</td>
<td>34</td>
<td>35</td>
</tr>
<tr>
<td>Australia — non-metropolitan areas</td>
<td></td>
<td></td>
<td>37</td>
</tr>
</tbody>
</table>

*Source: ABS (2003a), Haberkorn et al. (2004, p. 16).*

<sup>a</sup> Statistical Local Area.

*The median age in the two Statistical Local Areas (SLAs) in the Towong shire increased by between seven and eight years during 1991-2001. It was 42 years in both SLAs in 2001, which was five years more than the median age in non-metropolitan Australia in that year, and was higher than the median age for all SLAs in the Murray Valley and Green Triangle regions.*

**Population cohorts**

In the Murray Valley region, the children component (0–14 year cohort) of the population, and the youth component (15–24 year cohort) of the population fell in each census year from 1991 to 2001 (Table 5, Table 6). Over that period there was a decline by 4.3 per cent in the size of the population of children, and a decline by 7.1 per cent in the size of the youth population. There were larger declines in these cohorts in the Green Triangle region, and far greater declines in the Towong shire where the 0–14 year cohort declined by 23.8 per cent and the 15–24 year cohort by 24.0 per cent during 1991-2001. At the national level, non-metropolitan areas also experienced a decline in children during 1996–2001, but the magnitude of the fall (0.6 per cent) was much less than in the Murray Valley.
Valley region (3.3 per cent). Similarly, the decline in youth in non-metropolitan areas of Australia during 1996–2001 was 1.3 per cent compared to 2.0 per cent in the Murray Valley region. In contrast, metropolitan areas across Australia had a large increase in the number of children (3.5 per cent) and a slight increase in the number of youth (0.4 per cent) from 1996–2001 (ABS 2003a, Haberkorn et al. 2004).

Table 5  Population of children (0–14 year cohort) in the Murray Valley region, the Green Triangle region and the Towong shire during 1991–2001

<table>
<thead>
<tr>
<th>Region</th>
<th>1991</th>
<th>1996</th>
<th>2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murray Valley region</td>
<td>75 022</td>
<td>74 270</td>
<td>71 783 (-4.3%)</td>
</tr>
<tr>
<td>Towong shire</td>
<td>1 672</td>
<td>1 442</td>
<td>1 274 (-23.8%)</td>
</tr>
<tr>
<td>Towong Part A SLA</td>
<td>630</td>
<td>546</td>
<td>481    (-23.7%)</td>
</tr>
<tr>
<td>Towong Part B SLA</td>
<td>1 042</td>
<td>896</td>
<td>793    (-23.9%)</td>
</tr>
<tr>
<td>Green Triangle region</td>
<td>29 207</td>
<td>27 130</td>
<td>25 444 (-12.9%)</td>
</tr>
</tbody>
</table>


a Region as defined in the National Plantation Inventory (Wood et al. 2001, p. 84), which concords approximately with 31 Statistical Local Areas at the 2001 census (20 in Victoria and 11 in New South Wales).
b Per cent change from 1991-2001 indicated in parenthesis.
c Region as defined in the National Plantation Inventory (Wood et al. 2001, p. 58), which concords approximately with 17 Statistical Local Areas at the 2001 census (9 in Victoria and 8 in South Australia).

In the Towong shire, the proportional decline in the population of children was similar in the two SLAs, but the proportional decline in the youth population was more pronounced in the Towong Part A SLA (a reduction of 30.9 per cent) than in the Towong Part B SLA (reduction of 19.3 per cent) (Table 6).
Table 6  Population of youth (15–24 year cohort) in the Murray Valley region, the Green Triangle region and the Towong shire during 1991–2001

<table>
<thead>
<tr>
<th>Region</th>
<th>1991</th>
<th>1996</th>
<th>2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murray Valley region(a)</td>
<td>46287</td>
<td>43919</td>
<td>43022 (-7.1%)</td>
</tr>
<tr>
<td>Towong shire</td>
<td>663</td>
<td>582</td>
<td>504 (-24.0%)</td>
</tr>
<tr>
<td>Towong Part A SLA</td>
<td>269</td>
<td>234</td>
<td>186 (-30.9%)</td>
</tr>
<tr>
<td>Towong Part B SLA</td>
<td>394</td>
<td>348</td>
<td>318 (-19.3%)</td>
</tr>
<tr>
<td>Green Triangle region(c)</td>
<td>15873</td>
<td>13678</td>
<td>13144 (-17.2%)</td>
</tr>
</tbody>
</table>


\(a\) Region as defined in the National Plantation Inventory (Wood et al. 2001, p. 84), which concords approximately with 31 Statistical Local Areas at the 2001 census (20 in Victoria and 11 in New South Wales).

\(b\) Per cent change from 1991-2001 indicated in parenthesis.

\(c\) Region as defined in the National Plantation Inventory (Wood et al. 2001, p. 58), which concords approximately with 17 Statistical Local Areas at the 2001 census (9 in Victoria and 8 in South Australia).

A declining number of children relates to the immediate employment, schooling and lifestyle opportunities for young families, and may also reflect an underlying view that there are diminishing long-term prospects for raising a family with diverse sporting, social and recreational activities.

A decline in the youth cohort often reflects limited opportunities for advanced education (late secondary and tertiary) and narrow employment options. Over recent years (2002-2004), the official unemployment rate in Towong shire has been less than half the state and national averages (ABS 2006g). This may indicate that people seeking employment tend to leave the shire.

There was a decline by 23.8 per cent in the size of the population of children (0–14 year old cohort), and a decline by 24.0 per cent in the size of the youth population (15–24 year old cohort) in the Towong shire during 1991–2001. These declines were far greater than the declines in these cohorts in the Murray Valley region.

Although the population for Towong shire is declining and ageing, community cohesion, as indicated by a range of measures of community strength, remains relatively strong compared to the state-wide average (Department for Victorian Communities 2005, pp. 36-37).
5.2 Employment dynamics

The population of the Towong shire declined in each of the periods 1991–1996 and 1996–2001, resulting in an overall decline of 519 people from 1991 to 2001 to 5 972. However, change in the number of people employed in the shire has fluctuated: total employment declined in the period 1991–1996 but in the following five-year period it increased by 53 persons (with approximately half of the increase in both of the SLAs in the shire), such that the number of people employed in 2001 was only 38 fewer than in 1991 (Table 7).

More recent statistics show that the unemployment rate in the Towong shire fell from 3.1 per cent (105 persons) in 2002 to 2.1 per cent (71 persons) in 2004, which was below the national unemployment rates of 6.6 per cent and 5.7 per cent for 2002 and 2004 respectively (ABS 2006g).

Table 7 Employment in the Towong shire during 1991–2001

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total male</td>
<td>1 637</td>
<td>1 521</td>
<td>1 510</td>
</tr>
<tr>
<td>Total female</td>
<td>1 051</td>
<td>1 076</td>
<td>1 140</td>
</tr>
<tr>
<td>Total persons</td>
<td>2 688</td>
<td>2 597</td>
<td>2 650</td>
</tr>
<tr>
<td>Male in AFF\textsuperscript{a}</td>
<td>577</td>
<td>549</td>
<td>531</td>
</tr>
<tr>
<td>Female in AFF</td>
<td>251</td>
<td>238</td>
<td>234</td>
</tr>
<tr>
<td>Persons in AFF</td>
<td>828</td>
<td>787</td>
<td>765</td>
</tr>
<tr>
<td>Male in AFF as % of total male</td>
<td>35.2%</td>
<td>36.1%</td>
<td>35.2%</td>
</tr>
<tr>
<td>Female in AFF as % of total female</td>
<td>23.9%</td>
<td>22.1%</td>
<td>20.5%</td>
</tr>
<tr>
<td>Persons in AFF as % of total persons</td>
<td>30.8%</td>
<td>30.3%</td>
<td>28.9%</td>
</tr>
</tbody>
</table>


\textsuperscript{a} Agriculture, forestry and fishing.

Employment in agriculture, forestry and fishing

The role of primary industry (agriculture, forestry and fishing) in the Australian economy, measured by its contribution to total employment, has decreased significantly in the past 40 years. Primary industry’s share of employment has more than halved since the mid-1960s, when it accounted for 10 per cent of the
workforce compared to 3.8 per cent of the workforce in 2004–2005. However, primary industry remains an important employer in rural and regional Australia, and in 2001 accounted for almost 14 per cent of non-metropolitan employment (ABARE 2006a, Productivity Commission 2005). Employment in this sector has been combined with employment in mining and expressed as a proportion of all employed persons to derive a social indicator termed ‘natural resource dependency’ (Haberkorn et al. 2004). For this study, the focus is employment in ‘agriculture, forestry and fishing’, as an indicator of the relative importance of this sector to the economy of rural areas.¹⁸

In the Towong shire, employment in agriculture, forestry and fishing declined by 41 persons from 1991–1996 and by 22 persons from 1996–2001. In 2001, 28.9 per cent of employed persons in the Towong shire worked in the agriculture, forestry and fishing sector, a slight decline from 30.8 per cent in 1991 (Table 8). This sector includes services to agriculture (e.g. sheep shearing, aerial agricultural seeding and spraying, crop harvesting), but excludes employment in manufacturing of primary products (ABS 1993).

Employment in agriculture, forestry and fishing varied between the SLAs - the SLA of Towong Part B had 39.5 per cent of persons employed in this sector in 2001, more than three times the proportion in the SLA of Towong Part A (Table 8). In the Murray Valley region, the only SLA with a higher proportion of employment in this sector was Wagga Wagga Part B (40.1 per cent in 2001). Overall, the proportion of people employed in this sector in the Murray Valley is similar to that in non-metropolitan Victoria but less than half the proportion in the Green Triangle. During 1991–2001, the trend in the Towong shire, the Murray Valley and non-metropolitan Victoria was decreasing dependence on agriculture, forestry and fishing for employment whereas in the Green Triangle the level of dependence was similar (Table 8). Persons employed in agriculture, forestry and fishing as a proportion of all persons employed in 2001 in the Murray Valley and Green Triangle regions are shown spatially at Appendix 6.

¹⁸ ‘Agriculture, forestry and fishing’ is an industrial group coded under the Australian and New Zealand Standard Industrial Classification (ANZSIC) (ABS 2001c, p. 64).
Table 8  Employment in the rural industries in the Towong shire, the Murray Valley region, the Green Triangle region and Victoria during 1991–2001

<table>
<thead>
<tr>
<th>Region</th>
<th>1991</th>
<th>1996</th>
<th>2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murray Valley region</td>
<td>10.5%</td>
<td>9.9%</td>
<td>9.6%</td>
</tr>
<tr>
<td>Towong shire</td>
<td>30.8%</td>
<td>30.3%</td>
<td>28.9%</td>
</tr>
<tr>
<td>Towong Part A SLA</td>
<td>13.2%</td>
<td>12.9%</td>
<td>11.6%</td>
</tr>
<tr>
<td>Towong Part B SLA</td>
<td>41.2%</td>
<td>40.8%</td>
<td>39.5%</td>
</tr>
<tr>
<td>Green Triangle region</td>
<td>23.2%</td>
<td>23.9%</td>
<td>23.8%</td>
</tr>
<tr>
<td>Victoria — non-metropolitan areas</td>
<td>12.5%</td>
<td>12.4%</td>
<td>11.2%</td>
</tr>
</tbody>
</table>


* Persons employed in agriculture, forestry and fishing as a proportion of total persons employed.

In 2001, women comprised 43.0 per cent of the total employment in the Towong shire, up from 39.1 per cent in 1991. Their employment in the agriculture, forestry and fishing sector has remained relatively stable at around 30 per cent of total employment in that sector during 1991–2001 (ABS 2003a), just above the national average of 29 per cent for non-metropolitan areas in 1996 and 2001 (Herreria et al. 2004, p. 9). These statistics show the greater importance of the agriculture, forestry and fishing for employment of men, and the proportion employed in this sector (70 per cent) in the Towong shire is very similar to the proportions for the Murray Valley as a whole and for non-metropolitan Victoria.

In Towong shire in 2001, 95.7 per cent of persons employed in the agriculture, forestry and fishing sector were employed in agriculture and 2.9 per cent were employed in forestry and logging (excludes timber processing) (ABS 2003c).

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Towong shire experienced a slight decline in the number of people employed in ‘agriculture, forestry and fishing’ during 1991-2001. However, agriculture remains an important sector for employment, representing nearly 29 per cent of employment in the shire in 2001.

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The changing characteristics of rural communities are further revealed by changes in employment in the rural balance populations. Statistics are reported for LGAs in Victoria. Data for the period 1981-2001 shows that the proportion of
people in the rural balance population employed in agriculture, forestry and fishing has declined at an average annual rate of nearly two per cent. However, this has been offset to some extent by an increase of more than one per cent per annum in the employment in this sector in large towns (population of more than 5 000, excluding Melbourne). This trend has been attributed to such factors as the move of residents to rural areas for lifestyle reasons but commuting to urban centres for employment in manufacturing and service industries, and the move of many farmers to towns because of off-farm employment and/or to access better services (Victorian Government 2005, p. 18).

Statistics for Towing shire show that the proportion of the rural balance population employed in agriculture, forestry and fishing fell from 63 per cent to 46 per cent during 1981-2001, representing an annual rate of decrease of two per cent. During this period, the largest increases in the change in the annual rate of employment were in the sectors of ‘health and community services’ (4.3 per cent), ‘personal and other services’ (6.6 per cent), ‘property and business services’ (7.3 per cent) and ‘cultural and recreational services’ (11.3 per cent) (DSE 2006). However, the employment in agriculture, forestry and fishing in the rural balance population in the Towong shire at 2001 was the highest of all LGAs in the Victorian part of the Murray Valley region (range of 9-39 per cent for the other LGAs), and compares with a range of 39 per cent to 67 per cent for the four LGAs in the Victorian part of the Green Triangle region (Appendix 7).

Wages and salaries and household income

The total number of employed persons in the Towong shire in 2001 was 2 650, of which 1 692 were wage and salary earners who had a total wage and salary income of $47.8 million (average $28 222). By 2003, the number of wage and salary earners had increased to 1 818 and their income to $55.5 million (average $30 537) (ABS 2006g).

In 2001, median household income for non-metropolitan Victoria (all Victoria outside the Melbourne Statistical Division) was $702 per week (ABS 2003d). In the Towong shire, median household income in 2001 was $600-$699 per week; however, the median household incomes for both of the localities of Corryong and Tallangatta were $500-$599 per week (ABS 2003a), suggesting that people

in rural areas in the shire had median incomes similar to that reported for non-metropolitan Victoria.

There is some evidence that low incomes from farms was an important factor constraining change in land management practices on properties in the Goulburn Broken catchment of north east Victoria (Curtis, Lockwood & McKay 2001). However, data on individual farm income at the spatial level of LGA or lower is not readily available.

### 5.3 Farm physical characteristics

Changes and trends in the agricultural sector have been explored by analysing such farm physical characteristics as agricultural use of land, farm numbers and farm size (Annett 2003, Barr 2000, Department of Primary Industries and Energy [DPIE] 1997, Productivity Commission 2005). Nationally, farms are much larger and fewer than 20 years ago (Productivity Commission 2005) and the total area of land used for agriculture has decreased by about 44 million hectares, equivalent to nine per cent, in the last two decades (ABARE 2006a). These key farm characteristics — area of land used for agriculture, number of farms and size of farms — are analysed in this research.

**Agricultural use of land**

Agriculture is the major form of land use in Australia and in Victoria (ABS 2002b, p. 129; 2006e, p. 113). It has been suggested that change in the amount of land used for farming could be a useful indicator of regions where the primacy of agriculture is declining (Department of Natural Resources and Environment [DNRE] 2001, p. 9).

An increase in the amount of farmland primarily occurs by converting forest. Since 1990, the annual rate of conversion of forest to other land uses in Australia has decreased substantially, reflecting both the effects of changing market and climatic conditions and of regulatory impacts. In Victoria, the area of forest converted to ‘grasslands’ was estimated to be 3 525 hectares in 2001, down from 8 820 hectares in 1990 (Australian Greenhouse Office 2005, pp. A59, B151). The area of new land available for farming during 1990-2001 was therefore small compared to the 13.25 million hectares of land estimated to be used for agriculture in Victoria in 2000 (ABS 2002b, p. 129). This is consistent with the situation in the Towong shire where only 46 hectares of native
vegetation were recorded as being cleared under planning permits during 1994-2002 (North East Catchment Management Authority 2003, p. 139). Under this circumstance, the area of farmland would be expected to decline if agricultural industries became less important compared to other land use options. Alternatively, if agricultural industries were to expand production, then it would need to largely occur by intensification of existing farmland given there is little prospect for increasing the area available for farming in Victoria.

Change in the agricultural use of land was estimated from statistics on the number of ‘agricultural establishments’ collected in the agricultural censuses conducted by the ABS in 1997 (for the year ending 31 March 1997) and 2001 (for the year ending 30 June 2001). The scope of the census in both years was all agricultural establishments with an ‘estimated value of agricultural operations’ (EVAO) of $5 000 or more per year. The EVAO is not a measure of farm receipts, but provides a measure of agricultural activity. Forms were mailed to farming businesses for completion. Historically, agricultural censuses and agricultural surveys (conducted in inter-censal years) have achieved responses between 80 per cent and 90 per cent, with the average at 85 per cent (Statistical Clearing House [SCH] 2001, 2003; ABS 2005d).

Results for the Towong shire indicate a small decrease (2.4 per cent) in the area of farms, as measured by the area of agricultural establishments, from 1997 to 2001 (Table 9). Within the shire, however, there was a decrease in the area of farms of more than 12 000 hectares in the more densely populated SLA of Towong Part A, and an increase of more than 7 000 hectares in the more sparsely populated SLA of Towong Part B. Data for other LGAs in the Victorian part of the Murray Valley showed that, overall, there was little change in the areas of farms, but the largest decline in the area of farms was in the shire of Mitchell, the LGA closest to Melbourne. In contrast, in the Victorian part of the Green Triangle, there was a substantial decrease (about 75 000 hectares or nearly 4 per cent) in the area of farms (Appendix 8). The area of farms in Victoria has trended upwards in the last decade, rising from 12.7 million hectares in 1997 to 13.2 million hectares in 2001 and 13.9 million hectares in 2005.

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20 In most cases an agricultural establishment is a farm (ABS 2005d), so it is used as a proxy for ‘farm’ in this report.

21 The ‘estimated value of agricultural operations’ (EVAO) for the agricultural census and agricultural survey has been $5 000 since 1993-1994. In the preceding decade, it fluctuated between $2 500 and $22 500 (SCH 2003a).
(during which the area of farms used for crops increased from 2.6 to 3.6 million hectares), against the national trend of a decline in the area of farms of 4 per cent from 1997 to 2005 (ABARE 2006a; ABS 2005c, 2006c).

### Table 9  Total area of agricultural establishments (hectares) in the Towong shire in 1997 and 2001

<table>
<thead>
<tr>
<th>Spatial unit</th>
<th>1997</th>
<th>2001</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Towong Part A SLA</td>
<td>75 959</td>
<td>63 637</td>
<td>-12 322</td>
</tr>
<tr>
<td>Towong Part B SLA</td>
<td>142 378</td>
<td>149 532</td>
<td>7 155</td>
</tr>
<tr>
<td>Towong shire</td>
<td>218 337</td>
<td>213 169</td>
<td>-5 167</td>
</tr>
</tbody>
</table>

*Source: ABS (2006h, 2007a).*

Purchase of agricultural land by forestry companies would be one reason for the decrease in the area of farms in the Green Triangle. By 2003, there were 85 246 hectares of hardwood plantations in the LGAs of Glenelg, Moyne, Southern Grampians and West Wimmera established on agricultural land with most planted since 1997 (Limestone Coast Regional Development Board [LCRDB] 2004, p. 3). However, not all of this forest area would account for a decline in farmland, as plantations established on land leased from farmers is assumed to still be considered an agricultural establishment. Other factors affecting the area of farms enumerated in the two agricultural censuses could include farm subdivision resulting in the creation of small farms that did not meet the minimum EVAO threshold, differences in the response rate, changes in the economic conditions for agriculture, and the effects of inflation given that the minimum EVAO was the same in nominal terms.

![The area of farms in the Towong shire was 213 000 hectares in 2001, representing 32 per cent of the total land area of the shire.](image)

### Number of farms

Statistics on the number of agricultural establishments were obtained for the years 1997 and 2001 from the agricultural census, and for 2005 (for the year
ending 30 June 2005) from the agricultural survey. The agricultural survey is conducted annually in the inter-censal years by the ABS, and the sample for the 2005 survey was 30 500 farms, which was 23 per cent of all farms (ABS 2006i).

The number of farms in the Towong shire decreased during both of the periods 1997-2001 and 2001-2005, and there were 7.5 per cent fewer farms in 2005 compared to 1997. Farm numbers decreased in both SLAs in the shire over this eight-year period (from 225 to 203 in Towong Part A and from 283 to 267 in Towong Part B). Results for nearby LGAs were variable, indicating a decrease in Indigo shire, little change in farm numbers in the Wangaratta and Wodonga LGAs, and an increase in the Alpine shire. During 1997-2005, there was a small decrease (1.4 per cent) in farm numbers in the Murray Valley compared to the Green Triangle (9.8 per cent decrease) — the latter similar to the statewide trend in Victoria of a 11.7 per cent decrease in farm numbers (Table 10, Appendix 8). The results for Towong shire and Victoria are similar to the national decrease of 10.4 per cent in the number of farms from 1997-2005 (ABARE 2006a).

Table 10  Change in the number of agricultural establishments during 1997-2005

<table>
<thead>
<tr>
<th>Spatial unit</th>
<th>1997</th>
<th>2001</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Towong LGA</td>
<td>508</td>
<td>483</td>
<td>470 (-7.5%)</td>
</tr>
<tr>
<td>Alpine LGA</td>
<td>289</td>
<td>333</td>
<td>319 (10.4%)</td>
</tr>
<tr>
<td>Indigo LGA</td>
<td>518</td>
<td>484</td>
<td>491 (-5.1%)</td>
</tr>
<tr>
<td>Wangaratta LGA</td>
<td>800</td>
<td>809</td>
<td>799 (-0.2%)</td>
</tr>
<tr>
<td>Wodonga LGA</td>
<td>92</td>
<td>89</td>
<td>93 (0.7%)</td>
</tr>
<tr>
<td>Murray Valley</td>
<td>7 921</td>
<td>7 710</td>
<td>7 814 (-1.4%)</td>
</tr>
<tr>
<td>Green Triangle</td>
<td>6 505</td>
<td>6 114</td>
<td>5 870 (-9.8%)</td>
</tr>
<tr>
<td>Victoria</td>
<td>36 656</td>
<td>35 229</td>
<td>32 357 (-11.7%)</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th></th>
<th>a Local Government Area.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>b</strong></td>
<td>Per cent change from 1997-2005 indicated in parenthesis.</td>
</tr>
</tbody>
</table>

**Property size**

Statistics on farm size were only available at the spatial unit of Statistical Division (SD). The Victorian SD of Ovens-Murray comprises the LGAs of Alpine, Indigo, Towong, Wangaratta and Wodonga, and that of Western District
comprises the LGAs of Corangamite, Glenelg, Moyne, Southern Grampians and Warrnambool (ABS 2005b). These two SDs were selected as proxies for the Victorian parts of the Murray Valley and Green Triangle. The proportions of farms in size classes <50, 50-499, 500-999, 1 000-2 500 and >2 500 hectares were determined for the years 2001 (data from the agricultural census) and 2005 (data from the agricultural survey). These size classes are a simplification of those used to report the area of holding of agricultural establishments at a national level (ABS 2005a).

The results showed that the Ovens-Murray SD had more smaller farms (farms less than 50 hectares) and fewer larger farms (farms larger than 500 hectares) than the Western District SD. In both SDs, the trend from 2001 to 2005 was a shift of farms in the 50-499 hectare size class to larger size classes, with the trend more pronounced in the Western District SD (ABS 2007a; Appendix 9).

At the level of LGA, trends in farm size were inferred by calculating an ‘average farm size’ from statistics on the number and total area of agricultural establishments in 1997 and 2001. Results for the Victorian part of the Murray Valley suggested that the two LGAs closest to Melbourne — Mitchell and Murrindindi — had a slightly smaller average farm size in 2001 than in 1997, the LGAs of Wodonga and Indigo had a slight increase (4 hectares) in average farm size, and the average farm size in the other five LGAs increased by 12-27 hectares over that period. In the Victorian part of the Green Triangle, average farm sizes in the four LGAs increased by 19-38 hectares during 1997-2001 (Appendix 8).

The statistics on the area of agricultural land, number of farms and farm size may indicate increasing amalgamation of farms in LGAs more remote from urban centres. While it is difficult to be definitive in the interpretation of this data, the trend towards increasing farm size in most of the LGAs is consistent with the trend for farms across Australia (Box 6).

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*In the Towong shire, there appears to have been little change in the area of farms during 1997-2001, but the number of farms appears to have declined — supporting the view that there has been some farm amalgamation, a trend observed across Victoria and nationally.*
**Box 6 Physical size of Australian farms**

Farms in Australia range in physical size from small hobby and horticultural properties to extensive grazing and cropping properties.

There has been a trend towards larger farm sizes since the 1980s.
- A comparison of the distribution of farm sizes in 1982-83 and 2004-05 shows that the number of farms in the 0-499 hectare size range declined by 6.3 per cent, those in the 500-2 499 hectare size range increased by 2.7 per cent, and those larger than 2 500 hectares increased by 3.6 per cent.
- However, despite the trend towards larger farm size, small farms (where ‘small’ is less than 500 hectares) continue to dominate the number of farms in agriculture in Australia.
- The median farm size in Australia has remained in the 100-499 hectare size range since 1983-83.
- The trend to fewer and larger farms is common to most developed countries.

In 2004-05, statistics on farm size showed that:
- Farms less than 50 hectares accounted for 19 per cent of all farms. Most were operating enterprises (in decreasing rank) of beef cattle grazing, grape growing, fruit growing, vegetable growing and plant nurseries.
- Forty three per cent of farms were between 51 and 499 hectares in size. Farms in this category were mainly involved in enterprises (in decreasing rank) of beef cattle grazing, dairying, and sheep grazing.
- Thirteen per cent of farms were between 500 and 999 hectares in size, and a further 13 per cent were between 1 000 and 2 499 hectares.
- Farms larger than 2 500 hectares accounted for 11 per cent of all farms and were mainly operating grazing or cropping enterprises. A large proportion of these farms were located in the arid pastoral zone of inland Australia.


### 5.4 Farm business characteristics

Trends in the business of agriculture have been analysed using many indicators of farm performance, including the relative importance of different enterprises in the farm production mix, the value of agricultural operations of farms, farm cash income, off-farm income, farm business profit, and the ratio of land value to value of agricultural production (Barr & Karunaratne 2002; Chapman & Greenville 2002; DPI 2005b; DPIE 1997; Martin et al. 2007; Productivity...
Commission 2005; Taylor, Ha & Fisher 2006). These indicators provide insight to structural changes occurring within Australian agriculture — a sector whose relative importance within the economy has been in steady decline since the second half of the twentieth century (Productivity Commission 2005).

For this study, the focus is farm enterprise mix, value of agricultural production on farms, farm cash income, and the ratio of land value to value of agricultural production.

**Farm enterprise**

Changes in the type of enterprise on farms were analysed as a means of identifying trends in farm business characteristics. Statistics on the type of farm enterprise were obtained for 1997 and 2001 (data for both years from the agricultural census) and for 2005 (data from the agricultural survey), using the agricultural industry classifications of the Australian and New Zealand Standard Industrial Classification (ANZSIC) which form the basis for reporting national statistics on agricultural commodities. Statistics were obtained for the five industries (termed ‘enterprises’ in this research) that are considered to represent the ‘broadacre’ sector of Australian agriculture (i.e. ‘wheat and other crops’, ‘mixed livestock-crops’, ‘sheep-beef’, ‘sheep’, and ‘beef’), the ‘dairy’ industry, and the remaining agricultural industries aggregated as ‘other’ (Box 7). The broadacre and dairy enterprises combined are the majority of farms in Australia - in 2004-2005, these enterprises comprised 75 per cent of agricultural establishments nationally and 81 per cent in Victoria (ABS 2006c, p. 13).

The proportion of farms with nominated enterprises was determined by expressing the number of agricultural establishments in each type of farm enterprise as a proportion of the total number of agricultural establishments for the Towong shire, the Murray Valley and the Green Triangle (Figure 6). Results show the dominance of beef production as a farm enterprise in the Murray Valley (35 per cent of all enterprises in 2005) whereas the sheep enterprise was most important in the Green Triangle (22 per cent of all enterprises), though the trend during 1997-2005 in the latter region was that the sheep enterprise was declining while the beef enterprise was gaining prominence (ABS 2007a).
Box 7 Classification of agricultural statistics

The Australian and New Zealand Standard Industrial Classification (ANZSIC) is used by the Australian Bureau of Statistics (ABS) to classify responses to questions on industry in Australian censuses. First published in 1993, it has been used in the Census since 1996, though some codes changed in 2006.

The ANZSIC has a four level hierarchical structure, comprising Divisions (the broadest level), Subdivisions, Groups and Classes (the finest level). The hierarchy is illustrated with the following example:

Division A: Agriculture, Forestry and Fishing
Subdivision 01: Agriculture
Group 012: Grain, Sheep and Beef Cattle Farming
Class 0121: Grain Growing

The six Groups in the Subdivision 01 Agriculture are:
   011 Horticulture and Fruit Growing (eight Classes)
   012 Grain, Sheep and Beef Cattle Farming (five Classes)
   013 Dairy Cattle Farming (one Class)
   014 Poultry Farming (two Classes)
   015 Other Livestock Farming (four Classes)
   016 Other Crop Growing (three Classes)

Group 012 has the following five Classes:
   0121 Grain Growing
   0122 Grain-Sheep and Grain-Beef Cattle Farming
   0123 Sheep-Beef Cattle Farming
   0124 Sheep Farming
   0125 Beef Cattle Farming

Group 013 only has the Class 0130 Dairy Cattle Farming.

The Australian Bureau of Agricultural and Resource Economics (ABARE), which conducts agricultural and grazing industries surveys independently of the ABS, defines the ‘broadacre’ sector of Australian agriculture as comprising the five Classes of Group 012, but it uses different terminology as follows:
   ‘wheat and other crops’ (Class 0121)
   ‘mixed livestock-crops’ (Class 0122)
   ‘sheep-beef’ (Class 0123)
   ‘sheep’ (Class 0124)
   ‘beef’ (Class 0125)

ABARE reports statistics on the dairy industry separately from those of the broadacre industries as ‘dairy’ (Class 0130).

For this research, the simplified terminology used by ABARE has been adopted to describe agricultural enterprises. The remaining 17 Classes in the Subdivision 01 Agriculture have been aggregated into ‘other’ enterprises.

Figure 6 Proportion of farms with nominated enterprises in the Towong shire, Murray Valley and Green Triangle, 1997 and 2005

Beef production was the dominant enterprise in the Towong shire (60 per cent in 2005), followed by dairy (24 per cent), sheep-beef (12 per cent), sheep (3 per cent) and other (1 per cent). The proportions of farm enterprises were similar in both SLAs of the shire. The main shift in the balance between the different farm enterprises during 1997-2005 was an increase of about five per cent in beef enterprises, with most change occurring from 1997 to 2001. Overall, farming in the Towong shire was more specialised than in the Murray Valley — the sheep-beef, mixed livestock-crops and other enterprises comprised 13 per cent of all enterprises in Towong shire in 2005 compared with 40 per cent in the Murray Valley (Appendix 10).

**In Towong shire, beef production is the most common farm enterprise (60 per cent of farms in 2005), followed by dairying (24 per cent). This balance has remained relatively stable during 1997-2005.**

Within LGAs in Murray Valley and Green Triangle, beef production as a proportion of all farm enterprises was highest in the Towong shire. Other LGAs where beef enterprises in 2005 were at least half of all farming enterprises were Wodonga (59 per cent), Murrindindi (57 per cent), Wangaratta (53 per cent) and Indigo (50 per cent) — all in the Victorian part of the Murray Valley. Beef was the dominant enterprise in the New South Wales LGAs of Tumbarumba (48 per cent) and Tumut (47 per cent), but in the other LGAs which are in lower rainfall areas, mixed livestock-crops, sheep-beef or sheep were the main farm enterprises.

In the New South Wales part of the Murray Valley, the highest concentration of plantations is in the Tumut LGA, followed by Tumbarumba. In the Victorian part, the highest concentration of plantations is in the Towong shire (BRS 2004). Thus, the Radiata Pine plantation industry is operating in a landscape where agriculture is dominated by beef enterprises which, in part, reflects the similar bio-physical features of landscapes — high rainfall and productive soils — sought by these industries operating in south-eastern Australia. In the Green Triangle, the highest concentration of plantations is in the Glenelg LGA. Here, the proportion of beef farms was the highest of all LGAs in the region, and in the Glenelg LGA beef farming was the dominant enterprise in 1997 (34 per cent of all enterprises), followed by sheep-beef (29 per cent) and sheep (21 per cent)
enterprises. From 1997 to 2003, about 40 000 hectares of hardwood plantations were established on agricultural land in the Glenelg LGA (LCRDB 2004, p. 3). Thus, the plantation industry rapidly expanded the plantation estate in a landscape where beef farms were the dominant agricultural enterprise. However, the data on farm enterprises suggests that the main change in land use would have been the conversion of sheep farms and sheep-beef farms to plantations, as the main change during 1997-2001 was a large decrease (28 per cent) in the combined numbers of these enterprises, with little change in the numbers of the remaining enterprises (ABS 2007a).

**The Radiata Pine plantation industry is largely operating in areas where agriculture is dominated by beef enterprises. Both these industries in south-eastern Australia seek to operate in a bio-physical environment that features high rainfall and productive soils.**

**Agricultural activity**

The ‘estimated value of agricultural operations’ (EVAO), a measure of agricultural activity estimated from data collected in agricultural censuses and agricultural surveys, was analysed for the years 1997, 2001 and 2005. It can be used as an indicator of the relative size of agriculture in different LGAs and regions. It can also be used as a proxy for gross farm income (Barr 2000, p. 6; DNRE 2001, p. 9).

In nominal terms, the EVAO for Towong shire increased steadily from $52 million in 1997 to $78 million in 2005, an increase of 51 per cent. The relative performance during 1997-2005 for LGAs near Towong was Alpine (30 per cent increase), Indigo (46 per cent increase), Tumbarumba (68 per cent increase), Wangaratta (74 per cent increase) and Wodonga (71 per cent increase). The performance of agriculture in Towong during 1997-2005 matched the overall increase across all LGAs in the Murray Valley (55 per cent increase in EVAO), which in turn was below that of the Green Triangle region (71 per cent increase in EVAO). Details are provided at (Appendix 11). Agriculture remains the major industry of the Towong shire, and is expected to expand and diversify in the future on the back of new, intensive agricultural enterprises (TSC 2005, p. 20).
The EVAO for different farm enterprises was analysed. In the Towong shire, dairy farms have more than double the EVAO of beef farms; thus, in 1997, dairy farms were only 27 per cent of farm enterprises yet contributed 50 per cent of the total EVAO in the shire. However, by 2005, dairy farms had declined to 24 per cent of enterprises and 42 per cent of EVAO, and had been overtaken by beef as the most important contributor to the value of agriculture in the shire (60 per cent of enterprises and 46 per cent of the EVAO). In contrast to the Towong shire, the value of agriculture in 2005 across the Murray Valley was dominated by production in other enterprises (32 per cent of the total EVAO), followed by beef (17 per cent of total EVAO). Other enterprises include horticulture and viticulture which are expanding industries in parts of the Murray Valley (TRDC 2005, p. 7). The data shows that agriculture in the Towong shire is heavily dependent on two enterprises — beef and dairy — which when combined contributed 88 per cent of the total EVAO in the shire in 2005, compared to the Murray Valley and Green Triangle regions where agriculture was more diverse (Figure 7, Appendix 12).

*Agriculture in the Towong shire has become most dependent on beef cattle farming mainly at the expense of dairy cattle farming — as measured by the estimated value of agricultural operations — during 1997-2005. Across the Murray Valley region, agriculture is much more diversified than in the Towong shire.*
Figure 7  Contribution of farm enterprises to estimated value of agricultural operations in the Towong shire, Murray Valley and Green Triangle, 1997, 2001 and 2005

Towong shire

Murray Valley region

Green Triangle region

The EVAO has been used as an economic measure of farm size (Productivity Commission 2005, p. 36). Farms were classified as ‘small’ (EVAO<$200 000 per year), ‘medium’ (EVAO $200 000-$500 000 per year), and ‘large’ (EVAO >$500 000 per year).\footnote{Classified in consultation with an experienced agricultural consultant operating in Victoria (Neil Clark & Associates, PO Box 540, Bendigo, Vic 3552). This is similar to a classification of farms by business size used by ABARE, in which ‘small family farms’ had less than $200 000 per year in gross farm receipts, ‘medium family farms’ were more than $200 000 and less than $400 000 in gross farm receipts, ‘large family farms’ were more than $400 000 and less than $1 million in gross farm receipts, and ‘very large family farms’ were more than $1 million in gross farm receipts (ABARE 2002, p. 12).} In the Towong shire, there were very few large beef and dairy enterprises in 2005, and the trend was for the proportion of enterprises of this financial size to decrease during 2001-2005. When all farm enterprises were aggregated, Towong shire had only three per cent in the category of large farm in 2005, compared with 36 per cent in the Murray Valley and 49 per cent in the Green Triangle (ABS 2007a; Appendix 13). Thus, the increasing agricultural activity in the Towong shire is operating at a smaller economic scale than in the Murray Valley and Green Triangle. At a national level, there was a trend towards increasing economic size of farms in the last two decades: the proportion of small farms in 1982-83 was 84 per cent compared with 67 per cent in 2002-03 (expressed in constant 2004 prices); medium farms were 13 per cent in 1982-83 and 22 per cent in 2002-03; and large farms were three per cent in 1982-83 and 11 per cent in 2002-03 (derived from data in Productivity Commission 2005, p. 37). An important implication of these trends for Towong shire is that nationally, the largest 30 per cent of beef farms, grain farms and dairy farms (ranked by value of output) have produced considerably higher rates of return than the other 70 per cent of farms in the last two decades (Productivity Commission 2005, p. 40). Productivity growth is one of the factors influencing financial performance of farms and has been closely related to enterprise size in the beef industry - many smaller beef producers, especially those in the high rainfall zones, have made no productivity gain which has impacted their ability to maintain their real incomes, whereas the third largest of beef farms have experienced strong productivity growth (ABARE 2004, pp. 1, 7).

Beef and dairy farms in the Towong shire operate at a smaller economic scale compared to those types of farms in the Murray Valley and Green Triangle regions. National statistics show many smaller beef producers have made no productivity gain which has impacted their ability to maintain real incomes.
**Beef farm profile**

Given the importance of beef enterprises to agricultural production in the Towong shire, a profile of beef farms was developed using the interactive web package 'AgSurf' released in 2001 by ABARE. AgSurf contains statistics collected from ABARE’s annual farm surveys (ABARE 2006c). Data was constructed for the decade 1996-97 to 2005-06 for the ANZSIC industry group of beef cattle farming (0125), termed ‘beef’ by ABARE (the same term used in this study). The ABARE farm surveys during this decade covered agricultural establishments with an EVAO of $22 500 or more per year, and were separate to the agricultural censuses and agricultural surveys conducted by the ABS, in which the target population was agricultural establishments with an EVAO of $5 000 or more per year. In 2005, the agricultural survey conducted by the ABS estimated 7 924 beef farms in Victoria with an EVAO of $5 000 or more (ABS 2006c, p. 13), and ABARE estimated 4 820 beef farms with an EVAO of $22 500 or more (ABARE 2007); thus the ABARE farm survey sampled the upper 60 per cent of the beef farm population estimated by the ABS ranked on economic size.

The profile of beef farms is shown at Box 8. The estimates are averages per farm. This profile would be more representative of the ‘medium’ and ‘large’ beef farms than the ‘small’ beef farms in the Towong shire — the former two categories were more than half of all the beef farms in 2005 (Appendix 13).

Nationally, the beef industry contains more small farm businesses than any other category of farming — as a consequence, average measures of financial performance often appear lower than for other industries. Farms carrying more than 500 beef cattle produce about 70 per cent of the total value of broadacre beef production, and this group of farms achieved an average rate of return of more than 6 per cent in 2001-02, double the average for the industry (ABARE 2002, p. 8). Average measures also mask considerable variability found in the financial performance of beef farms. This is illustrated by statistics presented for beef farms in Australia ranked according to the total capital invested in the farm during 2002-03 to 2004-05. For the bottom third of farms, the annual farm business profit (defined in Box 8) on average was -$40 675 whereas the top 25 per cent of this group of farms (ranked at a regional level by rate of return to capital excluding capital appreciation) was $12 544. For the middle third of farms, the results were -$38 077 and $64 463 respectively, and for the top third of farms, -$4 087 and $379 199 respectively (Martin et al. 2006, pp. 204-205).
Thus, while statistics show that beef farms in Victoria, on average, did not make a business profit over the decade 1996-97 to 2005-06, national statistics for the industry suggest that the better performing farms (e.g. the top 25 per cent of farms) would have made a business profit during 2002-03 to 2004-05.

**Box 8 Profile of beef farms in Victoria — per farm averages**

In 2004-05, beef farms in Victoria with an estimated value of agricultural operations of $22 500 or more per year had the following features:

- The age of the owner manager was 63 years, compared with 59 years for all agricultural industries.
- The owner manager worked on the farm for 40 hours per week and off-farm for 3 hours per week.
- The area operated was 446 hectares and the beef herd was 297 animals.
- Farm cash income* was $26 800 and total non-farm income was $12 699.
- Farm business profit# was -$13 308 on farm business equity of $1.9 million.

Over the decade 1996-97 to 2005-06, with data expressed in 2005-06 dollars:

- Farm cash income ranged from -$648 to $26 800 per year compared to $25 434 to $88 567 per year for all agricultural industries.
- Farm business profit was negative for every year (range of -$59 492 to -$13 308 per year) whereas it was positive for three years out of ten for all agricultural industries (range of -$37 062 to $37 841 per year).
- Rate of return excluding capital appreciation was negative for all years except 2005-06. When capital appreciation was included, rate of return was positive from 2000-01 onwards.

* Farm cash income = the difference between total cash receipts and total cash costs.

# Farm business profit = farm cash income plus change in trading stocks, less depreciation expense, less the imputed value of the owner manager, partner(s) and family labour.

Source: AgSurf interactive web package, ABARE (2007).
Value of agricultural and plantation forestry production

Statistics for EVAO were used to show the size and type of agricultural activity in the Towong shire in 1997, 2001 and 2005. Although these statistics can be used as a proxy for gross farm income, a direct measure is provided by the ‘value of agricultural commodities produced’ (VACP), generally referred to as the ‘gross value of production’ (ABS 2003e, p. 23). Statistics for VACP in SLAs were obtained for the year ended 30 June 2001 based on the Agricultural Census conducted in that year, for the purpose of comparing the gross value of agricultural production with the ‘gross value of plantation forestry production’.

The gross value of agricultural production is the value placed on recorded production at wholesale prices realised in the market place. This is generally the metropolitan market in each state and territory, but where commodities are consumed locally, or where they are sold as a raw material for a secondary industry, these points of sale are presumed to be the market place. While VACP at the level of SLA is only reported as the gross value of agricultural production, agricultural statistics aggregated to a state level also report VACP as a ‘local value’ (calculated by deducting marketing costs from the gross value of commodities produced), which is the value placed on commodities at the point of production or ‘farm gate’ (ABS 2003e, p. 23).

For plantation forestry growers, the closest equivalent to VACP reported as the gross value of agricultural production is the ‘mill-door’ value of plantation products. Forest growers generally transact plantation products at a mill-door price and contractors are engaged to harvest and transport the products to the processing centre or ‘mill’ either by the grower or the processor(s) of the products being harvested (MBAC Consulting 2005, p. 36; Wareing et al. 2002, p. 28). However, forest growers can calculate the price paid for the standing timber, known as the ‘stumpage’, by deducting the payments for harvesting and transport from the mill-door price. For this research, stumpage is regarded as the closest equivalent in the forest industry to the ‘farm gate’ value of agricultural production.23

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23 It could be argued that the price of the timber that has been felled and moved to a central loading point in the forest is the equivalent of the farm gate value of agricultural production, but statistics are not readily available on the break-up of the costs of log harvesting and log transport in the total cost of getting timber from the plantation to the mill-door.
An estimate of the value of plantation forestry production in the Towong shire was derived from a study of the timber industry in north east Victoria (Wareing et al. 2002). The total area of softwood plantations in the study area that included the Towong shire was 64 468 hectares in 2001. HVP Plantations (HVP) had 52 250 hectares (81% of the total area) and produced approximately 95 per cent of sawlogs and 98 per cent of pulp logs harvested in the study area. In the financial year 2000-2001, 625 000 cubic metres of sawlogs and peeler logs and 339 000 tonnes of pulp logs were produced, with an estimated stumpage of $23.0 million for sawlogs and peeler logs and $4.4 million for pulp logs. Log harvesting and log transport of the above volumes of plantation products generated a gross turnover of $25.9 million in 2000-2001 (Wareing et al. 2002, pp. 16-18, 29). Applying these statistics pro-rata to the HVP plantation estate of 12 600 hectares in the Towong shire (74 per cent of the total plantation estate) (PNE 2004) provides an estimated stumpage of $6.3 million and a gross turnover of $5.9 million for log harvesting and transport from softwood plantations in the Towong shire in 2000-2001. Thus, the amount of $12.2 million is an estimate of the value of the timber plus the work done in the forest to fell the timber and the transport of the timber to the mill.

For the agricultural industries, the VACP reported as the gross value of production for the Towong shire for the year ended 30 June 2001 was $66.2 million, which was generated from 213 000 hectares of farms (ABS 2006h). This is equivalent to a gross value of agricultural production of $310 per hectare of farmland. For the plantation forestry industry, softwood plantations owned by HVP generated an estimated mill-door value of $12.2 million in 2000-2001. If this is taken as value of plantation products from the entire plantation estate of 17 080 hectares, the plantation sector generated a gross value of forestry production equivalent to $714 per hectare, more than double the estimated gross value of production per hectare for agriculture based on the value of recorded production at wholesale prices realised in the market place.

For agriculture in Victoria for the year ending 30 June 2001, the farm gate value of agricultural production was 92 per cent of the gross value (ABS 2002d, p. 18; 2003e, p. 23). Applying this proportion to the VACP reported for the Towong shire provides an estimate for the farm gate value of production of $285 per hectare of farmland for the year ending 30 June 2001. For plantations, the stumpage (i.e. farm gate) value of products for the Towong shire in 2000-2001
was estimated to be 52 per cent of the mill-door (i.e. gross) value of forestry production, which provides an estimate for the stumpage value of plantation production of $370 per hectare of plantation estate in 2000-2001.

The softwood plantation estate in the Towong shire is ‘mature’ in the sense that there is a spread of plantation ages from the 1970s onwards (PNE 2004), which means that it can be operated to produce a sustained yield of plantation products. The value of stumpage estimated for softwood plantations in the Towong shire is similar to that of $398 per hectare in 2002-2003 from 116 323 hectares of plantation in the south west slopes region of New South Wales (URS Australia 2004, section 4, pp. 1-2).

The data indicate that the plantation forestry sector in the Towong shire is producing a stumpage or ‘farm gate’ value of plantation products per hectare that is similar to the wider plantation industry in the south west slopes of New South Wales. The ‘farm gate’ value of plantation products per hectare of plantation land is about 30 per cent higher than the farm gate value of agricultural commodities produced per hectare of farmland. The gross value of plantation products expressed as the mill-door value of products per hectare of plantation estate was more than double the estimated gross value of agricultural production per hectare of farmland, because the plantation forestry sector had higher marketing costs (i.e. the costs of moving the products from the point of production to the point of sale) than agriculture.

For forest growers, the mill-door price minus payments for harvesting and transport represents the price paid for the standing plantation timber, known as the 'stumpage', and is the closest equivalent in the forest industry to the 'farm gate’ value of agricultural production. In the Towong shire in 2000-2001, the stumpage value of plantation products per hectare of plantation land was about 30 per cent higher than the farm gate value of agricultural commodities produced per hectare of farmland.

5.5 Agricultural value of land

Landholders own and manage rural land for a wide range of reasons - economic, socio-cultural and historical (Cary, Webb & Barr 2002). It is difficult to clearly
understand the underlying motivations of thousands of rural landholders in south eastern Australia, even more so when considering that in Victoria, about half of all properties are likely to change hands during 2002-2015 in the Wimmera region and during 2006-2016 in the Corangamite region (Curtis, Byron & MacKay 2005, p. 560; Curtis et al. 2006, p. 41). Longitudinal data on sale price of rural properties in regions where agriculture is the dominant land use can be used to examine trends in the market value of land in relation to its underlying potential for agriculture. In Victoria, the State Revenue Office supplies the Valuer-General with property sales data which is summarised annually for each LGA (Land Victoria 2005). For this research, a customised data set was obtained through the office of the Valuer-General for statistics on rural property sales for selected LGAs. Data was provided for all rural sales categories for properties 10 hectares or more in area from 1995 to 2005; 1995 was the first year that sales were listed in the current LGA boundaries following amalgamation of 210 local government councils into 78 councils (Valuer-General Victoria 2006).

We argue that by calculating the differential between the land value realised in the market (i.e. results of rural property sales), and the expected value of the land for agricultural use, an indication of whether landholders reside in a ‘production’ or a ‘lifestyle’ landscape is provided. That is, where there is a large differential between the land and the estimated value of the land for primary production, then it is likely that landholders live within a ‘lifestyle’ landscape in which farmland is being purchased for both farming and non-farming purposes, and landholders are deriving a significant proportion of their income from off-farm sources (Race & Stewart 2007).

Research that has sought to explain fluctuations in prices of farmland in recent decades has centred on capital asset pricing theory, which examines the extent to which the prices for financial assets (e.g. farmland) can be explained in terms of a rational evaluation of current and expected income from the asset. In its simplest terms, this theory assumes that buyers of farmland are risk neutral, discount the future at a constant rate, act competitively, and value land only for its economic return or rent. If these relationships hold, the value of land today can be represented as the discounted sum, or present value, of the expected value of future income or rents, with the opportunity cost of investing in the land being the discount rate. Under this model, if the profitability of one type of
agricultural use decreases, then the value of land for this use declines (Alston 1986; Burt 1986; Clark et al. 1993; Huang et al. 2006).

An estimate of the level of income expected from farming was obtained using the data for a comprehensive survey of farm enterprises in south west Victoria, in which farm financial performance has been monitored for 35 years on between 48 and 71 farms (DPI 2005b). Historical data in nominal dollars is provided for the average 'net farm income' of all farms included in the survey each year.\(^{24}\) Net farm income does not include an allowance for owner/operator labour, leases, capital expenditure, interest, tax, and principal repayments, but is believed to be useful for illustrating the relative agricultural performance of typical farms in different years. A real discount rate of 5 per cent was applied to the estimated net farm income, on the basis that the nominal cost of finance for a farm business is around 8 per cent (Holmes Sackett & Associates 2006) and recent and expected inflation is in the order of 2.6-3.0 per cent (Reserve Bank of Australia 2006). The present value of the estimated net farm income in perpetuity was thus determined in nominal dollars for each year during 1995-2005, as an indicator of the value of land for agriculture, which was then compared to the median sales prices realised for rural properties in different LGAs during 1995-2005.

The results are presented as the ratio of the median property sale price to the value of the land for agriculture, using a three-year moving average of the ratio to better illustrate trends (Figure 8). The index of the value of land for agriculture peaked in 2001-02 — a year in which farmers in the broadacre and dairy sectors of Australian agriculture recorded one of their best financial performances compared to the previous 26 years, as a result of high commodity prices and good seasonal conditions (ABARE 2002, p. 1).

Caution needs to be applied when interpreting these results, because the index of agricultural land value represents a theoretical construct of relative farm economics at one point in time, and is not necessarily related to land market price. Also, lower yields (due to drier than average conditions), increasing production costs, and lower prices can combine to significantly affect farm incomes from year to year.

\(^{24}\) Net farm income = Gross income (total income including allowed for inventory changes and rations) minus Enterprise costs (all variable costs that can be allocated to a specific enterprise) minus Overhead costs (all fixed costs (e.g. fuel, permanent labour, rates, administration, depreciation) but excluding owner/operator allowance, interest, leases, capital expenditure, principal repayments and tax) (DPI 2005b, p. 63).
Figure 8  Ratio of median sale price of rural land to an index of the value of land for agriculture in the Victoria part of the Murray Valley and Green Triangle, 1997-2005

Victoria part of Murray Valley

Victoria part of Green Triangle

Bearing in mind that farm incomes are inherently volatile from year to year (DPI 2005b, Martin et al. 2006), using the assumptions outlined above, the results suggest the largest differential between the rural property price and the index of agricultural land value occurred in the LGAs of Mitchell and Murrindindi, to the extent that land prices on average appear to be beyond reach of a viable agricultural enterprise. In such areas, it is likely that an increased area of rural land is being purchased by people who want small properties and don’t identify themselves as farmers, some deriving their income from employment in towns or major cities within commuting distance. Although these landholders may not be dependent on agriculture for their livelihoods and nor identify themselves as farmers, it appears they value highly the ‘agricultural’ landscape and cohesive rural community. For such people, arguably their livelihoods are not dependent on agriculture, but their quality of life requires a vibrant rural setting.

The results for the LGAs of Strathbogie and Towong in the Murray Valley and Glenelg, Moyne and the Southern Grampians in the Green Triangle suggest that agriculture is a competitive mainstream land use, and that land was being purchased primarily for its agricultural value. These areas would therefore be considered to be agricultural production landscapes on the basis of this indicator.

There was a strong trend for land prices to increase in all LGAs in the Murray Valley and Green Triangle during 1995-2005 (Appendix 14, Appendix 15), as have prices of broadacre farms across Australia in the past decade (Martin et al. 2006, p. 201). The general increase in land values has resulted from a number of factors including higher farm incomes, historically low interest rates, a positive outlook for future industry returns, and a steady increase in demand for land by urban people seeking a rural lifestyle and investment (Martin et al. 2006, p. 201).

It would appear that land in the Towong shire was purchased primarily for its agricultural value during 1997-2005 – thus an agricultural production landscape. In contrast, the results for Local Government Areas closest to Melbourne (e.g. Mitchell, Murrindindi) indicate that land prices on average appear to be beyond reach of a viable agricultural enterprise, and ownership of rural land is uncoupling from agriculture.
5.6 Purchasers of rural property

Understanding the location of purchasers of rural property is believed to provide another indication of the likely aspirations of landholders. That is, we consider ‘local’ purchasers to be more likely to be consolidating or expanding existing farms, whereas more distant purchasers are more likely to bring new ideas and approaches to rural land use. This idea was used by Barr, Wilkinson & Karunaratne (2005, p. 24) as an indicator of rural amenity landscapes — they presented the ratio of ‘local’ to ‘non local’ purchasers of rural land in Victoria during 1991-2001 at the spatial level of SLA.

From the statistics on rural property sales for selected LGAs in Victoria obtained through the office of the Valuer-General, the years 1995, 2000 and 2005 were selected for analysis to examine trends in the locations of people and businesses who purchased rural properties. The sales data was for all rural properties that were 10 hectares or more in area. Records with no purchaser address were deleted, which provided 1 338 records for analysis for north east Victoria (95 per cent of sales), and 952 records for the Green Triangle (90 per cent of sales).

Data for north east Victoria was from the LGAs of Alpine, Benalla, Indigo, Mansfield, Mitchell, Murrindindi, Strathbogie, Towong, and Wangaratta. The Green Triangle data was from the LGAs of Glenelg, Moyne, and Southern Grampians.

The purchaser address did not include a postcode, so the geographic location of each purchaser was determined by reference to various maps and atlases (e.g. Hema Maps 2005). The location of each purchaser was then coded as follows:

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local</td>
<td>Within the same LGA</td>
</tr>
<tr>
<td>Albury-Wodonga</td>
<td>Albury LGA &amp; Wodonga LGA</td>
</tr>
<tr>
<td>Melbourne</td>
<td>Melbourne Statistical Division (SD) &amp; Greater Geelong City Statistical Subdivision (SSD)</td>
</tr>
<tr>
<td>Rural Victoria</td>
<td>Areas outside Wodonga LGA, Melbourne SD &amp; Greater Geelong SSD</td>
</tr>
<tr>
<td>Other state</td>
<td>States other than Victoria &amp; international</td>
</tr>
</tbody>
</table>
For each LGA, data with the ‘Local’ code was examined for the occurrence of purchasers from the major city or town within the LGA. For the ‘Rural Victoria’ code, the data was examined for the occurrence of purchasers from the provincial centres of Ballarat and Bendigo, and from the LGA of Warrnambool which is wedged between the LGA of Moyne and the southern coast of Victoria.

Within the ‘Other State’ code, the data for each state was further coded into ‘capital city’ based on the Statistical Division (SD) for that capital city, and ‘rural’ which was all areas outside the capital city SD, to provide some insight about the origin of purchasers from states other than Victoria.

The data were then analysed by year and LGA. For each of the 36 data sets (3 years x 12 LGAs), the following statistics were calculated: number of properties sold, total area of all properties, median area, total value of all properties sold, and median price.

**Location of rural property purchaser - north east Victoria**

In north east Victoria, the LGAs of Benalla, Indigo, Mansfield and Wangaratta are wholly in the Murray Valley region as defined by the National Plantation Inventory (NPI). The LGAs of Alpine, Mitchell, Murrindindi, Strathbogie and Towong are mostly in the Murray Valley region, which extends to southern New South Wales. The detailed statistics for the nine LGAs in the Victorian part of the Murray Valley region are available from the principal researcher on request.

**Local purchasers**

Local purchasers were the dominant group of purchasers of properties in the LGAs of Alpine, Benalla, Indigo, Towong and Wangaratta. These five LGAs are consolidated in the northern half of north east Victoria. The closest LGA to Melbourne is Benalla, some 198 kilometres distant. In 2005, the proportions of properties bought by local purchasers were: Alpine 37%, Benalla 44%, Indigo 49%, Towong 47%, and Wangaratta 53%. When year 2005 was compared to year 2000, there was a decrease in the proportion of local purchasers of properties in Alpine, Benalla and Wangaratta, which was paralleled by a sharp increase in the proportion of purchasers from Melbourne.

In north east Victoria, the Wangaratta LGA (population 26 596 in 2001) had the lowest proportion of its population in the rural balance component (32% in 2001), due to the high proportion of the population in the rural city of
Wangaratta (population 16,342 in 2001). The influence of purchasers from Wangaratta was therefore examined. It was found that purchasers who reported their address as Wangaratta, expressed as a proportion of the total local purchasers, decreased from 55% in 1995 to 34% in 2000. The trend was opposite in the Benalla LGA (population 14,066 in 2002, rural balance component 35% in 2001), where purchasers who reported their address as Benalla (population 8,614 in 2001), expressed as a proportion of the total local purchasers, increased from 45% in 1995 to 62% in 2000.

Local buyers were the dominant group of purchasers of rural properties in 2005 in the Local Government Areas of Alpine (37% of all properties purchased), Benalla (44%), Indigo (49%), Towong (47%) and Wangaratta (53%).

Albury–Wodonga purchasers

Albury-Wodonga purchasers were from the LGAs of Wodonga and Albury, combined population of 73,468 in 2001. Albury-Wodonga purchasers were only active in the LGAs of Alpine, Indigo, Towong and Wangaratta. Thus, the purchase activity did not extend more than 100 kilometres from Albury-Wodonga—the next closest LGA was Benalla, some 113 kilometres distant (Wodonga city to Benalla town).

For the four LGAs combined where purchases were made, the Albury-Wodonga purchasers as a proportion of all purchasers were 16% in 1995, 20% in 2000 (representing 34 properties), and 10% in 2005 (20 properties). Most activity was in the nearest LGAs (Indigo and Towong), followed by Alpine, then Wangaratta.

Rural Victoria purchasers

Over the years 1995, 2000 and 2005, the proportions of purchasers from rural Victoria across all the north east Victoria LGAs were 17%, 11%, and 12% respectively. Most purchase activity was in the LGAs of Benalla (27% of all purchases in both 1995 and 2000), Strathbogie (24% in 1995, 23% in 2000), and Wangaratta (21% in 2005). In all instances, the median area of properties bought was greater than the median area for all properties across the LGA in the particular year. For all LGAs analysed in north east Victoria, there was only one
purchaser from the provincial centre of Bendigo (in 1995), but none from Ballarat.

**Melbourne purchasers**

Over the years 1995, 2000 and 2005, the number of properties bought in the north east Victoria LGAs by Melbourne purchasers (and the proportion of total purchases) were 108 (31%), 175 (37%), and 205 (39%) respectively. In each year, the median area of properties bought was less than the median area for all properties purchased.

Melbourne purchasers were the dominant group of purchasers of properties in the four LGAs closest to the metropolitan area—results for 2005 were 50% of Mansfield properties, 64% of Mitchell properties, 65% of Murrindindi properties, and 54% of Strathbogie properties. In all of these LGAs except Mansfield, the proportion of properties purchased by Melbourne buyers increased between 1995 and 2005. The most distant of these LGAs from Melbourne is Mansfield and its main town, Mansfield, is 202 kilometres from Melbourne with an approximate driving time of 2 hours 20 minutes.

To the north of this consolidated group of LGAs, the next four closest LGAs to the metropolitan area are, in order of increasing distance from Melbourne, Benalla, Wangaratta, Indigo, and Alpine. The proportion of properties bought by Melbourne purchasers changed much more between years 2000 and 2005 relative to the change between years 1995 and 2000; the results for years 2000 and 2005, in terms of the proportion of properties purchased and the number bought, were: Benalla 16% (6) in 2000, 33% (22) in 2005; Wangaratta 8% (5) in 2000, 14% (11) in 2005; Indigo 7% (3) in 2000, 16% (8) in 2005; and Alpine 14% (3) in 2000, 26% (9) in 2005.

The most distant LGA from Melbourne is Towong. Its second largest town, Tallangatta, on the western edge of the LGA, is 350 kilometres from the metropolitan area, with an approximate driving time of 4 hours. In 2005, 11% of properties (representing 4 properties) were acquired by Melbourne buyers, down from 15% (7 properties) in year 2000; thus, in 2005, Melbourne buyers had least influence in the LGA most distant from the metropolitan area.
**Melbourne purchasers were the dominant group of buyers in 2005 of rural properties in all Local Government Areas (LGAs) closest to the metropolitan area — Mansfield (50% of all properties purchased), Mitchell (64%), Murrindindi (65%) and Strathbogie (54%). These buyers had least influence in the Towong shire, the most distant LGA from Melbourne.**

**Other state purchasers**

Properties purchased in north east Victoria by buyers in other states, as a proportion of the total, were low compared to the Green Triangle region, ranging from 4% in 1995 to 6% in 2005. Most purchase activity was in Towong and Wangaratta, with most buyers from New South Wales.

Buyers from Sydney and Canberra (i.e. from the Sydney SD and the Canberra SD) had low participation rates in the property market in north east Victoria, only purchasing nine properties and one property respectively over the years 1995, 2000 and 2005, equivalent to less than 1% of all properties in total. A small number of properties were purchased by overseas parties—two in 1995, and four in 2000. Purchasers in south east New South Wales bought more than half the properties in Towong shire bought by ‘other state purchasers’ — a result to be expected given the proximity of Towong shire to this region.

The results for the LGAs of Towong, Benalla and Mitchell are provided to illustrate the different proportions of purchasers for an LGA close to Melbourne (Mitchell), an LGA about two hours travel time from Melbourne (Benalla), and the most distant LGA from Melbourne in the study (Towong) (Figure 9).
Figure 9  Locality of purchaser of rural properties in selected Local Government Areas in north east Victoria (1995, 2000 and 2005)
**Location of rural property purchaser - Green Triangle**

In the Green Triangle, the LGA of Glenelg is wholly in the Green Triangle region as defined by the National Plantation Inventory (NPI). For the LGAs of Southern Grampians and Moyne, the western parts (approximately half) of these LGAs lie within the NPI Green Triangle region, and the other parts fall within the NPI Central Victoria region.

*Local purchasers*

Local purchasers were the dominant group of purchasers across the Green Triangle region for 1995, 2000, and 2005, buying 35% to 66% of properties within an LGA. When data were consolidated for each of the three years, there was no apparent trend across the region in the proportion of properties purchased. However, in 1995, local purchasers bought 54% of properties representing 42% of the total area of properties bought by all purchasers, whereas in 2005, local purchasers bought 48% of properties representing 64% of the total area of all properties purchased.

In the Glenelg LGA, the acquisition of properties by local purchasers was 47% in 1995, 38% in 2000, and 35% in 2005. In the latter two years, purchasers from Melbourne and interstate acquired 51% of properties, up from 35% in 1995. This shift in year 2000, which was still evident in 2005, was largely the result of Managed Investment Scheme (MIS) forestry companies entering the land market — discussed below.

*Rural Victoria purchasers*

Over the years 1995, 2000 and 2005, the LGA of Moyne had the highest proportion of purchasers from rural Victoria (30%), followed by Glenelg LGA (13%), and Southern Grampians LGA (9%). There were no purchasers from the provincial centres of Ballarat and Bendigo in any LGAS in these years.

In order to examine the regional distribution of rural Victoria purchasers, the data for each LGA was split into purchasers from the Green Triangle region (the LGAs of Glenelg, Moyne, Southern Grampians, and Warrnambool), and the balance of rural Victoria purchasers. This revealed that two-thirds of the rural Victoria purchasers were from the Green Triangle region, with the proportion highest for Moyne (74%, as mainly influenced by purchasers from the Warrnambool LGA), followed by Glenelg (61%), and Southern Grampians (45%).
**Melbourne purchasers**

Over the years 1995, 2000 and 2005, the LGA of Moyne had the highest proportion of purchasers from Melbourne (23%), followed by Glenelg LGA (18%), and Southern Grampians LGA (16%). For the three LGAs combined, the proportion was 19%.

Property acquisitions by Melbourne purchasers peaked in the year 2000, when 95 properties were bought (23% of the Green Triangle total), up from 32 properties (14% of the Green Triangle total) in 1995. The driver of this shift was Managed Investment Scheme (MIS) forestry companies entering the land market in the Green Triangle region in 1996. The pattern of property acquisition follows the cycle of funds raised from investors. In 2000, 76 of the 95 properties (80%) bought by Melbourne purchasers were acquired by MIS forestry companies, and in 2005, 34 of the 54 properties (62%) were likewise acquired. MIS forestry companies located in Perth were also active in this property market. The purchases of properties in the Green Triangle region over the period 1995–2005 by all MIS companies was as follows, with the proportion of the total sales shown for the years 1995, 2000 and 2005:

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>MIS</td>
<td>0</td>
<td>4</td>
<td>6</td>
<td>21</td>
<td>75</td>
<td>144</td>
<td>6</td>
<td>2</td>
<td>20</td>
<td>34</td>
<td>50</td>
<td>362</td>
</tr>
<tr>
<td>Total</td>
<td>0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>35%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>16%</td>
</tr>
</tbody>
</table>

If MIS companies are removed from Melbourne purchasers, the trend for the balance of Melbourne purchasers across the region is declining acquisitions both in number and proportion of the total: 32 (14%) in 1995, and 21 (7%) in 2005.

In contrast to the Green Triangle, the data showed that there was only one rural property purchased in north east Victoria for plantation expansion by a MIS forestry company — this occurred in 2005 by a company based in Sydney.
Melbourne purchasers of rural property in the Green Triangle region peaked in the year 2000, when they comprised 23 per cent. The driver of this shift was Managed Investment Scheme (MIS) forestry companies entering the land market, whose funds are reportedly drawn from high income urban investors. The influence of MIS has not occurred to any appreciable degree in north east Victoria.

Other state purchasers

As was found for Melbourne purchasers, property acquisitions by purchasers in other states peaked in the year 2000, when 78 properties were bought (19% of the Green Triangle total), up from 23 properties (10% of the Green Triangle total) in 1995. Again, the shift was caused by MIS forestry companies, but in this instance by companies based in Perth, being active in the land market in the Green Triangle region. In fact, in 2000, MIS companies in Perth bought 93% of properties acquired by interstate purchasers, and bought 70% in 2005. There were no international purchasers of property in the Green Triangle region.

A standout result was that interstate purchasers bought larger properties than other purchasers: in 2000, the median property size bought by interstate buyers was 161 hectares compared to a median area of 79 hectares for all purchasers across the Green Triangle region; in 2005, the respective figures were 78 hectares and 54 hectares.

When the data for interstate purchasers was examined in more detail, it was found that Adelaide (i.e. Adelaide Statistical Division) buyers had little influence in the land market, buying only 1% of all properties over the years 1995, 2000 and 2005.

Most influence, apart from MIS forestry companies, was from purchasers in the South Australian part of the Green Triangle region. It was found that when the MIS purchasers were taken out, 51% of the remaining interstate purchasers were from the LGAs of Mount Gambier, Grant, Wattle Range, and Naracoorte–Lucindale, all in south west South Australia.

Results for north east Victoria and the Green Triangle are provided at Figure 10.
Property sales and turnover - Towong shire

The property database of the Towong shire was examined (TSC 2007). The database provided rateable properties that were eight hectares or more in size and classified ‘rural production’. At 2007, excluding plantation forests, there were 5 630 parcels of land that comprised 1 523 rateable properties (each described by a property number) with an area of 190 000 hectares and 1 104 owners.25

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25 A ‘parcel’ is the smallest unit of land able to be transferred within Victoria’s cadastral system. A ‘property’ is defined as land under common occupation particularly for the purpose of rating or habitation. Properties are typically described by a street address or a ‘rating assessment number’ allocated by an authority such as an LGA. A property can be one parcel of land, many parcels (e.g. a farm), or part of a parcel (e.g. a shop in a commercial development). An LGA’s view of property is usually seen as definitive and is described by the LGA’s property number (DSE 2007c). However, a ‘property’ sale recorded by the Valuer-General could be for a parcel of land, part of a property, or a whole property as recorded by a LGA.
During 1995-2005, the median number of annual property sales recorded by the Valuer-General for Towong shire was 42 (for properties 10 hectares or more in size). Although the data do not concord in terms of size of property or period, they indicate that the number of property sales, expressed as a proportion of rateable properties, has been in the order of three per cent per year.

Data from the Valuer-General for the Towong shire for 1995-2005 showed a total of 412 sales across 35 parishes for properties 10 hectares or more in area. For each parish, the details of each transaction (vendor name, purchaser name, property area in hectares, lot number or Crown description) was viewed to identify properties that had been bought and then sold ('turned over') during the period. Only nine properties (2 per cent of total sales) were turned over, including one property that turned over twice. The median period these properties were held before turnover was three years (range 1-9 years), and the median area of these properties was 38 hectares (range 16-308 hectares). Thus, of properties sold during 1995-2005, only a small proportion turned over at a frequency of less than 11 years.

**Purchase of land by forestry companies**

Property sales recorded by the Valuer-General during 1995-2006 were analysed to determine the location and amount of rural land purchased by forestry companies in north east Victoria and the Green Triangle, and specifically the influence of forestry companies operating 'managed investment schemes' (MIS)\(^\text{26}\) as there has been considerable debate about the impact of these companies on the rural property market (e.g. Tonts, Campbell & Black 2001, p. 41; Schirmer et al. 2005b, pp. 88-96; Australian Plantation Timber Industry [APTI] 2006, pp. 45-46; National Farmers Federation 2006, p. 2; Paton and Associates 2006).

Forestry companies were identified from lists of 'product rulings' issued to forestry companies operating MIS for investment in plantation expansion (Australian Taxation Office 2005). Product rulings describe the nature of the forestry investment, including the region and the type of land sought for plantation establishment (e.g. land must have been under agricultural pasture for at least 5 years). However, the Australian Taxation Office has provided written product rulings on which forestry MIS schemes operate within certain tax laws only since 1998, so the expert industry knowledge of the principal

\(^{26}\) Also known as ‘retail forestry projects’ (APTI 2006, p. 38).
researcher was used to identify those companies operating a MIS before specific product rulings were issued. This knowledge was also used to identify those forestry companies not operating a MIS but active in the rural property market (e.g. Japanese joint venture forestry companies). The type of MIS used in forestry is a ‘primary production scheme’, in which an investor holds an interest as a ‘grower’ of the primary product (e.g. pine trees). The investor usually enters into an agreement with the manager for the scheme to establish and maintain the trees until harvest at maturity, and profits from the harvest are distributed according to the holdings of the investor in the scheme. These schemes are often run in a way to maximise taxation benefits for investors (Australian Securities & Investments Commission 2006).

The data analysed was sales during 1995-2006 of all rural properties that were 10 hectares or more in area, which provided 5 545 records for north east Victoria, and 3 839 records for the Green Triangle. Data for north east Victoria was from the LGAs of Alpine, Benalla, Indigo, Mansfield, Mitchell, Murrindindi, Strathbogie, Towong, and Wangaratta. The Green Triangle data was from the LGAs of Glenelg, Moyne, and Southern Grampians. For the analysis, a vendor or purchaser was classified as either a ‘rural property’ participant in the land market, a ‘MIS forestry company’ participant, or a ‘non-MIS forestry entity’ participant, where the latter included companies whose core business is forestry and companies dealing in forestry land as property investment. Each property sale was then coded as follows:

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Rural property purchaser buys from a rural property vendor, a MIS forestry company vendor, or a non-MIS forestry company vendor</td>
</tr>
<tr>
<td>M</td>
<td>MIS forestry company buys from a rural property vendor (i.e. agricultural land is purchased for plantation expansion by a MIS forestry company)</td>
</tr>
<tr>
<td>F</td>
<td>All other sales involving a MIS forestry company or non-MIS forestry entity (i.e. this identifies transactions within the forestry sector, as well as rural property purchased by non-MIS forestry companies).</td>
</tr>
</tbody>
</table>

The data was then analysed by year and LGA. For each of the 144 data sets (12 years x 12 LGAs), the following statistics were calculated: number of properties

27 The principal researcher has 30 years experience in industrial forestry in south east Australia.
sold, total area of all properties, median area, total value of all properties sold, and median price. Across all LGAs, more than 99 per cent of transactions coded ‘A’ were between rural property participants. Within the code ‘F’, the purchase of rural property by non-MIS forestry companies was minor compared to the purchase of rural property by MIS forestry companies (code M).

In north east Victoria, there were only 31 property sales coded ‘F’ during 1995-2006, with a total area of 1 149 hectares. The majority of transactions were within the forestry sector, including 10 such transactions in the Towong shire in 2003. The median area of the 31 properties sold was 114 hectares and the median sale price was $3 254 per hectare. The only sale of rural property for plantation expansion (code ‘M’) occurred in the Towong shire in 2005, for an area of 121 hectares.

The low level of land transactions involving forestry companies in north east Victoria was in stark contrast to the high level of activity in the Green Triangle. There, MIS forestry companies purchased 378 rural properties during 1995-2006 with a total area of 65 377 hectares, a median area of 123 hectares, and a median price of $3 256 per hectare. Most activity occurred in the Glenelg shire (35 050 hectares), with more than 11 000 hectares purchased in each of the years of 1999 and 2000. Less than 20 rural properties were purchased by non-MIS forestry companies during 1997-2006. However, about 250 properties were sold within the forestry sector. For example, approximately 15 800 hectares of forestry land was sold in 2004 by a MIS forestry company to an investment fund focussed on forestry assets including carbon (James Fielding Group 2004).

A sub-set of the data for the three LGAs in the Green Triangle was examined to compare prices paid for land by MIS forestry companies and rural property purchasers. All properties 40 hectares or more in area were selected to remove small properties that may have higher value for uses other than agriculture or forestry (e.g. horticulture, lifestyle). Properties of this minimum size comprised 98 per cent of the total area of land purchased by MIS forestry companies. MIS forestry companies purchased 334 rural properties during 1995-2006 with a total area of 64 231 hectares, a median area of 129 hectares, and a median price of $3 115 per hectare. Rural property purchasers bought 2 078 properties with a total area of 323 544 hectares, a median area of 92 hectares, and a median price of $2 344 per hectare. Thus, on average, MIS forestry companies paid higher
prices for land than land bought by rural property purchasers — the same result reported for three LGAs in a forestry region in Western Australia during 1994-2004 (Schirmer et al. 2005b, pp. 95-96). What is not known, however, is the capability nor the suitability of these aggregate areas of land for the intended uses — such attributes would provide insight to the question to what extent has the MIS forestry sector been able to pay a ‘premium’ price, if any, for land compared to competing buyers.

Forestry companies purchased 31 properties in north east Victoria during 1995-2006, with a total area of 1 149 hectares. The majority of transactions were within the forestry sector, including 10 in the Towong shire in 2003. Only one farming property was purchased for plantation expansion by a MIS forestry company — in the Towong shire in 2005.

In the Green Triangle region, MIS forestry companies purchased 378 rural properties during 1995-2006 with a total area of 65 377 hectares, a median area of 123 hectares, and a median price of $3 256 per hectare. On average, MIS forestry companies paid higher prices for land than land bought by other rural property purchasers.

5.7 Other indicators

It was suggested that ‘rural residential building’ may be a useful indicator of change in agricultural areas. Rural residential building permits were investigated for the Indigo shire by obtaining statistics from the shire for the total number of new house approvals for each year from 2001 to 2006. However, it was not possible from the data to identify ‘rural residential’ from ‘urban’ as the database for building permits did not include the planning zone in the planning scheme. It would be necessary to spatially represent the data in order to infer trends in rural areas and urban localities.
6  Research findings from interviews

The research team used purposeful sampling that involved selecting experienced people from stakeholder groups for an interview. A detailed discussion of the sampling approach and interview method is provided in section 4.6 above. A summary of attributes of farmers, and of farmers with farm forestry experience interviewed are provided at Table 11.

Table 11  Attributes of farmers, and farmers with farm forestry experience interviewed

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Farmer (N = 6)</th>
<th>Farmer with farm forestry experience (N = 4 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median age group</td>
<td>46-55 years</td>
<td>51-60 years</td>
</tr>
<tr>
<td>Median number of years of managing property</td>
<td>25 years</td>
<td>28 years</td>
</tr>
<tr>
<td>Median property size</td>
<td>540 hectares</td>
<td>315 hectares</td>
</tr>
<tr>
<td>Major enterprise</td>
<td>Beef production</td>
<td>Cattle (25%), prime lamb (25%), horticulture (25%), forestry (25%)</td>
</tr>
<tr>
<td>Median number of years involved in farm forestry</td>
<td>0 years</td>
<td>20 years</td>
</tr>
<tr>
<td>Median proportion of farm under farm forestry</td>
<td>0%</td>
<td>12%</td>
</tr>
<tr>
<td>Succession plan to transfer property within family</td>
<td>100%</td>
<td>75%</td>
</tr>
<tr>
<td>Household has off-farm income</td>
<td>67%</td>
<td>75%</td>
</tr>
<tr>
<td>Farm business made a profit in 2005-2006</td>
<td>100%</td>
<td>75%</td>
</tr>
<tr>
<td>Property within Towong shire</td>
<td>100%</td>
<td>0%</td>
</tr>
<tr>
<td>Property outside north east Victoria</td>
<td>0%</td>
<td>50%</td>
</tr>
<tr>
<td>Husband and wife interviewed</td>
<td>33%</td>
<td>25%</td>
</tr>
</tbody>
</table>

Note: Other interviewees contributed views as farmers with farm forestry experience yet were identified primarily as belonging to other stakeholder groups. These interviewees are not included in this table.

Data from these interviews has been analysed and condensed under key topics. This information is provided in the subsequent sections, with some direct quotes from interviewees were included where these were felt to be illustrative of main points.
6.1 Changes in agricultural landscapes in the north east Victoria

Benefits and disadvantages of living and farming in the region

Six farmers who operated grazing properties in the Towong shire were interviewed. Most of the farmers were living and farming in the area because family history was rooted in the region. The children of one farmer were the sixth generation living on the property. Another farmer had considered moving to New South Wales but chose to stay because of the accumulated knowledge of farming in the area (“... we knew the risks of farming here”). One respondent had taken up farming more than a decade ago after a professional career, and observed that “... there is the romance of being back to our roots by being on the land.”

From an agricultural perspective, the farmers regarded the region as a good reliable farming area mainly because of its rainfall (“... everyone wants to live here because of good and reliable rainfall”). However, opinions about soils varied from ‘good’ to ‘poor’ — the latter attributed to high acidity and low fertility. The region was generally recognised for its grazing enterprises, much less so for horticulture.

The farmers identified a number of disadvantages of living and farming in the region. Isolation was the main issue raised. Some felt isolated from every-day commerce due to closure or decline of local towns (“... the nearest town is too small and declining”). Others were concerned about remoteness from a regional centre (Albury-Wodonga) and Melbourne — the main centres for education and the places their children are moving too. Another issue was that declining population has made the area less interesting to live in (“... the area hasn’t the attraction it once had”). However, one respondent noted that while relatively isolated, it was still a good, cohesive community.

Six respondents operating agricultural enterprises either full-time or part-time and living outside the Towong shire were interviewed. Proximity to Melbourne (within 2 hours travel time) or regional centres was important for business and social reasons for the majority of these respondents, reinforcing the importance of the issue of isolation felt by farmers in the Towong shire.
Farmers in the Towong shire regard it as a productive and reliable farming area mainly because of its rainfall; however, the isolation was the main disadvantage identified.

Future plans for property

Two of the farmers had a succession plan for the next generation to continue farming on the properties. Two others acknowledged the difficulty of succession planning but hoped that the next generation would come back to the farm.

All farms planned to continue with beef enterprises, but none of the farmers had plans to expand production. None of the farmers planned to expand the size of their holdings - instead, one was intensifying property management rather than buying more land ("... I am adverse to increasing debt"); two planned to continue their strategy of concentrating on off-farm income and investment; and another, who was finding it increasingly difficult to do the farm work, was attempting to continue farming with limited capital expenditure because the rural lifestyle remained attractive.

Only one farmer was leasing other farmland — in this case, neighbouring land. On the other hand, others were considering leasing their land — one farmer was contemplating leasing the farm in the longer term and moving to a provincial centre to live; another had thought of leasing the farm, and would even consider selling the land to a forestry company.

Changes in the role and importance of agriculture

Farm enterprise

The Towong shire was an important area for ‘soldier-settler blocks’ following WWI and WWII. Block size was based on land quality, and was typically 320 acres (approximately 130 hectares), with a range in the order of 100-400 acres (40-160 hectares). Dairying was the dominant enterprise on the rolling hills and undulating terraces of the northern valleys, whereas beef and sheep grazing enterprises were the main land use on the higher elevation grazing land in the shire (Rowe 1967, pp. 112-113). An experienced rural real estate agent commented: “... post WWII, a dairy herd of 50 cows was a big herd from which a
good living could be made - these days a herd of 300 cows is a big herd”. There has been a constant turning over of these small properties and restructuring of agricultural industries, such that the region is now regarded by farmers and rural real estate agents as predominantly a beef-producing district, though dairying is still important. A long-term farmer who had been operating a dairy enterprise for more than 20 years had recently changed to beef production (“... stopped due to my age and lack of water”).

Feedlots (confined yards for controlled, grain-based feeding) are regarded as a significant development within the beef industry (“... feedlotting has been the saviour of the industry”). There has been a move away from producing vealers and steers for direct sale to meat markets, to producing animals for feedlots. Producing cattle to specifications required by feedlots was seen to be a more reliable way of marketing cattle and, importantly, feedlots were seen as the means to produce the consistent supply of high-quality product demanded by retailers. Another trend in north east Victoria and elsewhere is growth in ‘backgroundering’ operations, where a farmer buys 8-10 month-old ‘weaner’ cattle, and grows them under contract to a feedlot to sell into the feedlot at approximately 15 months of age. Thus, the beef industry is segmenting, with producers finding their niche along the supply chain.

In the beef industry, there has been a move away from producing vealers and steers for direct sale to meat markets, to producing animals for feedlots (confined yards for controlled, grain-based feeding).

A decline in wool prices has been a factor that has affected the use of a land type in the shire. The less-improved hilly land was a valuable part of the farming sector when wool prices were high. However, low wool prices together with the problem of controlling wild dogs have dramatically changed the profitability of farming this land. One farmer commented: “… depressed wool prices and predation of sheep by wild dogs has rendered this land almost worthless for agriculture”; another said that 15-20 per cent of the farm was best suited to running sheep, but was not being used because of these factors. Another factor noted was the lack of skilled labour, especially shearers, for sheep farming. Thus, there has been a move away from sheep farming by traditional farmers, and
farming has focussed on the more productive land in the valleys and lower slopes. The move away from sheep is unlikely to be reversed by ‘lifestyle’ farmers — a member of staff of the Department of Primary Industries (DPI) commented: “... for lifestyle farmers, sheep are more difficult than cattle because of more intensive animal husbandry — crutching, shearing, dipping, fly strike, drenching, lamb marking, etc”.

Low wool prices together with the problem of controlling wild dogs have greatly reduced the profitability of farming the less-improved hilly land that was once a valuable part of the farming sector.

There were similar views amongst farmers and rural real estate agents interviewed about what constitutes a ‘viable farm’. One long-term beef farmer estimated that $2.5 million was needed for a viable family farm ($2 million for land and $0.5 million for livestock), which equated to an enterprise with a herd of about 400-500 breeding cows — a view confirmed by two other farmers. Other opinions were “... 400 hectares of good land with some irrigation and at least 300 breeding cows”, and “... you need 500-600 cows just to keep your head above water”. A farmer noted that 10 years ago, the Victorian Farmers Federation said that an economic beef farm was 500 breeding cows. One farmer was operating a beef enterprise with 90-100 animals, and acknowledged that this was well below the size of herd required for a stand-alone, viable farm — but the lifestyle was the important consideration.

A DPI staff member working in the livestock industries specifically in north east Victoria but with statewide responsibilities described trends in the structure of beef enterprises. These included: a reduction in herd size; an increase in the number of herds, thus maintaining overall livestock numbers; and, most herds are now operated by ‘lifestyle’ farmers, and contain 50-200 cattle - though there are examples of lifestyle farmers who have herds much larger than 200 cattle, but regard it as a ‘hobby’ because the enterprise is small when compared to other businesses they operate. The interviewee commented that there are now more people seeking livestock extension services, lifestyle farmers now outnumber traditional farmers by about three to one as clients of these services, the lifestyle farmers have a higher rate of adoption, and this group has a
relatively high proportion of innovators because many of these new clients have been successful in business elsewhere. Such farmers would bring a different perspective to what constitutes a ‘viable farm’ — traditionally thought of as a farm enterprise that is able to provide household income for a reasonable standard of living, after paying for depreciation, debt costs and capital improvements (e.g. lime for pastures, fences). Herein is the difficulty of defining a ‘viable farm’, because of the different contexts in which farm enterprises are operated and of the aspirations of the operators.

There is difficulty in defining a ‘viable farm’, because of the different contexts in which farm enterprises are operated and of the aspirations of the operators. Traditionally, an economic beef farm was considered to have about 500 breeding cows, but there are now many beef enterprises operated by ‘lifestyle’ farmers that contain 50-200 cattle.

**Employment**

Permanent farm employees were the norm when the current generation of farmers was growing up on the property. Now there is not the income to employ permanent labour — a factor in the loss of people from the district. There is, however, demand for casual labour that cannot always be met (“... lack of skilled labour for casual employment is a real issue”).

The logistics of carrying out routine farm operations has changed. Farming as a business is making more use of contractors for such specialised tasks as pesticide application and crop production. Efficiencies in handling and delivering farm merchandise (e.g. veterinary supplies, chemicals) means that many of these products are delivered at farm-gate, rather than the farmer travelling to a regional retail outlet.

**Off-farm income**

Two-thirds of the farmers interviewed had off-farm income. This was an important part of their livelihood (“... in good years the farm only just breaks even — without paying me a wage”); and another commented: “... most of the farmers are dependent on off-farm income to survive.” Off-farm sources of
income were diverse, and included contracting businesses, employment in regional centres and surrounding districts, government superannuation, pensions, and residential property investment.

Of a client base of a financial institution of more than 200 farm businesses in north east Victoria and southern New South Wales (mainly beef and dairy operations), about 70-80 per cent of clients had off-farm income, most of which would earn more off-farm than on-farm. A senior staff member of another financial institution operating in the same general area reported that off-farm income was increasing — it was important for cash flow and nearly every young farmer had a job in town to maintain the lifestyle of their family with that of their peers. This interviewee also provided a generic example of the role of off-farm income in succession planning: young people (aged 30-40 years) have been able to come back to the family farm with the backing of a successful business and/or off-farm income, with the parents moving into a town or regional centre.

Off-farm income was an important part of the livelihood of farmers in the Towong shire and came from diverse sources of employment and business. Regionally, many farmers earn more income off-farm than on-farm.

Land purchase

The area was regarded by farmers as traditionally tightly-held by families for farming, particularly the large farms, but this was changing. As one farmer commented: “... age has caught up with the farming community, so more properties are coming onto the market, especially the smaller properties that originally were dairy farms.” Many properties are a composite of non-contiguous parcels of land, and many outlying blocks are traded.

A farmer was concerned about the impact of rising land prices on the future of traditional agriculture (“... the land is worth too much just to run cows on it”). Similarly, two farmers commented that it was very difficult to purchase land now based on returns from agriculture, as land prices were being driven by other values. Another commented that land prices had gone up noticeably in the past five years — now more than $6 000 per hectare for good farmland. [This is much
higher than the median price of $3,378 per hectare recorded for all rural properties 10 hectares or more sold in the Towong shire in 2005.]

Despite increasing land prices, farmers were active buyers of rural property. A farmer explained that good operators are buying smaller or less viable farms, paying what may seem to be high prices relative to the agricultural earning capacity of the land if the land is adjacent to or near their current farm operation, as this brings efficiencies in management and production, and provides further opportunities for the next family generation of farmers. Also, if they purchased the original land at relatively low prices or inherited the land, and have none or a low level of debt, what may seem to be a high price for land was rationalised in the sense of the overall capital cost of the farm. The purchase of properties by neighbours or near-neighbours in the Towong shire and southern New South Wales at a price that exceeds the agricultural value of the land, and the afore-mentioned rationale, was confirmed by a rural real estate with 25 years experience in the region and by an agribusiness professional working for a major bank in the region. The latter added: “... for established farmers, the high land prices have allowed them to unleash equity to buy next door”.

**Although data on rural property sales indicated that land in the Towong shire was purchased primarily for its agricultural value during 1997-2005, several farmers interviewed said that it was now difficult to purchase farmland based solely on the likely returns from agriculture.**

Some purchasers of land have moved into the shire, but usually are not full-time farmers. These ‘lifestyle’ farmers were buying properties 100-400 hectares in size, and operating the farm as part of a larger business. A farmer observed: “They want properties with appealing aesthetics.” Other purchasers included ‘absentee’ landowners. Buyers were said to be coming from Albury-Wodonga, and the capital cities Sydney and Melbourne. A farmer observed that land was mainly being purchased by local people and absentee landholders — hence, not many people were coming to live in the district. On the other hand, a farmer commented: “New owners bring money, and usually upgrade farms, including infrastructure.” On a regional front, an agribusiness professional and a senior staff member in DPI reported that an increasing number of new owners were
Melbourne and Sydney investors who have employed local people as farm managers. This type of employment was important to many of the new generation of farmers who were finding farming difficult because of property size reduction through generational change and the effects of drought.

Land was mainly being purchased by local people and absentee landholders — hence, not many people were coming to live in the district. Some local farmers, however, are getting ‘off-farm’ work by managing lifestyle farms for absentee landowners.

A senior agency person thought that a consequence of high land prices is that corporate farming is likely to increase — as in Queensland — in which there is focus on management of the supply chain, vertical integration, and economies of scale, to make the overall business profitable.

Another change in the business of agriculture that emerged from the interviews was the extent to which agricultural land was leased. Four of the farmers interviewed commented on the increasing trend for farmers to lease neighbouring land (“... this is one way for younger people to expand their enterprises”). An agribusiness professional working in the region said that agricultural grazing land (not irrigated) was typically leased for an annual cost of 4.0–5.5 per cent of land value and leases were usually for 3-5 years, adding: “... you won’t find any leases that are more than 10 years”.

Future of agriculture

Views about the future of agriculture were both optimistic and pessimistic. Farmers held the view that beef production would continue to be the predominant form of agriculture in the foreseeable future. Three farmers were optimistic about the future of the beef industry because of such factors as increasing demand for quality-assured product in the Asia-Pacific region. Another commented: “... farmers here are a pretty conservative group — they know beef cattle well.” In contrast, one was pessimistic about the future of farming: “Farming was good in the 1950s and 1960s — but now it is a real struggle. We are not competing on a level playing field compared to major competitors like the USA”. This pessimism was shared by a rural property sales manager with 30 years of experience.
years local experience in the region, due to the large impact of recent droughts on farm returns, causing financial difficulties for some farmers as debt climbed from low levels. Though some alternative agriculture has developed in the district (e.g. onion production), this was regarded by the farmers as only ever having a relatively small value of production compared to the main farming enterprises in the Towong shire.

Within DPI — the lead agency in Victoria for the development of the agriculture and forest industries — there were contrasting views about the future of agriculture in north east Victoria. One regional DPI staff member, whose area of responsibility was north east Victoria, commented: “... traditional farmers are not making money - this is now an amenity landscape”, and added: ”...rising land values are a major driver of this change. A significant amount of land will change hands in the next decade. High-value niche industries with export markets, plus tourism, are the future”. Another DPI staff member, with responsibilities in the livestock industries statewide and north east Victoria specifically, provided a different perspective. The view held was that the outlook for beef is strong, even though it has international competition. Further, “...north east Victoria is a prime area because it produces high quality cattle that are sought after for feedlot operations”. Of note, at state government level, the government strategy for population growth and industry development in provincial Victoria identified the dairy industry, the resources sector and forest industries as the emerging primary industries for growth and investment (Regional Development Victoria 2005, pp. 42-45).

Farmers were mostly optimistic about the future of the beef industry and the dairy industry, but views within the Department of Primary Industries about the future of agriculture in north east Victoria were both optimistic and pessimistic.

Views about the future of agriculture were obtained from two senior agribusiness staff working for financial institutions — one a major bank and the other a specialist lender to primary industries. Both were located in Albury-Wodonga and had clients in north east Victoria and southern New South Wales, including numerous clients with beef farms or dairy farms. In general, dairy clients were
optimistic, though the high cost of land was an impediment to expansion. Nearly all young farmers were entering farming on an inheritance of land, one interviewee explaining: “... the only young farmers who can enter from scratch are those in dairying — they can share-farm by milking and raising calves and slowly work their way into the industry”. Beef farming was seen to have good prospects for producers both large and small — even though meat processors want increasing supplies and prefer to deal with large producers, small suppliers can still access markets and receive fair prices. One interviewee commented that lifestyle farmers were moving into the Towong shire, and that the financial institution had a ‘lifestyle farm finance’ product. The rationale was that in addition to lending to operators of commercial-scale farms, there was a market to lend to people who rely on off-farm income yet wish to farm on a smaller scale. This was done because the institution recognises that small or part-time farmers make a meaningful contribution to agricultural production in Victoria, and that this sector is growing in importance.

However, several concerns were raised about the future of agriculture by the agribusiness staff working for financial institutions. Older farmers tend to depreciate farms — they let pastures and fences run down, and do not carry out the necessary environmental works. In addition to the ageing demographic of farmers, the increasing demands on young farming families to keep up with their non-farming peers are putting pressure on the ability of farmers to maintain the capital base of their assets. Also raised was water security (“... the single biggest issue facing agriculture”), and the predicted impacts of climate change on agriculture.

Agribusiness people working with financial institutions were concerned about the future of agriculture because of the inability of farmers to maintain the capital base of their farm assets, the issue of water security, and the predicted impacts of climate change on agriculture.

A senior staff member of the Towong shire was concerned in the short term about the impact of recent drought on the resilience and resources of the farming community. The broader view held by the interviewee about farming in the shire was that it is very much a traditional agricultural area, was only a
marginal land use in many parts of the shire, had little innovation save for some trials of alternative crops, and has difficulty maintaining parity with other areas because of the large distance to markets and the nature of the terrain that often precludes the use of modern transport systems ("many farmers must carry livestock using traditional transport to a pick-up point accessible to B-doubles - the cost of road and bridge upgrades to allow B-double transport to most farmers would be astronomical"). In the longer term, a major concern was that agriculture, the largest industry in the shire that pays 60 per cent of rate base, presents the greatest risk to the rates income given that the capacity of farmers to pay may deteriorate significantly in the future.

The Towong shire was concerned in the short term about the impact of recent drought on the resilience and resources of the farming community, and in the long term about the high dependence on agriculture for the rate base of the shire, given that the capacity of farmers to pay may deteriorate significantly in the future.

Local government role

There were reservations amongst farmers in the Towong shire about the approach to land-use planning by local government. One commented that local government “... should not be overly prescriptive about land use”. Another said that restricting land uses other than agriculture in large parts of the shire limited opportunities for ‘lifestyle’ properties which were a means of attracting people to the region — an outcome sought by council and community. However, one farmer — even though disillusioned by the poor profitability of agriculture - believed that local government should zone rural areas exclusively for farming.
6.2 Nature and perceptions of forestry in north east Victoria

The research team used purposeful sampling to select experienced people from forestry companies for an interview. The interviewees selected had senior responsibility for the development of plantation resources and/or the procurement of wood supplies for processing, to provide perspectives on both the supply of, and demand for plantation wood resources. A summary of attributes of the company staff interviewed, and of the companies represented, are provided at Table 12.

Table 12 Attributes of forestry companies and forestry company staff interviewed

<table>
<thead>
<tr>
<th>Attribute</th>
<th>N = 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company core business</td>
<td>Plantation timber production (33%), Plantation timber production &amp; processing (42%), Plantation timber processing (25%)</td>
</tr>
<tr>
<td>Location of main company office</td>
<td>Provincial Victoria (59%), Capital city (33%), Provincial other state (8%)</td>
</tr>
<tr>
<td>Region of company operations</td>
<td>Operation in the Murray Valley (92%), Operations in states other than Victoria and NSW (50%)</td>
</tr>
<tr>
<td>Median longevity of company</td>
<td>38 years</td>
</tr>
<tr>
<td>Median age group of company staff interviewed</td>
<td>41-50 years</td>
</tr>
<tr>
<td>Median time with company</td>
<td>10 years</td>
</tr>
<tr>
<td>Median time in forestry industry</td>
<td>23 years</td>
</tr>
<tr>
<td>Current position in company</td>
<td>Resources manager (50%), Commercial operations manager (25%), Harvesting manager (8%), other (17%)</td>
</tr>
<tr>
<td>Median time in current position</td>
<td>7.5 years</td>
</tr>
</tbody>
</table>

Changes in the role and importance of forestry

Industrial-scale forestry

Plantations in the Towong shire are in a softwood resource area formerly known as the 'Upper Murray management area’, one of eight softwood development zones recognised in Victoria when the Victorian government managed plantations (Forests Commission 1972, pp. 20-21; Government of Victoria 1986, pp. 51-
The eight softwood development zones were set up to provide sufficient softwood resources to support the establishment of wood processing industries at decentralised sites, for the dual purpose of providing employment in rural areas and reducing the need to import forest products (LCC 1984, p. 110). Plantations in the Towong shire are centred on the Shelley-Koetong plateau, where rainfall is more than 1 000 millimetres per annum (Rowe 1967, p. 142). Planting by the State (i.e. the Forests Commission) commenced there in 1961, and was boosted by Softwood Forestry Agreements between the Commonwealth and State governments that started in 1966-67 and provided federal loans to the states for plantation expansion, largely to meet wood self-sufficiency goals (Forests Commission 1972, p. 19; LCC 1984, p. 110; Gerrand et al. 2003, p. 2).

Plantations in the Towong shire are a softwood resource. Planting was started by the State in 1961 and the resource is centred on the Shelley-Koetong plateau where rainfall is more than 1 000 millimetres per annum.

The land used by the State for plantations was forested public land (i.e. native forest) cleared for plantation development, and farmland purchased by the Forests Commission. Where forested public land was used, relatively low-productivity native eucalypt forest was replaced with high-productivity softwood plantation (Rowe 1967, p. 112). The Forests Commission purchased a large grazing property on the Shelley-Koetong plateau in 1962 that was sold by the owner ‘after finding the farming conditions there difficult to sustain’ (Aussie Heritage 2007, p. 2). Further farmland (grazing land and some native forest) was purchased by the Forests Commission, under the policy that wherever possible, ‘marginal’ farmlands should be used for the establishment of softwood plantations (LCC 1981, p. 9; LCC 1984, p. 111). Also, 995 hectares of private plantations were established under Farm Forestry Agreements in which the government provided farm forestry loans to private landowners (Forests Commission 1972, p. 21; LCC 1984, p. 111).

28 Almost all government-managed publicly-owned softwood plantations in Victoria were sold to the USA investment group, John Hancock Ltd, in 1998 (Gerrand et al. 2003, p. 2).

29 David Buntine, Forest Officer, Towong Shire, 1 October 2007.
The land used by the State for plantation development was public land cleared of native forest and purchased farmland. It was government policy to use ‘marginal’ farmlands for softwood plantations wherever possible.

In 1984, there were 12,700 hectares of softwood plantations in the Upper Murray management area (i.e. the Towong shire), of which 83 per cent were State-owned (Government of Victoria 1986, p. 51). Wood from these State-owned plantations was part of the north east Victoria supply zone for two processing industries - one in Wodonga (sawmill and wood preservation plant) and another in Albury (pulp and newsprint plant). The latter was a large capital investment that the Victorian government supported by way of a long-term, legislated pulpwood supply agreement, which ensured the supply of raw material (LCC 1984, p. 112). Amongst other wood supply agreements in north east Victoria, one was signed by the Victorian government with a processor in 1986 to supply wood for 40 years. The Victorian government’s stated intent in its Timber Industry Strategy of 1986 was to expand the State-owned softwood plantations in the Upper Murray management area by 5,700 hectares, as part of an overall strategy for north east Victoria to provide increasing supplies of raw material for large, internationally competitive industries including pulp mills, sawmills and reconstituted wood processing plants. The combined expansion target for the two other softwood development zones in north east Victoria (Benalla/Mansfield and Ovens) was 10,700 hectares, with most plantations in the three zones to be established on freehold land purchased by the State (Government of Victoria 1986, pp. 56-58).

However, the plantation expansion target set by the Victorian government in 1986 was not achieved in the Upper Murray or the other two softwood development zones in north east Victoria. The Victorian government’s commitment to phase out by 1987 the clearing of native forest for softwood plantations (Government of Victoria 1986, p. 55), and the community concern about the purchase of private land for softwood expansion, led to the decline and ultimate cessation of softwood plantation expansion by the State (Wareing et al. 2002, p. 16). During 1984-2005, the plantation resource in the Towong shire expanded by only 4,047 hectares, of which 2,593 hectares was planted by RCA Management, a company that sold woodlots to investors (Wareing et al. 2002, p.
At the end of 2005, there were 16,747 hectares of plantations, of which 99 per cent was softwood dominated by Radiata Pine (BRS 2007), and three-quarters was owned by HVP Plantations (PNE 2007).

The government’s commitment to phase out by 1987 the clearing of native forest for softwood plantations, and community concern about the purchase of farmland for softwood expansion, led to the decline and ultimate cessation of softwood plantation expansion by the State in north east Victoria.

Thus, the plantation estate in the Towong shire was mostly established during the 1960s to the mid-1980s by the State government on public land cleared of native forest and on purchased farmland. A regional staff member of HVP Plantations (HVP) — the largest grower in the shire — reported that investment in new industrial-scale softwood plantations in the north east region ceased in the early 1990s when the State divested management of its plantations. In the Towong shire, most of HVP’s plantations are ‘second rotation’, having been replanted following harvesting, which means that the infrastructure and planning issues are effectively dealt with — particularly identification of the net plantation area and construction of roads for harvesting and fire protection assets. The scale of this plantation estate is not sufficient to support local processing — all plantation logs are hauled to processing centres in other LGAs in Victoria and New South Wales.

Lack of plantation expansion

An interviewee from the Towong shire with considerable forestry experience in the region discussed reasons for the lack of plantation expansion in the Towong shire in the past 15 years. These included: the timber processing industry in the main has not established new plantations; farmers cannot see the benefit of investing in forestry; the dissected valleys in the region give a low ratio of planted area to gross area compared to land in southern New South Wales; funding for the construction and maintenance of roads for harvesting and log transport is a long-standing issue; and native vegetation controls are much simpler to deal with in New South Wales (a ‘one-stop-shop’) compared with the approach in Victoria. The latter was regarded to be a significant impediment, as
the view held was that there are many exemptions under the Victorian native vegetation regulations that allow farmers to get on with their business, but there are no exemptions for pine plantations (“... these regulations could be dramatically improved in favour of plantation growers without losing their intent”).

A staff member of a forestry company with plantation operations in the Murray Valley and elsewhere in Victoria described that company’s difficulties with the regulatory environment with regard to plantation expansion (“... the key for us with the Plantations 2020 Vision was to get forestry treated the same way as agriculture. Forestry has gone backwards regarding its planning and regulation. Nothing has been achieved at a state level in the regulatory environment”). This has come at a cost to the business of the company (“... in our case, expansion has been at considerable expense, frustration and difficulty because of a hostile planning environment”). These sentiments were borne out by a forestry company investing in new plantations in the Murray Valley (“... the planning impediments ... we have gone backwards”), and by a staff member of a forestry processing company with operations throughout eastern Australia (“... we get the impression that Victoria is the hardest state to operate in”).

There has been little investment in new industrial-scale softwood plantations in north east Victoria since the early 1990s when the State divested management of its plantations. Forestry companies reported that a significant impediment was the difficult regulatory environment related to plantation expansion in Victoria.

Towong shire had 16 747 hectares of plantations in 2005 - 99 per cent was softwood, and three-quarters was owned by HVP Plantations. The scale of plantations is not sufficient to support local processing — all plantation logs are hauled to processing centres in other Local Government Areas in Victoria and New South Wales.
Plantation management and employment

The mature softwood estate in the Towong shire is managed as part of a larger plantation resource in north east Victoria, with harvesting and replanting on a crop cycle of about 25-30 years on a static land base. HVP’s business is serviced by a good base of contractors for silvicultural operations that still have a significant component of manual tasks (“... most contractors are locally-based, building on a heritage of working in the industry”). Harvesting is now a difficult business to enter — it has evolved from ‘motor-manual’ systems (typically 40 000 tonnes per year for a system) to fully-mechanised systems that have a much higher capital cost and operate at a production level of 80 000-100 000 tonnes per year, based on a harvester ($600 000) and log ‘forwarder’ ($500 000). The interviewee from HVP reported that there have been failures of harvesting contractors in recent years, to which the company has responded by introducing longer-term contracts (e.g. 5 years), to assist contractors to finance harvesting machinery.

Another issue was the availability of a skilled workforce to operate modern harvesting systems (“... shortages of harvesting operators has been an issue for a long time, and will continue to be so”). Overall, employment in the timber industry in the Towong shire in 2001 was 54 persons (22 in ‘forestry and logging’ and 34 in ‘wood and paper product manufacturing’), representing 2.1 per cent of employment in all industries (ABS 2003c).30 Since 1998, employment in this industry in the shire has fallen by more than half, based on an estimated 129 people employed in the timber industry in 1998 (Wareing et al. 2002, p. 65), with most of the decline occurring in the ‘forestry and logging’ category.31 Reasons for the decline could include changes in plantation management when the State-owned resource was privatised at the end of 1998, changes to harvesting methods, and changes to the management and harvesting of native forest resources on public land in the shire. [Statistics on employment by industry have not been released to date (July 2007) from the 2006 Census.]

30 ‘Timber industry’ employment defined as the combined employment in the ‘forestry and logging’ group (ANZSIC Division A, subdivision 03) and the ‘wood and paper product manufacturing’ group (ANZSIC Division C, subdivision 23) (ANZSIC 1993).

31 ‘Timber industry’ defined as in previous footnote.
Farm forestry

National statistics on ‘farm forestry’ plantations are collected for ‘plantations outrightly-owned by individuals with a total plantation estate of usually less than 1 000 hectares’ (Wood et al. 2001, p. 169). From the national plantation inventory at September 2000, there were 5 731 hectares of farm forestry plantations in the Murray Valley — which was 3.2 per cent of the total plantation area. Nearly 80 per cent of the farm forestry plantations were in the north east Victoria part of the Murray Valley. This area (4 448 hectares) comprised equal proportions of softwood and hardwood resources planted in a total of 375 plantations with a median area of 10 hectares. The softwood plantations are predominantly Radiata Pine mostly planted during 1970-1989 with a peak planting period during 1975-1979, whereas almost all the hardwood resource was planted during 1995-1999 (Wood et al. 2001, pp. 86-90). However, a regional inventory of plantations indicated that farm forestry softwood resources in north east Victoria were about 6 000 hectares (Wareing et al. 2002, p. 17) compared to the 2 213 hectares reported by Wood et al. (2001, p. 89).

The Towong shire has a significant area of farm forestry softwood plantations under the definition of ‘farm forestry’ used in the collation of national plantation statistics. At 2004, 23 owners, including three schools, had 1 475 hectares of softwood plantations aged 14-31 years, most established under a range of incentives offered by government and industry by owners who, in the main, had little or no forestry experience.32 However, these small growers have experienced great difficulty in accessing softwood markets, which led to a policy by the Towong shire in 1999 to assist these owners market their plantation wood. In 2003, the Upper Murray Pine Marketing Group (UMPMG) was formed with the support of the Towong shire to represent the small softwood growers as a single entity (Buntine 2004, pp. 1-2).

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32 Many owners do not live near their plantation and live outside the Towong shire, and most of the plantations are not part of a farm enterprise (David Buntine, Forest Officer, Towong shire, 1 October 2007).
An interviewee representing the forestry interests of the Towong shire explained that the main issue related to the marketing of wood from farm forestry plantations was that these resources produced relatively small volumes of wood at irregular intervals (“... large companies only want to talk to growers who can supply a reasonable quantity on a consistent basis”). The UMPMG now formed has brought together growers with 746 hectares of softwood plantations. All but one grower established their plantation under a Farm Forestry Loan Agreement — a State incentive. However, their forestry investment has not met their expectations (“... they are frustrated growers. No-one wanted to thin their plantations. Their enthusiasm for replanting pines is virtually non-existent. Formation of UMPMG was the first light at the end of the tunnel”). The growers include a medical practitioner, lawyers and agribusiness professionals. Importantly, UMPMG can now represent the interests of growers who collectively have a resource estimated to have a production capacity of more than 400 000 tonnes of sawlogs and pulplogs over 10 years. Although this amount of wood is still small compared to the volumes produced by industrial plantations in the shire, and the marketing group is yet to complete a marketing program, this scale of production has been adequate to attract the interest of the large processors in the region. By comparison, if a single grower had a plantation of 10 hectares (the median area of plantations of farm forestry growers reported by Wood et al. 2001), the volume of logs that grower would have to sell, based on the estimated productivity of UMPMG plantations, would be about 3 250 tonnes — clearly not attractive to a large industrial processor.

Farm forestry (i.e. small) softwood growers in the Towong shire have experienced great difficulty in accessing softwood markets.

Other farm forestry growers in north east Victoria have experienced similar problems marketing plantation resources. A growers co-operative (North East Victoria Forest Growers Co-operative) was established in 1986 to market mature farm forestry softwood resources. This cooperative, which represented private growers with a combined resource of about 500 hectares, was wound up in 2001 (Wood et al. 2001, p. 89; Wareing et al. 2002, p. 18). In regard to the estimated 6 000 hectares of farm forestry softwood plantations in north east Victoria,
Wareing et al. (2002, p. 17) commented: ‘There is little evidence of close cooperation between owners of small softwood plantations to promote the industry or to effectively market the logs they produce.’

**Managed investment schemes in forestry**

Managed investment schemes (MIS) have become the dominant source of private investment in plantation developments in Australia, and since 1997 it is estimated that growers participating in such schemes have financed about 70 per cent of all new plantations in the national estate. This investment comes primarily from Australian investors, either as individuals or through their corporate structures, and is a substantial shift of city-based capital into regional Australia (Cummine 2005).

In 2006-2007, $672 million was raised for forestry projects through MIS, which was 59 per cent of the $1 139 million raised by the agribusiness investment industry. About 81 800 hectares of plantations, mostly Blue Gum for production of woodchip, are expected to be established from the money invested in 2006–2007. In the previous three financial years, the amount raised for forestry MIS was $698 million, $765 million and $505 million respectively (AAG 2005, 2007).

**Managed investment schemes (MIS) have become the main source of private investment in new plantations in Australia — in 2006-2007, $672 million was raised for forestry projects through MIS.**

Other sources of investment in new plantations are governments, industrial wood processing companies, and private investors. Over the 10–year period 1994–2003, it was estimated that the source of funds for investment in ‘green fields’ plantations (i.e. plantations established on new land) was 63 per cent from MIS, 18 per cent from government, 17 per cent from industrial wood processing companies, and two per cent from private investors. Apart from governments, all investors showed a strong preference for short rotation plantations (Kelly et al. 2005). However, the aim of forestry investment schemes that sought to develop plantations in the Murray Valley regions was the establishment of pines to be managed on long rotations (approximately 25 years) — most of the region is too far from an export woodchip facility to attract MIS for short rotation woodchip
plantations. While there has been a high level of investment in MIS in recent years, there was a trend for industrial wood processing companies to divest their plantation assets, rather than making direct investments in new plantations (Kelly et al. 2005).

Views about MIS amongst the six farmers and four farmers with farm forestry experience were mixed. One of the latter interviewees was in favour of MIS, and was of the opinion that MIS investors gained no taxation advantage compared to other primary producers. Four of the 10 interviewees were concerned that MIS skewed the rural land market because MIS companies, through taxation advantages, were able to pay a premium price for land. One commented that farmers struggling with poor commodity prices and drought were vulnerable to ‘selling out’ to MIS companies. A farmer with farm forestry experience objected to the high cost to enter a MIS forestry investment relative to first-hand knowledge of the cost of establishing plantations (“... MIS is the face of forestry that scares the pants off me”).

There was also a view expressed by a member of a Catchment Management Authority in north east Victoria that the MIS forestry industry had a poor reputation amongst farmers in the Towong shire and southern New South Wales, because the financial structure of the investment usually required trees to be planted before the end of the financial year (i.e. by 30 June), even though this may not be the best time to plant because of seasonal conditions or the logistics of completing operations (“... rushing to get the trees in the ground in the wrong conditions, everyone says what a waste of money ... it is just seen as a tax dodge ruining good farmland”).

Two interviewees from an industry group representing dairy farmers at a national level reported that the dairy industry is very concerned about MIS, because there is a widespread view within the industry that forestry MIS companies with tax concessions out-compete dairy farmers for land. They were particularly concerned that MIS would continue to create market distortions and provide the plantation industry with a competitive advantage over the dairy industry for land and water resources. This view was echoed for farmers in general by two interviewees working for rural real estate agents in the Murray Valley.

Three staff working in private forestry in DPI, Victoria, recognised the importance of MIS in bringing investment into plantation forestry. But they were concerned
about the taxation issues related to MIS, and one commented that MIS projects did not take into account social and environmental issues. One reported that within DPI, the dairy and grazing industries groups were negative to MIS, but the horticulture group was positive. Another believed that, overall, DPI staff were negative about MIS, for reasons including buying farms and displacing farm families, and that MIS represented big corporations for which there was distrust. Also, MIS generated considerable correspondence to the minister (“... it creates more headaches than solutions at senior levels”).

There was widespread concern in the rural community about managed investment schemes (MIS) — particularly the perception that the tax arrangements for MIS create market distortions for land and water resources at the expense of farmers.

An interviewee who was national manager of agribusiness for a major financial institution said that people investing in MIS are doing it principally for taxation benefits, a view also held by another interviewee working for a financial institution. The former interviewee, drawing on experience from extensive travel in Australia to financial forums involving farmers, reported that MIS has been raised as an issue at virtually all of these forums. However, the interviewee believed that MIS appears to be good public policy (“... on balance, MIS have enormous merit ... MIS forestry depopulates in part but can centralise population in regional centres” (by the build up of a regional contracting base that adds economic value to the region)). Strong support for MIS in general was provided in comments from a state manager of rural real estate for a national livestock and real estate company (“... it is a great concept and brings investment at a scale that is beneficial to agriculture”).

Some interviewees from forestry companies had reservations about MIS in forestry. Not all companies investing in new plantations operate a MIS, and one commented that MIS were a strong competitor with the company for land and capital. Another interviewee, whose company does not operate a MIS, was concerned that ‘mums and dads’ investors will be greatly disappointed by the returns from their Blue Gum plantation investments, but added that the company, which processes Radiata Pine, was satisfied with the returns forecast
for Radiata Pine MIS projects. In contrast, another interviewee believed the forecast returns for the latter were overstated, caused by the combined effect of overestimates of current log prices, log price growth, and plantation yields. An interviewee from a company that has provided forest management services to small-scale plantation investors in the Murray Valley for 20 years advocated withdrawal of MIS for forestry (“... I have never seen a MIS that works for investors ... MIS are a boom and bust business ... I would knock MIS on the head”).

**Perceptions of plantation forestry as an industry and land use**

Interviewees from stakeholder groups were asked about their perception of plantation forestry, including the extent to which they believed plantation forestry was meeting community expectations.

*Farmers’ perceptions of plantation forestry*

All the farmers had negative perceptions of plantation forestry. During the interviews, it became evident that the plantation establishment that occurred when the state government planted softwoods in the Shelley-Koetong area, mostly during the 1960s and 1970s, had shaped the views of these long-term residents about plantation forestry.

Farmers described the following disadvantages of softwood plantation forestry in the Towong shire:

- Forestry is not popular within the community because it fragments the population — families were lost from the area when plantations were first established more than 20 years ago.
- The community is concerned about the ‘domino’ effect of plantation forestry — that is, the sale of one property in a small community could lead to others which would have significant social impacts (“... if pines started here, eventually they would get the whole valley ... it would destroy the social life if it came to the valley”).
- Plantation development creates less employment than agriculture, and the level of activity is extremely variable — there is not much activity for long periods of the crop cycle (“... small communities get nothing out of plantations”).
Processing occurs in other areas — Tumut, Albury, etc. The scale of plantations required to attract softwood processing industries will never be achieved in the Towong shire. The community is disappointed that the employment and economic activity associated with softwood timber processing is out of the shire.

The industry generates high volumes of log truck traffic that damage shire roads.

There is a general dislike of Radiata Pine (‘pines’) relative to native forest or eucalypt plantations (“... we don’t like pine trees”).

Softwood plantations are seen as a harbour for pests, vermin and weeds.

Land purchase or leasing by forestry companies is detrimental to the region, because land is ‘locked into forestry’ for a long period (“... forestry should not encroach onto farming land ... forestry is all right on higher country, but not on lower slopes and river flats”).

Not all plantation companies are good neighbours.

The industry is unstable — as evidenced by the demise of an investment company that established softwoods in the shire.

The over-riding concern was the impact of plantations on local communities — loss of farms and employment, causing families to move away. The loss of only several families in a small farming valley was regarded as sufficient to have a significant effect on the social capital of the community.

The views of other long-term residents had also been influenced by the way in which industrial-scale softwood plantations were first established in the area. An interviewee, who was a member of a Catchment Management Authority, explained: the practices used to clear native forest for pine plantations resulted in poor water quality in the local streams, and people there at the time of clearing still live in the area and have not forgotten. Further, people do not like monocultures, and there have always been issues with control of pest plants and animals in plantations (“... there is a black mark against forestry in the region for these reasons”).

Despite community concern about the impact of plantation establishment on water quality, the impact of plantations on catchment water yield wasn’t raised
as an issue. One farmer thought that plantation water use wasn’t of concern in the local area because there was usually plenty of runoff.

**The over-riding concern of farmers was the impact of plantations on local communities — loss of farms and employment, causing families to move away.**

Although farmers were concerned in general about the prospect of forestry MIS purchasing large tracts of farmland, one farmer, who led a campaign against plantation expansion when the government was planting softwoods, now had a different perspective on the issue. In 2005 this farmer had held discussions about selling the farm after being approached by an agent acting on behalf of a forestry agency seeking land for a forestry MIS project. Several factors had influenced this change of opinion about plantation expansion. First, softwoods when first planted at scale caused dramatic visual change to the landscape farmed by a conservative community, but with time softwood forestry had become an accepted land use (“... I spent five years fighting plantation expansion in the 1980s — everyone was united then ... now we are a bit neutralised — plantations are part of the scenery”). Second, plantation expansion in the 1980s was funded wholly by government, not the corporate sector as is the case today for proponents of plantation expansion in the Towong shire. “The issue then was that they - the government - were spending our taxpayers’ dollars to buy farmland. Now ... it seems to be a bit different ... managed investment schemes buying farmland would not generate the same protest”. Third, the combined effect of drought and the ageing demographic of farmers has taken its toll on the capacity and willingness of farmers to take a stance against change (“... people are worn down by the drought. And the age of the community is much older — there is not the energy or passion to fight”).

**Changes in community perceptions of forestry**

Many of the concerns raised about plantation expansion are similar to those raised in when the Victorian government established The State Plantations Impact Study (SPIS) in 1988 in response to community opposition to the government’s program for expanding softwood plantations on farmland (Box 9). Other community issues related to forestry in the Towong shire were reported in
Box 9 State plantations impact study - 1988

The Victorian government established The State Plantations Impact Study (SPIS) in 1988 in response to opposition by rural communities about the government’s program for expanding softwood plantations. This concern was expressed in areas where farm land had been purchased for new plantations — local people felt that the government’s forestry program threatened the social fabric and the very existence of their community. The catalysts of this issue were government policies under the Timber Industry Strategy of 1986 that on the one hand planned to increase the area of state-owned softwood plantations from 91,300 hectares to 125,000 hectares from 1986 to 1996, of which the largest increase was planned for north east Victoria (16,400 hectares), and on the other hand to halt the practice of clearing native forest for state plantations. As a consequence, the majority of new land would have to be grazing farm land purchased from private landholders.

During the study, 268 submissions were received statewide from individuals, farmer organisations, the timber industry, local government, government departments, community groups, conservation groups, fire fighting groups, land protection groups and other types of organisations.

The issues considered in detail included:
- Domestic supply and demand
- Ban on clearing native forests for plantations
- Establishment of state plantations on freehold land
- Relative socio-economic benefits of farming and forestry
- Social impact on rural communities
- Timber traffic and local roads
- The loss of rates
- Does government have an unfair advantage over farmers when buying land for plantations
- Is government subsidizing processing companies
- Economic effect of plantations on adjacent landowners
- Fires and fire fighting capacity
- Environmental impact of government plantations
- Impact of plantations on human health


the comprehensive regional assessment in 1998 of the cultural, social and economic values of forests in the north east regional forest agreement (RFA) region (Box 10). All the issues raised by farmers in the interviews were issues at the time of the SPIS, indicating that there has been little progress in resolving community concerns about expansion of softwood plantations on farmland in north east Victoria. The RFA assessment included a community case study of the
township of Corryong 'situated in a traditional agricultural district in the Towong shire'. The community was described as 'characterised by strong social and family ties', and the primary forest issues nominated were unemployment and population loss, due to reductions in availability of native timber resources (Commonwealth Forests Taskforce 1998, p. 136).

**Box 10 North East Victoria comprehensive regional assessment - 1998**

The comprehensive regional assessment (CRA) examined the natural, cultural, social and economic values of forests in Victoria’s North East regional forest agreement (RFA) region. Data collection methods used as part of the social assessment included documentary analysis, secondary data analysis, mail and telephone surveys, personal interviews and workshops.

A community telephone survey was based on a sample of 1,100 households. Five contiguous sectors with similar proportions of people employed within agriculture and forestry (as recorded in the 1991 Census) were defined and approximately 220 households in each sector were randomly surveyed. The eastern sector was mostly comprised of the shires of Towong, Alpine, Wangaratta (southern half) and Delatite.

Community perceptions of changes in land use were assessed in the telephone survey. Approximately one third of respondents in the eastern sector believed that in the past two years there had been changes in the use of forests that had affected the community in which they lived - the most commonly reported changes related to closure of sawmills and development of pine plantations.

The telephone survey included belief statements to identify community views in relation to forest values and forest management. The results indicated that:

- Many respondents (68.2 per cent overall) identified the natural beauty of the forests of the region as a key factor in deciding to live in the area.
- Approximately two thirds of respondents indicated that they felt torn between conservation of native forests and the need for employment provided by forest industries.
- There was a perception among respondents that a reduction in the activity of forest industries within the region could adversely impact on their communities.

A component of the regional assessment was six community case studies including the township of Corryong situated in a traditional agricultural district in the Towong shire. The community was described as ‘characterised by strong social and family ties’ (p. 136), an attribute that was regarded as important for the community in adapting to the impacts of economic contraction and service withdrawals from the region. Attitudes towards forest use and management were assessed through community workshops. The primary forest issues nominated were unemployment and population loss, due to reductions in availability of native timber resources.

Towong shire response to community concerns about plantations

The Towong shire formed the ‘Towong Shire Plantations Committee’ in 1996, in response to on-going community concerns about plantations. The committee lobbied the shire to employ a forest officer, and an appointment was made in 1998. An interviewee reported that Towong shire was the first LGA to do so.

The committee meets twice per year and its members include representatives of industrial plantation growers, farm forestry growers, Landcare, PNE, Towong shire, and DSE. Minutes of the meeting held on 10 November 2006 were viewed. The committee appeared to be operating effectively — 12 people attended, a wide range of issues were discussed, the Towong shire forest officer tabled a comprehensive report, and an action was recorded. Two interviewees in the Towong shire were members of the committee and commented that it was an effective community forum, and that there was not a lot of concern about plantation forestry at present, but one added that there would be concern if plantations expanded markedly.

Plantation company response to community concerns

Farmers in the Towong shire, when asked about their perceptions of forestry, commented on forestry companies as neighbours and ‘corporate citizens’. One interviewee said that the practices of neighbours were always under scrutiny (“... people are very judgemental about what neighbours do”). Not all plantation companies were regarded as ‘good’ neighbours. However, several farmers volunteered that HVP Plantations (HVP) was a ‘good’ neighbour. Examples of being a ‘good’ neighbour were participation in weed control and fencing projects on common boundaries (“... they have pines on our boundary into their second rotation. The forestry people will come and spray Blackberries if you ring them..."
and will share fencing costs”), and consultation with local communities situated near scheduled harvesting operations (“... they were very good in their public relations with the valley community, telling them what was going to happen ... informing the community has been very important”).

Following these interviews, a regional staff member of HVP was interviewed specifically about their approach to community activities. Details are provided at Box 11.

**Box 11 Community partnerships activities in north east Victoria by HVP Plantations**

- Consultation with the wider community on forestry issues (e.g. through the Country Fire Authority, Local Government Authorities, Landcare groups, neighbours).

- Consultation with local the community related to plantation harvesting (e.g. organisation of a bus tour for residents local to a plantation in the lead up to a first-time harvesting operation).

- Membership of Towong Shire Plantations Committee and the regional forestry group Plantations North East Inc.

- Community safety initiative (organisation of radio communication between logging trucks and school buses using roads at the same time).

- Control of pest animals and noxious weeds in cooperation with the community and the Departments of Sustainability & Environment and Primary Industries (e.g. by working through Landcare groups).

- Sponsorship of community activities (e.g. event at an agricultural show) and local sport teams (e.g. football, netball).

- Participation in catchment planning and water quality projects with Catchment Management Authorities.

- Protection of heritage sites and development of heritage projects.

Importance of plantation policies at national, state and regional levels

The main national policies related to the management and use of Australian forests that are relevant to plantations are the National Forestry Policy Statement (developed in 1992), Plantations for Australia — The 2020 Vision (developed in 1997), and Action Agenda for the Forest and Wood Products Industry (developed in 2000) (Gerrand et al. 2002).

At a state level, recent private forestry policy in Victoria is presented in ‘Private Forestry Victoria: Growing the Future in Forestry — Growing Private Forests, 2002-2005’ (DNRE 2002), ‘The Plantation Incentives Strategy: Direction Statement’ (DPI 2005a), and ‘Priorities for Action: Victoria’s Private Forestry Industry 2005-2008’ (DPI 2006). In the Plantation Incentives Strategy, the Victorian Government affirmed its commitment to the expansion of plantation forestry on private land, and announced a new emphasis for government support for private forestry from farm forestry to investments in large-scale commercial plantations managed on long rotations primarily for sawlog production (DPI 2005a, p. 7). In New South Wales, a Farm Forestry Strategy was released in 2003, with a vision that farm forestry be regarded as a mainstream farm enterprise delivering commercial and environmental benefits (NSW Agriculture 2003, p. vii).

During the interviews, knowledge of, and views about federal policies (particularly the Plantations 2020 Vision) and state policies relating to the expansion of plantations was explored. As well, views about the role and importance of PNE regarding development of plantation forests were sought.

The forestry company stakeholders were all highly aware of the Plantations 2020 Vision, but were mostly dismissive of its impacts apart from providing a policy platform for MIS. One forestry company staff member commented: “We do not see Plantations 2020 as having much direct relevance to what we do. It sits in the background. Its flag-waving has influenced MIS which has been beneficial for industry, but Plantations 2020 is disconnected from local government and regions.” Another commented: “... Plantations 2020 Vision does not resonate within the company.” Some were extremely critical (“...in our view, the 2020 Vision is a monumental disappointment. Plantation expansion has only been driven by tax”). Others were disappointed, saying it was ‘just a piece of paper’ (“... a bit like Hawke’s one billion trees statement”). Two were concerned that there
was too little emphasis on the established softwood plantation industry in the policy ("... we have seen no effective investment in new softwood plantations"). Others were critical because in their view the Plantations 2020 Vision had made no progress on one of its objectives - to reduce planning impediments to plantation expansion. There was little knowledge of the Plantations 2020 Vision by interviewees outside the forestry industries or state agencies with forestry programs.

Forest policies at the state level were not well known by the stakeholder groups, including interviewees from forest companies. Nor were these policies seen to be important to some forestry companies ("... at the state level, government private forestry is completely irrelevant to us. We become involved with them only in a defensive mode"). Several forestry company staff were not aware of state private forestry strategies. One staff member of a forestry company with forestry experience in New Zealand as well as in Australia was surprised at the lack of contact by the state forestry agency in Victoria with forestry companies ("... forestry agency people in New Zealand approach us — we do not have to seek out programs"). Overall, there was very little interaction between forestry company staff and private forestry staff in Victorian government.

There was little knowledge of national forest policy related to plantation expansion (i.e. the Plantations 2020 Vision) by interviewees outside the forestry industries. Forest policies at the state level were not well known by the stakeholder groups, including interviewees from forest companies.

In contrast, the Private Forestry Development Committee (PFDC), PNE, had a high profile amongst a range of stakeholder groups. PNE, along with other PFDCs, were regarded as the most useful advocates of private forestry by the forestry companies operating wholly or principally in Victoria ("... we have a regional representative on the committee and I see everything that person does with the committee as a good investment by the company"). Another forestry company staff member commented: “... they are doing what Private Forestry should be doing.” The benefits of PNE to the forestry industry included ‘building bridges’ with local government, a good focal point for the industry, good for networking, and ‘putting the case’ for the forest industry. A staff member of an
LGA reported that PNE was a valued regional committee ("... we would have no interface with industry without PNE").

However, several forestry company interviewees commented that if the performance of PNE was measured by the area of new plantations in north east Victoria, then the committee had had virtually no impact. Two commented that the effectiveness of PFDCs depended very much on "... having the right person in place". One forestry company reported that neither state forestry agencies nor PFDCs were having any impact on such issues as the regulatory operating environment that was central to the business of the company. Three forestry company staff operating principally in New South Wales had little or no contact with any of the PFDCs in that state.

**Plantations North East (PNE), a Private Forestry Development Committee (PFDC), had a high profile amongst a range of stakeholder groups. PNE, along with other PFDCs, were regarded as the most useful advocates of private forestry by the forestry companies operating wholly or principally in Victoria.**

### 6.3 Opportunities for forestry

Forestry company staff interviewed were asked about the attributes of regions important for investment in plantations and processing, and of broad plans of their company in relation to future investment. Also explored with these and other interviewees were opportunities for farm forestry and forestry partnerships.

**Forestry company plans**

Broad details of forestry company plans were discussed with staff from forestry companies that are processors of plantation wood (the ‘demand’ side of the industry), and staff from forestry companies that are growers of industrial plantations (the ‘supply’ side of the industry).

**Processors of plantation wood**

The industries that process plantation logs (‘primary processing industries’) are a broad and diverse group that produce such products as preservative treated
round timber, sawn timber, plywood, reconstituted panel products, pulp and paper products and woodchips. Primary processing industries that process logs from north east Victoria are located both within and outside the region (i.e. in New South Wales part of the Murray Valley). Industries using sawn timber, panel board or other timber products as manufacturing inputs ('secondary processing industries') are numerous and produce a wide range of products (e.g. pallets, furniture) (Wareing et al. 2002, pp. 32, 41). For this research, the focus was on companies that are primary processing industries who are the buyers of logs from industrial plantation growers.

The primary purpose of long rotation softwood plantations is the production of sawlogs for conversion to sawn timber for use in building, and a strong domestic market is critical to the ongoing success of the industry (Gerrand et al. 2003, p. 3). A staff member of the largest processor of softwood sawlogs in the Murray Valley was interviewed. The interviewee commented that large-scale sawmills are required in the first instance to be competitive on the domestic market, as the sawn product is mainly sold into the Australian housing and timber market.

The sawmill was commissioned in 2005 and is cutting 650 000 cubic metres per year of sawlogs. The plan is to increase the annual throughput to 800 000 cubic metres per year in two years by further capital investment and the addition of another shift of employees to the main production line, with wood supply from Forestry NSW and HVP Plantations. The next target is 850 000 – 900 000 cubic metres per year by bringing in privately-owned wood currently not allocated under supply agreements. Beyond this outlook, the interviewee believed that there would be rationalisation in sawmilling amongst the major domestic processors of softwood logs, and that the next step in scale would be about one million cubic metres of sawlog intake per year.

The main purpose of softwood plantations is sawlog production for conversion to sawn timber primarily for use in the domestic housing market. Sawmilling is a large-scale industry — the next step in scale would be an annual intake by a single processor of about one million cubic metres of sawlogs.

Farm forestry plantations and small-scale, privately-owned wood in the region has been consolidated by two forest grower companies in the past five years.
This ‘packaging’ of plantation resources has resulted in them now being regarded as ‘medium-sized players’ in the industry. The interviewee commented that the processing company had spent considerable time and resources examining these plantations at the level of individual growers, but found it a very inefficient way to secure resource (“...we got to the point where we were saying we can’t deal with you — you need to hook up with some of the companies that are bringing resource together”).

The interviewee had concerns for wood quality in the future, mainly because of the trend to clear-fell (i.e. final harvest) plantations at a younger age. Plantation rotation ages are reducing, caused by such factors as demands for resource, improved silviculture, and commercial decisions by growers. The processing company therefore has specifications in wood supply contracts that provide for a minimum age of 28 years for sawlogs from a clear-fell operation. The sawmill in the Murray Valley was designed to operate most efficiently with logs of 28-30 centimetres centre diameter under bark, but will cut a size range of 15-75 centimetres.

Radiata Pine plantations in the Murray Valley are typically managed on a ‘rotation’ (i.e. growing cycle) of 30 years. However, the plantations are normally ‘thinned’ (i.e. partially harvested to remove small and inferior trees to concentrate growth on the final crop trees being grown for sawlogs) at about ages 14 and 21 years. Logs removed when the plantation is thinned are mostly sold as ‘pulplogs’ (logs used for the manufacture of wood pulp and paper products), and pulplogs typically comprise 30 per cent of the total volume of wood harvested during the rotation (Ferguson et al. 2002, pp. 82, 89). The interviewee from the processor of softwood sawlogs commented that industries that process pulplogs were important to their business, because they provided a market for logs from thinning operations required as part of the ‘normal’ silviculture to produce sawlogs, and these industries also provided a market for sawmill residues that are then used in the production of wood pulp.

A staff member of a large processor of softwood pulplogs in the Murray Valley was interviewed. The interviewee commented that company intake is about 400 000 tonnes per year of pulplogs. This raw material is supplemented by the addition of about 150 000 tonnes per year of recycled fibre - use of recycled fibre

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33 In the forest industry, sawlogs are usually measured in round volume whereas pulplogs are usually measured by weight.
was not envisaged at the outset, but this proportion of about 40 per cent of the pulplog intake is expected to continue in the future. The mill operates a single paper machine (24/7) — most paper mills have a second machine operating (24/7) alongside as insurance of supply in case of machine breakdown, but the company has production capacity back-up at other mills in Australasia. Also, the original intent at the facility was to eventually build a second paper machine. The interviewee reported that there is now increased competition for pulplogs in the Murray Valley, and lack of resource is a constraint for expansion of the company’s production if it wanted to do so (“... the main factor limiting expansion is supply of virgin fibre”). Also reported was that the trend for increased scale of processing means that wood is being hauled greater distances than in the past. For example, when one proposal for a second paper machine was considered, the whole of south east Australia (the Green Triangle to central NSW) was considered as a possible wood supply zone.

A recent development in the Murray Valley was the announcement by the company Visy to expand its pulp and paper mill at Tumut, as soon as the company receives formal planning approval and details of a regional roads assistance package from the NSW government. It was announced on 3 April 2007 that the $450 million expansion would more than double the mill’s current output, with most of the increased production bound for export (Visy 2007).

The business models of the major wood processors in the Murray Valley do not include the production of wood resources (“... we do not see plantation expansion as our role in the Murray Valley”). One company that owned plantations as part of its wood supply sold its forests (“... the company wanted to realise lazy assets”), though it was reported that this issue was a continual debate within the business. In effect, the wood resource of the business was ‘outsourced’.

There is increasing demand for softwood logs from primary processors in the Murray Valley to supply markets for wood products. However, the business models of the major wood processors in the Murray Valley do not include the production of wood resources.

34 About 30 per cent of recycled fibre is from magazines (which has some hardwood fibre) and about 70 per cent is from newsprint. Recycled fibre is an international commodity traded on a ‘wildcat’ market.
In a socio-economic assessment of the timber industry in north east Victoria in 2002, analysts reported that growth of the plantation processing industries was dependent on development of new softwood resources: ‘Expansion of the area of softwood plantations is required to provide the significant increase in log resources needed to provide opportunities for existing industries to grow and remain internationally competitive …’ (Wareing at al. 2002, p. 19). Since that view was put, our research indicates that there is now more demand for softwood resources in the region.

Growers of industrial plantations

The main grower of industrial plantations in north east Victoria is HVP Plantations (HVP), who own more than 80 per cent of the softwood resources in the region. HVP is jointly owned by Australian and USA superannuation and investment funds, together with John Hancock Financial Services Incorporated. The Hancock Timber Resources Group, based in Boston, acts as overseeing manager on behalf of investors (Wareing et al. 2002, p. 17). HVP owns most of the plantations in the Towong shire, and interviews were held with a regional staff member and a Melbourne-based staff member of the company — the latter having statewide responsibilities for the business.

In regard to wood supply, the interviewees reported that there was strong demand for increased supply of softwood logs, driven by strong domestic demand for softwood products and export opportunities (“... all of our major customers want more wood and have aggressive expansion aspirations”).

The interviewees reported that the performance of the business has been stable over the past eight years of private ownership, in that there has been little development of new plantations, though existing assets have been acquired. Feedback from investors has been positive — the Australian investors like the asset class because it adds stability and diversity to a portfolio of equities, and banks like the stability of the business (“... one of the Australian investors has said that this forestry investment is the most trouble-free investment in their portfolio”). Recent changes in direction have led to an impetus to expand the business (“... we are quite clearly in an expansion mode without having a narrow vision of what that might mean”). At this stage, while many opportunities are being evaluated, the company is being opportunistic about new investments, but, overall, remains optimistic about growth prospects for the industry.
'Greenfield’ investments, including new plantation development, have not been attractive until recently because they have not been able to meet the financial rate of return required by the business for the investment. This was partly due to an assumption of no real price appreciation for land — which was acknowledged to be a conservative assumption. However, the required return on new investments has been reduced, which has allowed the company to start buying agricultural land for plantation expansion. A number of properties were purchased in the last year, and staff in all regions are ‘on the lookout’ for land, albeit at a low level. Of note is that the company is finding it difficult to compete with forestry companies operating MIS when buying agricultural land for plantation expansion.

A significant development in the business approach of HVP is a trial with a forestry company operating a MIS, now in the second year of a three-year agreement, in which HVP leases its second rotation land to the MIS project, provides forest management services, and markets the timber. Only a small proportion of HVP’s land comes under this agreement. This trial business model may be a more profitable use of capital, rather than the traditional approach of financing the replanting of the land. A main benefit for the partner company operating the MIS is ready access to a suitable land base ("... this is a less controversial source of land for MIS").

Two forestry companies — Willmott Forests Ltd (‘Willmott’) and Gunns Plantations Limited (‘Gunns’ - are currently operating MIS projects for the development of softwood plantations in the Murray Valley. Staff from both these companies were interviewed. Gunns have an expansion target of 10 000 hectares per year — 9 000 hectares of hardwood plantations in Tasmania and 1 000 hectares of softwood plantations in southern NSW (the ‘Hume’ region). The company selected the Hume region (part of the Murray Valley) for its new softwood MIS project in 2006 because of: reliable rainfall and good soils, proven growth of plantations in the region, relatively low growing risk, expanding markets for wood products, both sawlog and pulplog, strong support from processing industries, and a relatively straightforward operating environment in regard to planning ("... our perception is that the more difficult operating environment in Victoria is because of planning controls"). The company did not go to the Green Triangle because land supply in South Australia is ‘capped’ by agreement relating to utilisation of groundwater resources, and hardwood MIS
projects have caused land prices to increase, thus there is much more competition for forestry land. Although there is a forestry MIS competitor for land in the Hume region, the interviewee explained that they were targeting higher rainfall land (>800 millimetres per annum) so the companies were effectively operating in different areas of the region. Subject to at least maintaining the current level of sales of its MIS project, the company expects to develop plantations in the Hume region at an annual rate of about 1 000 hectares in coming years, as it aims for a minimum of 10 000 hectares of plantations when developing a project in a new region. The current business model provides for leasing or purchase of land ("... we would prefer to lease — less cash required upfront"), but land has been purchased in the Hume region in order to assemble quickly the land required for the early stages of the project.

The increased demand for softwood logs by processors is reflected in the plantation expansion plans of major industrial growers of softwoods in the Murray Valley region.

Similarly to Gunns, Willmott selected the Hume region in the Murray Valley as a focal point for development of softwood plantations for reasons including: roads and other forestry infrastructure (e.g. nursery facilities) were in place, there was a strong forestry contractor base in the region, the regulatory environment was supportive of plantation expansion — not an impediment, and there was strong and expanding processing capacity for plantation logs. Agricultural land is purchased by way of direct negotiation with the landowner or at auction, and about 5 000 hectares was bought during 2001-2005. The plan of the company is to develop 5 000 hectares per year across all regions of interest — Bombala, Braidwood (east of ACT), Murray Valley, and HVP regions (Gippsland, Ballarat, Green Triangle) where second rotation land is made available for MIS plantations under agreement. The interviewee commented that land for plantation expansion is becoming more difficult to acquire, reporting that their regional forester was the losing bidder at auction on five properties in 2006 - the winning bidders were local buyers and buyers from outside the region, including dairy farmers from New Zealand.
The largest grower of industrial plantations in the NSW part of the Murray Valley is the state agency Forestry New South Wales (‘Forestry NSW’), deemed to be a ‘forestry company’ for this research. A staff member with management responsibilities across the Hume region and elsewhere, including land purchase, was interviewed. In regard to being able to supply plantation logs to customers under current contracts, the Hume region had the ‘tightest’ supply of all regions across the state. Forestry NSW has not purchased land for their own plantation expansion for seven years because land has not been affordable under the company’s investment model (“... cannot meet the hurdle rate set”). However, the company establishes second rotation plantations using its own funds. Now, Forestry NSW is only involved in plantation expansion by providing forestry services to other investors, including purchase of agricultural land on behalf of investors, mostly for MIS projects. Since 1976, more than 26 000 hectares (gross area) of land have been purchased for Forestry NSW expansion and other investors, with nearly 2 000 hectares purchased during 2001-2005 on behalf of other investors. In regard to the type of investor active in forestry, the interviewee reported that new plantation establishment outside MIS projects is stagnant at best and is probably decreasing.

The interviewee reported that in the Tumut LGA, there is very little available, suitable land for purchase — most is tightly held by strong farming families. The Tumbarumba shire is the main priority for plantation expansion based on the availability of land. It was expected that the company would develop in the order of 10 000 hectares of new plantations for clients in the next five years. There is no focus on north east Victoria for land purchase because of past difficulties in dealing with planning controls related to the clearing of remnant native vegetation (“... I am not that keen about doing anything in Victoria — it was painful enough last time — it is not a streamlined process by any stretch of the imagination. As soon as you want to knock down a native tree, you are in strife”). Although Forestry NSW has no fixed policy on leasing of land for forestry, the experience of the interviewee was that leasing land to forestry
generally does not suit landowners, because they then cannot always get out of farming when they want to.

**Nearly all new plantations are being established in southern New South Wales in LGAs adjacent to the Towong shire. There are significant areas of suitable agricultural land for conversion to plantations in Towong shire based on the productive capability of the land and the economic haulage distances to major regional processors.**

**However, accessing land in the Towong shire is currently considered too challenging for plantation expansion by MIS companies because of experience with, and perceptions of a relatively difficult planning environment for plantation development.**
7 Discussion

This chapter discusses the implications of the research results (presented above) for land use generally and commercial forestry specifically in north east Victoria, in particular focussed on Towong shire. It also discusses the likelihood of the plantation industry achieving its future plans and PNE meeting its strategic goals. While the focus of this research was on north east Victoria, this study drew on research in the Green Triangle and southern New South Wales where the communities and agricultural sectors are comparable, yet the forest industries are prominent and expanding.

7.1 Rural landscapes and communities in north east Victoria

Agricultural production is still important and growing in nominal value terms across the north east Victoria region and in the Towong shire; however, there are diminishing returns for small / medium size operators — which are a high proportion of farm businesses in the region.

Agriculture in the Towong shire is more specialised with beef and dairy dominant enterprises compared to the wider north east region and Green Triangle. We have concerns about the long-term viability of the large number of small / medium size beef operators in Towong. Consistent with this concern, Towong shire is exploring options to diversify this narrow interest in agriculture, and expand the shire’s economic development beyond agriculture. This emerging approach challenges the primacy of prime agricultural land being zoned exclusively for conventional agriculture as an ‘as-of-right’ land use.

Towong shire is essentially a ‘production’ landscape (i.e. a strong dependence on agriculture); however, there is a diminishing and ageing farm population with a strong allegiance to the agricultural industry (beef and dairy specifically). Financial and emotional reserves of farmers and communities are being stretched by drought, consistently poor terms of trade and the loss of young people from the community. It appears that the farming community in the Towong shire is rapidly approaching a ‘social tipping point’ — whereby the large number of ageing farmers operating unviable livestock enterprises cannot be sustained for much longer. Given the lack of new residents in the Towong shire, profound structural change in the demographic profile of farmers and their approach to farming is likely to occur within the next decade. There are some signs that
landholders are receptive to leasing land (in order retain the farm) or selling their property.

In the wider north east Victoria, ‘new’ landscapes (reduced dependence on agriculture) are more apparent and advanced in LGAs closer to Melbourne (e.g. Mitchell and Murrindindi shires) and in LGAs closer to other major regional centres (e.g. Indigo shire). Notwithstanding this emergence, agriculture can still remain an important economic sector within these LGAs and the aesthetics of a ‘farming’ landscape are central to this demographic shift.

North east Victoria was contrasted with the Green Triangle — a region with high forestry activity and investment in new plantations, yet similar agronomic industries. The demographics of these two regions reveal that largely Towong shire was the one LGA in north east Victoria that most closely reflected the demographics of the LGAs in the Green Triangle. By contrasting these two regions, the critical social and commercial attributes for viable farming and forestry became more apparent.

### 7.2 Role and perceptions of plantation forestry in north east Victoria

While the forestry sector is expanding plantations rapidly in the Green Triangle and in southern New South Wales to a lesser extent, it is notably inactive in north east Victoria. This disparity is heightened given the large area of agricultural land in north east Victoria considered to be ‘suitable’ for a significantly larger plantation estate. Forest industry informants reported that the main barrier to their investment in the region was the onerous and restrictive planning environment, compared to that operating in southern New South Wales.

There is a strong perception that the growing of plantations without associated processing only has a negative impact on local communities. There is a fear that investment in plantation forestry in the Towong shire will only translate to the growing of forests — not processing. Consistent with this community view is the view of industry informants who indicated that while Towong shire is a desirable area for growing forests, there is unlikely to be any significant investment in processing in the shire given the economies of scale now required and the concentration of processing at existing facilities outside the shire (e.g. Tumut, Tumbarumba and Wangaratta).
The perception of forestry is also influenced by the nature of farming in north east Victoria largely undertaken by family-based businesses, whereas forestry is mostly undertaken by large corporate entities with little local ‘ownership’. While managed investment schemes (the dominant source of investment in new plantations) are bringing substantial funds into regional areas (southern New South Wales, Green Triangle), there remains negative views of this approach to forestry due to their perceived advantage in purchasing farmland over agriculture.

Of the limited first-hand experience of landholders with small-scale commercial forests in the Towong shire, the commercial prospects have failed to meet their initial expectations — the major challenge has been profitable marketing of small and irregular parcels of wood to large processors. This experience is mirrored for many small-scale growers in other regions.

7.3 Opportunities for plantation forestry in north east Victoria

Under current and proposed planning requirements of the Towong shire (e.g. forestry discouraged in the Farming Zone), plantation forestry as currently practised is unlikely to have much scope for expansion. However, changes in Towong shire’s planning requirements may be emerging (e.g. shire’s interest in diversifying its primary industries), in part prompted by the implications of the shire’s population reaching a ‘social tipping point’. Whilst there are pronounced demographic and agricultural changes in Towong shire, agriculture remains the dominant source of employment and land use. In contrast, in neighbouring Indigo shire, indicators suggest that a new social landscape has emerged. In Towong, the social context to plantation forestry appears to have changed since the 1980s, in that there is now a greater divergence of views of the merit and role of plantation forestry. However, whilst there is a perception amongst plantation companies that plantation forestry is not a preferred land use in the Towong shire, the forest industry is likely to focus its expansion activities in other regions where the planning environment is relatively supportive of their activities.

Given the experience of the Upper Murray Pine Marketing Group, it is unlikely that farm forestry (independently-owned and managed farm forestry plantations) will expand in the north east region in the current context of the forest industry.
Indeed, a more likely scenario is that the area of farm forestry independently established by landholders will contract.

A new approach to commercial forestry, such as flexible leasing partnerships, may significantly alter the perceptions of forestry amongst the wider community, and their willingness to be involved. Already, nine forestry partnerships operate in the Murray Valley. A summary of these and selected forestry partnerships with similarities elsewhere in Australia is presented at Appendix 16. However, given the experience in the Green Triangle, forestry partnerships may not be the only strategy needed for a vibrant and expanding forestry sector in north east Victoria.

Coupled with the emergence of flexible partnerships, is the shift in thinking by corporate forest growers to develop a stronger relationship with the local community as recognition of the wider community’s ability to grant the forestry sector its ‘social licence’ to operate. The achievement of the social licence to operate is complex and varied, a challenge that is still being understood by the wider forestry sector.
References

AAG - see Australian Agribusiness Group.
ABARE — see Australian Bureau of Agricultural and Resource Economics.
ABS — see Australian Bureau of Statistics.


BRS — see Bureau of Rural Sciences.


CIE — see Centre for International Economics.


CSIRO — see Commonwealth Scientific and Industrial Research Organisation.


DAFF — see Department of Agriculture, Fisheries and Forestry.

DNRE — see Department of Natural Resources and Environment.
DPI — see Department of Primary Industries.
DPIE — see Department of Primary Industries and Energy.
DSE — see Department of Sustainability and Environment.


LCC - see Land Conservation Council.

LCRDB — see Limestone Coast Regional Development Board.


NFI — see National Forest Inventory.


PNE- see Plantations North East.


SCH — see Statistical Clearing House.


SPIS — see State Plantations Impact Study.


TRDC — see The Regional Development Company.

TSC — see Towong Shire Council.


Abbreviations and Glossary

Abbreviations

ABS  Australian Bureau of Statistics
LGA  Local Government Area
PNE  Plantations North East Inc.
SLA  Statistical Local Area

Glossary

Agricultural establishment
The smallest accounting unit of business at a physical location in the agriculture sector. It may consist of a group of locations provided they are in the same shire, but the majority of establishments operate at one location only. In most cases an agricultural establishment is the same as a farm (ABS 2005d).

Census
The Australian Census of Population and Housing is an official count of population and dwellings, and collects details of age, sex, and other characteristics of that population. The 2006 Census is the 15th national Census for Australia. Census statistics are used as the basis for estimating the population at the national, state and local government levels. Since 1961, a Census has been held every five years (ABS 2006j). The first data from the 2006 Census was released on 27 June 2007. Further data will be released in subsequent months.

Estimated value of agricultural operations (EVAO)
An estimation of the agricultural activity of an agricultural establishment. Three-year average weighted prices are applied to livestock turn-off and livestock numbers on the farm, and to area and production data for crops. The aggregation of these commodity values is the estimated value of agricultural operations. It is not an indicator of the value of receipts of individual farms, but an indicator of the extent of agricultural activity (ABS 2005d). Caution needs to
be applied when comparing figures across census or survey periods because they have not been adjusted for inflation or changes in commodity prices.

**Green Triangle region**

The Green Triangle region is one of 15 National Plantation Inventory regions that comprise the national plantation estate. The 15 regions were identified as best representing economic wood supply zones. The Green Triangle region straddles the border of south east South Australia and south west Victoria, and extends from Robe and Naracoorte in South Australia to east of Hamilton in Victoria. It has been a major softwood plantation region since the early 20th century. Blue Gum plantation development started on a large scale in the late 1990s. At the end of 2005, the region had 298,835 hectares of plantations — 17 per cent of the national estate (Wood et al. 2001, pp. 8, 59; Parsons, Gavran & Davidson 2006, pp. 9, 29.)

**Land capability**

Identification of land where the biophysical growth requirements of a particular tree species are satisfied for a given management regime. It normally aims to classify land on growth potential according to such site factors as climate, soils and topography (Stephens, Sun & Tickle 1998, pp. 5-6).

**Land suitability**

Involves the integration of biophysical factors and social and economic factors affecting the fitness of land for plantations. Land having the same capability may have different suitability because of such factors as land price, distance to market or other preferred uses (Stephens, Sun & Tickle 1998, pp. 5-6).

**Land availability**

The area of suitable land ultimately available for plantation development. To assess the availability of land, it is necessary to gauge the willingness of landholders to plant trees themselves, or make their land available to government and/or industry through outright sale or joint venture for plantation development (Stephens, Sun & Tickle 1998, pp. 5-6).

**Local Government Area (LGA)**

A Local Government Area (LGA) is a geographical area under the responsibility of an incorporated local government council. Types of LGAs in states of Australia include: Cities and Areas in New South Wales; Cities, Rural Cities, Boroughs and
Murray Valley region
The Murray Valley region is one of 15 National Plantation Inventory regions that comprise the national plantation estate. The 15 regions were identified as best representing economic wood supply zones. The Murray Valley region extends from Melbourne in southern Victoria to Gundagai in southern New South Wales, including the foothills of the Great Dividing Range and the south-west slopes of New South Wales. The boundary of the region was extended in 2006 to include agricultural irrigation regions of northern Victoria. At the end of 2005, the region had 184 602 hectares of plantations — 11 per cent of the national estate (Wood et al. 2001, pp. 8, 85; Parsons, Gavran & Davidson 2006, pp. 9, 43.)

Planning scheme
The planning scheme controls land use and development within a municipality. It contains State and local planning policies, zones and overlays and other provisions that affect how land can be used and developed. The planning scheme will indicate if a planning permit is required to change the use of land, or to construct a building or make other changes to the land. Every municipality has its own planning scheme.

Population
The census enumerates people where they were located on census night. Most standard census variables are based on this enumerated population. It includes temporary visitors and excludes residents who were absent on census night (ABS 2001b, p. 177). The population statistics presented in this report are based on the enumerated population in SLAs.

Rural balance
A geographical area defined by the Department of Sustainability and Environment, Victoria which, when aggregated, covers an entire Local Government Area except for urban centres and localities (UC/Ls). The UC/Ls are generally defined as population clusters of 200 or more people and composed of one or more whole Census Collection Districts (Department of Sustainability and Environment 2006, pp. 6-7).
**Statistical Local Area (SLA)**
A Statistical Local Area (SLA) is a spatial unit in the hierarchically structured Australian Standard Geographical Classification (ASGC). A SLA consists of one or more Census Collection Districts — the smallest geographic area defined in the ASGC. In turn, SLAs are Local Government Areas, or parts thereof (ABS 2001b, pp. 172, 183, 255).

**Towong shire**
The Towong shire is a municipal council which is the authority responsible for administering the Towong planning scheme that applies to the Towong Local Government Area.
Appendices

Appendix 1  Towong shire exhibited amendment C14 zones
Appendix 2  Interview guides for respondents from stakeholder groups

Respondent: Farmer

1. What are the benefits and disadvantages of living and farming here?
   • You personally?
   • For you family?
   • For the farm business?
   • Is it meeting your expectations?

2. What are your plans for your property over the next 3-5 years, and your longer term plans (i.e. >10 years)?
   • Diversify the farming business?
   • Become specialised?
   • Buy or lease more property?
   • Sub-divide the property?
   • Pass to next generation /sell?

3. To what extent do you think there has been a fundamental shift in the role and importance of agriculture in this district?
   • What are the signs / indicators?
   • What do you think is driving these changes?
   • What are the impacts for you?
   • In your local community, who do you think is benefiting / being disadvantaged by these changes?
   • What impacts are occurring at the community level?

4. Have you considered investing in forestry?
   • Why (might have off-farm investment) / why not?
   • What aspects of forestry appeal to you, what aspects concern you?
   • What aspects of forestry would need to change for you to be interested?
   • To what extent do you think plantation forestry is meeting community expectations in your district?
1. What are the benefits and disadvantages of living and farming here?
   • You personally?
   • For you family?
   • For the farm business?
   • Is it meeting your expectations?

2. What are your plans for your property over the next 3-5 years, and your longer term plans (i.e. >10 years)?
   • Diversify the farming business?
   • Become specialised?
   • Buy or lease more property?
   • Sub-divide the property?
   • Pass to next generation /sell?

3. To what extent do you think there has been a fundamental shift in the role and importance of agriculture in this district?
   • What are the signs / indicators?
   • What do you think is driving these changes?
   • What are the impacts for you?
   • In your local community, who do you think is benefiting / being disadvantaged by these changes?
   • What impacts are occurring at the community level?

4. [As applicable] What have been the benefits and disadvantages of your forestry partnership?
   • To what extent was the negotiation process fair and equitable?
   • On reflection, are you still satisfied with the terms and conditions of the partnership agreement?
   • Are you satisfied with the way your forestry partner has performed?
   • Overall, has this been a good approach to commercial forestry (financial return, impact on farm management, impact on land value)?
   • Would you like to renew the partnership? If so, under what terms and conditions? If not, why; and what will you do with the land?

5. What are your plans for forestry over the next 3-5 years, and your longer term plans (i.e. >10 years)?
   • Expand the area of forestry
   • Invest in silviculture?
   • Carry out harvesting?
   • Main factors driving these decisions?

6. What is your view about the role and importance of PNE regarding development of plantation forests and the forestry industry in north east Victoria?
<table>
<thead>
<tr>
<th>Question</th>
<th>Forestry company</th>
<th>Processing company</th>
</tr>
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| 1. What are the key attributes of the regions where you are investing in new plantations? | • Land availability, quality and price?  
• Proximity to domestic and export markets?  
• Local government planning policies? | 1. The attributes of the region that are important for the business of your company? |
| 2. To what extent do you think there has been a fundamental shift in the role and importance of agriculture and forestry in these regions? | • What are the signs / indicators?  
• What do you think is driving these changes?  
• What are the impacts for your business now and in the future?  
• Do you think forestry is just competing with agriculture for land, or is it competing with other interests? | 2. The plans of your company for expansion of processing capacity over the next 3-5 years, and the longer term plans? |
| 3. What are the plans of your company for plantation expansion over the next 3-5 years, and your longer term plans (i.e. >10 years)? | • Rate of expansion planned to increase / decrease?  
• Move to new regions; change the business model?  
• Main factors driving these decisions?  
• Impacts of your plans on other companies / wider forestry sector? | 3. The benefits and disadvantages of forestry partnerships to the business of your company? |
| 4. What have been the benefits and disadvantages of your forestry partnership? | • To what extent is your company seeking forestry partnerships?  
• To what extent is the negotiation process fair and equitable?  
• On reflection, are you still satisfied with the terms and conditions of the partnership agreement?  
• Are you satisfied with the way your forestry partners have performed?  
• Overall, has this been a good approach to commercial forestry (use of capital, performance of the tree crops, financial return, community benefits)?  
• Would you like to renew existing partnerships and increase the role of partnerships in commercial wood production? If so, under what terms and conditions? If not, why? | 4. The importance of plantation policies (e.g. Plantations 2020) to your business? |
| 5. To what extent is Plantations 2020 important to your business? | • Broad policy is endorsed; goals of Plantations 2020 are achievable?  
• Policy underpins growth of your business? | 5. To what extent is Plantations 2020 important to your business? |
| 6. What is your view about the role and importance of PNE regarding development of plantation forests and the forestry industry in north east Victoria? | 6. What is your view about the role and importance of PNE regarding development of plantation forests and the forestry industry in north east Victoria? | 7. To what extent is plantation forestry meeting community expectations in your region? What are your views about forest certification (FSC, AFS)? |
| 7. To what extent is plantation forestry meeting community expectations in your region? What are your views about forest certification (FSC, AFS)? | |
1. To what extent do you think there has been a fundamental shift in the role and importance of agriculture in this district?
   - What are the signs / indicators?
   - What do you think is driving these changes?
   - What are the impacts for council as a governing body?
   - In your local community, who do you think is benefiting / being disadvantaged by these changes?
   - What are the impacts for your job?

2. How does your council view the expansion of plantation forestry on agricultural land?
   - To what extent does your council support expansion of plantations in your shire?
   - Is your council planning to increase / decrease the regulation of plantation forestry?
   - How does the approach of neighbouring councils to plantation forestry affect the way your council approaches this land use (i.e. regional approach)?
   - How does your council view the role of managed investment schemes in plantation expansion?

3. How does your council view plantation forestry as a land use?
   - Does council have a single view of forestry?
   - To what extent is plantation forestry meeting community expectations in your shire?
   - Does your council have concerns about plantation forestry? If so, what?
   - What impact does conversion of agricultural land to plantations have on the value of the land and on the value of surrounding land?
   - Does council distinguish plantation forestry from farm forestry and agroforestry? If so, how does council treat these land uses differently?
   - How important does your council regard the code of forest practices to be in delivering good environmental outcomes for plantation forestry?
   - Does council audit compliance of plantation forestry companies with the code of forest practices?

4. What is council awareness of state and federal policies and initiatives regarding expansion of plantations?
   - Plantations 2020 vision
   - Victorian government private forestry strategy
   - Plantations North East strategy?
   - To what extent were you consulted in the development of these policies?
   - To what extent do you endorse these policies?

5. What is your view about the role and importance of PNE regarding development of plantation forests and the forestry industry in north east Victoria?
### Respondent: State agency

1. To what extent do you think there has been a fundamental shift in the role and importance of agriculture in this region?
   - What are the signs / indicators?
   - What do you think is driving these changes?
   - In your local community, who do you think is benefiting / being disadvantaged by these changes?
   - What are the impacts for your job?

2. How do you view plantation forestry as a land use?
   - To what extent is plantation forestry meeting community expectations in your region?
   - Do you have concerns about plantation forestry? If so, what?
   - What impact does conversion of agricultural land to plantations have on the value of the land and on the value of surrounding land?
   - How important do you regard the code of forest practices to be in delivering good environmental outcomes for plantation forestry?

3. What is your approach to implementing the 2005 Plantation Incentives Strategy (PIS)?
   - How is the PIS being accepted within your region?
   - How could your agency’s approach be improved for your region?

4. What is your view of the importance of managed investment schemes in plantation expansion?

5. To what extent do you believe that partnership agreements have a role in the expansion of commercial wood production?

6. What is your view about the role and importance of PNE regarding development of plantation forests and the forestry industry in north east Victoria?

### Agricultural agency

1. Benefits and disadvantages of livestock farming in the region?
2. Changes in the role and importance of agriculture in the region?
3. Your perception of plantation forestry as a land use?
### Respondent: Catchment management authority

1. To what extent do you think there has been a fundamental shift in the role and importance of agriculture in this district?
   - What are the signs / indicators?
   - What do you think is driving these changes?
   - What are the impacts for your authority as a governing body?
   - In your local community, who do you think is benefiting / being disadvantaged by these changes?

2. How does your authority view the expansion of plantation forestry on agricultural land?
   - To what extent does your authority support expansion of plantations in your CMA?
   - Is your authority planning to increase / decrease the regulation of plantation forestry?
   - How does the approach of neighbouring CMAs to plantation forestry affect the way your authority approaches this land use (i.e. regional approach)?
   - How does your authority view the role of managed investment schemes in plantation expansion?

3. How does your authority view plantation forestry as a land use?
   - Does the CMA have a single view of forestry?
   - To what extent is plantation forestry meeting community expectations in your CMA?
   - Does your CMA have concerns about plantation forestry? If so, what?
   - What impact does conversion of agricultural land to plantations have on the value of the land and on the value of surrounding land?
   - Does your authority distinguish plantation forestry from farm forestry and agroforestry? If so, how does council treat these land uses differently?
   - How important does your authority regard the code of forest practices to be in delivering good environmental outcomes for plantation forestry?

4. What is your authority’s awareness of state and federal policies and initiatives regarding expansion of plantations?
   - Plantations 2020 vision
   - Victorian government private forestry strategy
   - Plantations North East strategy?
   - To what extent were you consulted in the development of these policies?
   - To what extent do you endorse these policies?

5. What is your view about the role and importance of PNE regarding development of plantation forests and the forestry industry in north east Victoria?
**Respondent: Regional forestry group**

1. To what extent do you think there has been a fundamental shift in the role and importance of agriculture in this region?
   - What are the signs / indicators?
   - What do you think is driving these changes?
   - In your local community, who do you think is benefiting / being disadvantaged by these changes?
   - What are the impacts for your job?

2. How do you view plantation forestry as a land use?
   - How do you respond to the notion that plantations are ‘just another agricultural crop’?
   - To what extent is plantation forestry meeting community expectations in your region?
   - Do you have concerns about plantation forestry? If so, what?
   - What impact does conversion of agricultural land to plantations have on the value of the land and on the value of surrounding land?
   - How important do your regard the code of forest practices to be in delivering good environmental outcomes for plantation forestry?

3. To what extent is ‘Plantations 2020’ important to plantation expansion?
   - Broad policy is endorsed?
   - Goals of Plantations 2020 are achievable?
   - Policy underpins growth of your business?

4. What is your approach to implementing plantation policies?
   - Plantations 2020 Vision?
   - The 2005 Plantation Incentives Strategy (PIS)?
   - How are these policies being accepted within your region?
   - How could your group’s approach be improved for your region?

5. What is your view of the importance of managed investment schemes in plantation expansion?

6. To what extent do you believe that partnership agreements have a role in the expansion of commercial wood production?
Respondent: Agribusiness professional

1. To what extent do you think there has been a fundamental shift in the role and importance of agriculture in Victoria / your region?
   - What are the signs / indicators?
   - What do you think is driving these changes?
   - In rural communities, who do you think is benefiting / being disadvantaged by these changes?
   - What are the impacts for your job?

2. What are the characteristics of people coming into the region?
   - Who is coming?
   - What are they looking for?
   - What prices are they paying?
   - What employment / skills are they coming with?
   - What are their values and how are they expressed?
   - Are they having an influence on the values of long-term landholders?
   - Who is going?

3. How do you view plantation forestry as a land use?
   - How do you respond to the notion that plantations are ‘just another agricultural crop’?
   - To what extent is plantation forestry meeting community expectations at a metropolitan level / regional level?
   - Do you have concerns about plantation forestry? If so, what?
   - What impact does conversion of agricultural land to plantations have on the value of the land and on the value of surrounding land?
   - What impacts does plantation expansion have for other agribusiness?

4. What is your awareness of state and federal policies and initiatives regarding expansion of plantations?
   - Plantations 2020 vision
   - Victorian government private forestry strategy
   - To what extent do you endorse these policies?

5. What is your view of the importance of managed investment schemes in plantation expansion and agribusiness investment?
   - To what extent are they a good investment?
   - How do they compare with other investment models?
## Appendix 3  Total population in the Murray Valley region, the Green Triangle region and the Towong shire over the period 1991–2001

<table>
<thead>
<tr>
<th>Region</th>
<th>1991</th>
<th>1996</th>
<th>2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murray Valley region&lt;sup&gt;a&lt;/sup&gt;</td>
<td>301 154</td>
<td>310 536</td>
<td>317 285 (5.4%)&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Towong shire</td>
<td>6 491</td>
<td>6 122</td>
<td>5 972  (~8.0%)</td>
</tr>
<tr>
<td>Green Triangle region&lt;sup&gt;b&lt;/sup&gt;</td>
<td>116 698</td>
<td>114 106</td>
<td>113 309 (~2.9%)</td>
</tr>
</tbody>
</table>

**Source:** ABS (2003a).

<sup>a</sup> Region as defined in the National Plantation Inventory (Wood et al. 2001, p. 84), which concords approximately with 31 Statistical Local Areas at the 2001 census (20 in Victoria and 11 in New South Wales).

<sup>b</sup> Region as defined in the National Plantation Inventory (Wood et al. 2001, p. 58), which concords approximately with 17 Statistical Local Areas at the 2001 census (9 in Victoria and 8 in South Australia).

<sup>c</sup> Per cent change from 1991-2001 indicated in parenthesis.

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Social dimensions of plantation expansion in north east Victoria 156
## Appendix 5  Rural balance population in Local Government Areas (LGAs) in the Murray Valley and Green Triangle, 1981-2001

<table>
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<tr>
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<tr>
<td>Alpine</td>
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<td>7 338</td>
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<td>79%</td>
</tr>
<tr>
<td>47%</td>
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<td>57%</td>
<td>60%</td>
<td>58%</td>
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<td></td>
</tr>
<tr>
<td>Benalla(^b)</td>
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<td>4 156</td>
<td>4 490</td>
<td>4 749</td>
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<td>33%</td>
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<td>30%</td>
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<td>36%</td>
<td>35%</td>
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</tr>
<tr>
<td>Indigo</td>
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<td>4 972</td>
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<td>5 987</td>
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</tr>
<tr>
<td>39%</td>
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<td>41%</td>
<td>42%</td>
<td>43%</td>
<td></td>
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</tr>
<tr>
<td>Mansfield(^b)</td>
<td>2 980</td>
<td>4 391</td>
<td>6 293</td>
<td>6 636</td>
<td>5 523</td>
<td>85%</td>
</tr>
<tr>
<td>61%</td>
<td>68%</td>
<td>74%</td>
<td>72%</td>
<td>65%</td>
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</tr>
<tr>
<td>Mitchell</td>
<td>6 576</td>
<td>7 720</td>
<td>9 469</td>
<td>8 969</td>
<td>8 751</td>
<td>33%</td>
</tr>
<tr>
<td>36%</td>
<td>37%</td>
<td>39%</td>
<td>36%</td>
<td>32%</td>
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<td></td>
</tr>
<tr>
<td>Murrindindi</td>
<td>5 088</td>
<td>6 427</td>
<td>7 064</td>
<td>7 469</td>
<td>6 027</td>
<td>18%</td>
</tr>
<tr>
<td>53%</td>
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<td>58%</td>
<td>60%</td>
<td>46%</td>
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</tr>
<tr>
<td>Strathbogie</td>
<td>3 114</td>
<td>3 234</td>
<td>3 588</td>
<td>3 636</td>
<td>3 905</td>
<td>25%</td>
</tr>
<tr>
<td>40%</td>
<td>40%</td>
<td>41%</td>
<td>41%</td>
<td>43%</td>
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<td></td>
</tr>
<tr>
<td>Towong</td>
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<td>3 460</td>
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<td>57%</td>
<td>57%</td>
<td>57%</td>
<td>57%</td>
<td>54%</td>
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</tr>
<tr>
<td>Wangaratta</td>
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<td>8 238</td>
<td>8 706</td>
<td>8 756</td>
<td>8 100</td>
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<tr>
<td>31%</td>
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<td>34%</td>
<td>35%</td>
<td>32%</td>
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</tr>
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<td>1 900</td>
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<td>10%</td>
<td>6%</td>
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<tr>
<td><strong>Green Triangle – Victorian part</strong></td>
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<td>Glenelg</td>
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<td>7 062</td>
<td>6 823</td>
<td>6 725</td>
<td>6 171</td>
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<td>33%</td>
<td>33%</td>
<td>33%</td>
<td>34%</td>
<td>32%</td>
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</tr>
<tr>
<td>Moyne</td>
<td>11 277</td>
<td>10 678</td>
<td>10 684</td>
<td>10 300</td>
<td>9 791</td>
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</tr>
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<td>67%</td>
<td>65%</td>
<td>65%</td>
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</tr>
<tr>
<td>Southern Grampians</td>
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<td>5 617</td>
<td>5 553</td>
<td>5 264</td>
<td>4 901</td>
<td>-18%</td>
</tr>
<tr>
<td>32%</td>
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<td>31%</td>
<td>31%</td>
<td>30%</td>
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</tr>
<tr>
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<td>3 381</td>
<td>3 090</td>
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<td>2 514</td>
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<td>59%</td>
<td>57%</td>
<td>55%</td>
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</tr>
</tbody>
</table>

**Source:** Department of Sustainability and Environment 2006.

\(^a\) Rural balance population as a proportion of the total population.

\(^b\) The Mansfield shire was amalgamated with the city and shire of Benalla on 18 November 1994 to form the Delatite shire. The Delatite shire was de-amalgamated on 28 October 2002 to the Benalla rural city and the Mansfield shire.
Appendix 6  Persons employed in agriculture, forestry and fishing as a proportion of all persons employed in 2001 in the Murray Valley and Green Triangle regions

Persons employed in agriculture, forestry and fishing as a proportion of all persons employed in 2001

Social dimensions of plantation expansion in north east Victoria
### Appendix 7  Rural balance population employed in the agriculture, forestry and fishing industries in Local Government Areas (LGAs) in the Murray Valley and Green Triangle, 1981-2001

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<tr>
<td>Alpine</td>
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<td>751</td>
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<td>678</td>
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<tr>
<td></td>
<td>34%a</td>
<td>20%</td>
<td>12%</td>
<td>11%</td>
<td>11%</td>
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</tr>
<tr>
<td>Benalla</td>
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<td>591</td>
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</tr>
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<tr>
<td></td>
<td>50%</td>
<td>38%</td>
<td>31%</td>
<td>28%</td>
<td>24%</td>
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<tr>
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<td>616</td>
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<td></td>
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<tr>
<td></td>
<td>43%</td>
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<td>26%</td>
<td>24%</td>
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<td>333</td>
<td>300</td>
<td>295</td>
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</tr>
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<td>21%</td>
<td>21%</td>
<td>22%</td>
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</tr>
<tr>
<td>Strathbogie</td>
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<td>830</td>
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<td>669</td>
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<td>52%</td>
<td>45%</td>
<td>42%</td>
<td>39%</td>
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<tr>
<td>Towong</td>
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<td>54%</td>
<td>52%</td>
<td>47%</td>
<td>46%</td>
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</tr>
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<td>36%</td>
<td>30%</td>
<td>24%</td>
<td>26%</td>
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</tr>
<tr>
<td>Wodonga</td>
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<td>133</td>
<td>116</td>
<td>76</td>
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<td>9%</td>
<td>7%</td>
<td>5%</td>
<td>9%</td>
<td></td>
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<tr>
<td><strong>Green Triangle – Victorian part</strong></td>
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<tr>
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<td>59%</td>
<td>45%</td>
<td>41%</td>
<td>40%</td>
<td>39%</td>
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</tr>
<tr>
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<td>-30%</td>
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<tr>
<td></td>
<td>68%</td>
<td>61%</td>
<td>55%</td>
<td>53%</td>
<td>51%</td>
<td></td>
</tr>
<tr>
<td>Southern Grampians</td>
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<td>1 913</td>
<td>1 660</td>
<td>1 518</td>
<td>1 349</td>
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<td></td>
</tr>
<tr>
<td></td>
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<td>66%</td>
<td>60%</td>
<td>56%</td>
<td>51%</td>
<td></td>
</tr>
<tr>
<td>West Wimmera</td>
<td>1 723</td>
<td>1 442</td>
<td>1 106</td>
<td>1 037</td>
<td>954</td>
<td>-45%</td>
</tr>
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<tr>
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<td>84%</td>
<td>81%</td>
<td>72%</td>
<td>73%</td>
<td>67%</td>
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</tr>
</tbody>
</table>

**Source:** Department of Sustainability and Environment 2006.

- **a** Rural balance population employed in agriculture, forestry and fishing as a proportion of the total employed persons in the rural balance population.
- **b** The Mansfield shire was amalgamated with the city and shire of Benalla on 18 November 1994 to form the Delatite shire. The Delatite shire was de-amalgamated on 28 October 2002 to the Benalla rural city and the Mansfield shire.
Appendix 8 Change in the number, area and average size of agricultural establishments in Local Government Areas (LGAs) in the Murray Valley and Green Triangle, 1997-2001

<table>
<thead>
<tr>
<th>LGA</th>
<th>Change in number</th>
<th>Change in area (hectares)</th>
<th>Change in average size (hectares)</th>
</tr>
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<td><strong>Murray Valley – Victorian part</strong></td>
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</tr>
<tr>
<td>Alpine</td>
<td>42</td>
<td>18 385</td>
<td>12</td>
</tr>
<tr>
<td>Delatite</td>
<td>-37</td>
<td>6 974</td>
<td>27</td>
</tr>
<tr>
<td>Indigo</td>
<td>-42</td>
<td>-7 224</td>
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</tr>
<tr>
<td>Mitchell</td>
<td>-34</td>
<td>-18 915</td>
<td>-7</td>
</tr>
<tr>
<td>Murrindindi</td>
<td>8</td>
<td>-363</td>
<td>-5</td>
</tr>
<tr>
<td>Strathbogie</td>
<td>-33</td>
<td>-3 787</td>
<td>14</td>
</tr>
<tr>
<td>Towong</td>
<td>-32</td>
<td>-5 167</td>
<td>17</td>
</tr>
<tr>
<td>Wangaratta</td>
<td>3</td>
<td>13 481</td>
<td>15</td>
</tr>
<tr>
<td>Wodonga</td>
<td>-7</td>
<td>-1 392</td>
<td>4</td>
</tr>
<tr>
<td>All LGAS</td>
<td>-132</td>
<td>1 991</td>
<td>n.c*</td>
</tr>
<tr>
<td><strong>Green Triangle – Victorian part</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glenelg</td>
<td>-150</td>
<td>-18 029</td>
<td>38</td>
</tr>
<tr>
<td>Moyne</td>
<td>-166</td>
<td>-26 614</td>
<td>19</td>
</tr>
<tr>
<td>Southern Grampians</td>
<td>-36</td>
<td>17 506</td>
<td>33</td>
</tr>
<tr>
<td>West Wimmera</td>
<td>-89</td>
<td>-47 718</td>
<td>35</td>
</tr>
<tr>
<td>All LGAs</td>
<td>-441</td>
<td>-74 855</td>
<td>n.c</td>
</tr>
</tbody>
</table>

*Source: ABS (2006h, 2007a).*

*Not calculated.*
## Appendix 9 Proportion of agricultural establishments in five size classes in 2001 and 2005

<table>
<thead>
<tr>
<th>Spatial unit</th>
<th>&lt;50 ha</th>
<th>50-499 ha</th>
<th>500-999 ha</th>
<th>1 000 – 2 500 ha</th>
<th>&gt;2 500 ha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ovens-Murray</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>19%</td>
<td>71%</td>
<td>8%</td>
<td>2%</td>
<td>0%</td>
</tr>
<tr>
<td>2005</td>
<td>19%</td>
<td>67%</td>
<td>10%</td>
<td>3%</td>
<td>0%</td>
</tr>
<tr>
<td>Western District</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>8%</td>
<td>74%</td>
<td>12%</td>
<td>5%</td>
<td>1%</td>
</tr>
<tr>
<td>2005</td>
<td>7%</td>
<td>69%</td>
<td>15%</td>
<td>8%</td>
<td>1%</td>
</tr>
</tbody>
</table>

*Source: ABS (2007a).*

*a Statistical Division.*
## Appendix 10 Proportion of farms with nominated enterprises in the Towong shire, Murray Valley and Green Triangle, 1997, 2001 and 2005

<table>
<thead>
<tr>
<th>Spatial unit</th>
<th>Year</th>
<th>Beef</th>
<th>Dairy</th>
<th>Sheep</th>
<th>Wheat - other crops</th>
<th>Sheep - beef</th>
<th>Mixed livestock - crops</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Towong Part A SLA</td>
<td>1997</td>
<td>54.1%</td>
<td>25.5%</td>
<td>2.2%</td>
<td>0.0%</td>
<td>15.4%</td>
<td>0.1%</td>
<td>2.7%</td>
</tr>
<tr>
<td></td>
<td>2001</td>
<td>60.9%</td>
<td>20.3%</td>
<td>1.0%</td>
<td>0.0%</td>
<td>15.3%</td>
<td>0.0%</td>
<td>2.5%</td>
</tr>
<tr>
<td></td>
<td>2005</td>
<td>59.2%</td>
<td>21.1%</td>
<td>2.7%</td>
<td>0.0%</td>
<td>15.5%</td>
<td>0.0%</td>
<td>1.5%</td>
</tr>
<tr>
<td>Towong Part B SLA</td>
<td>1997</td>
<td>57.2%</td>
<td>27.9%</td>
<td>1.1%</td>
<td>0.0%</td>
<td>11.3%</td>
<td>0.0%</td>
<td>2.5%</td>
</tr>
<tr>
<td></td>
<td>2001</td>
<td>61.2%</td>
<td>28.1%</td>
<td>2.5%</td>
<td>0.0%</td>
<td>7.1%</td>
<td>0.0%</td>
<td>1.1%</td>
</tr>
<tr>
<td></td>
<td>2005</td>
<td>61.4%</td>
<td>25.7%</td>
<td>2.9%</td>
<td>0.0%</td>
<td>9.3%</td>
<td>0.0%</td>
<td>0.7%</td>
</tr>
<tr>
<td>Towong LGA</td>
<td>1997</td>
<td>55.9%</td>
<td>26.8%</td>
<td>1.6%</td>
<td>0.0%</td>
<td>13.1%</td>
<td>0.0%</td>
<td>2.6%</td>
</tr>
<tr>
<td></td>
<td>2001</td>
<td>61.1%</td>
<td>24.8%</td>
<td>1.9%</td>
<td>0.0%</td>
<td>10.6%</td>
<td>0.0%</td>
<td>1.7%</td>
</tr>
<tr>
<td></td>
<td>2005</td>
<td>60.4%</td>
<td>23.7%</td>
<td>2.8%</td>
<td>0.0%</td>
<td>12.0%</td>
<td>0.0%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Murray Valley</td>
<td>1997</td>
<td>33.2%</td>
<td>9.6%</td>
<td>13.0%</td>
<td>3.0%</td>
<td>15.3%</td>
<td>13.2%</td>
<td>12.6%</td>
</tr>
<tr>
<td></td>
<td>2001</td>
<td>36.7%</td>
<td>8.7%</td>
<td>13.1%</td>
<td>3.8%</td>
<td>14.6%</td>
<td>10.3%</td>
<td>12.8%</td>
</tr>
<tr>
<td></td>
<td>2005</td>
<td>35.0%</td>
<td>7.7%</td>
<td>14.7%</td>
<td>2.8%</td>
<td>13.4%</td>
<td>12.4%</td>
<td>14.0%</td>
</tr>
<tr>
<td>Green Triangle</td>
<td>1997</td>
<td>16.4%</td>
<td>13.3%</td>
<td>28.7%</td>
<td>3.5%</td>
<td>21.2%</td>
<td>10.7%</td>
<td>6.1%</td>
</tr>
<tr>
<td></td>
<td>2001</td>
<td>18.8%</td>
<td>13.3%</td>
<td>25.4%</td>
<td>4.6%</td>
<td>20.1%</td>
<td>10.3%</td>
<td>7.5%</td>
</tr>
<tr>
<td></td>
<td>2005</td>
<td>21.6%</td>
<td>11.0%</td>
<td>24.8%</td>
<td>3.9%</td>
<td>22.7%</td>
<td>9.2%</td>
<td>6.9%</td>
</tr>
</tbody>
</table>

*Source: ABS (2007a).*
### Appendix 11  Change in the estimated value of agricultural operations (EVAO) ($ million), 1997 to 2005

<table>
<thead>
<tr>
<th>Spatial unit</th>
<th>1997</th>
<th>2001</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Towong Part A SLA</td>
<td>19.7</td>
<td>22.6</td>
<td>28.8 (46%)b</td>
</tr>
<tr>
<td>Towong Part B SLA</td>
<td>31.7</td>
<td>39.6</td>
<td>48.8 (54%)</td>
</tr>
<tr>
<td>Towong LGA</td>
<td>51.5</td>
<td>62.2</td>
<td>77.5 (51%)</td>
</tr>
<tr>
<td>Alpine LGA</td>
<td>44.3</td>
<td>42.6</td>
<td>57.8 (30%)</td>
</tr>
<tr>
<td>Indigo LGA</td>
<td>46.0</td>
<td>53.3</td>
<td>67.3 (46%)</td>
</tr>
<tr>
<td>Wangaratta LGA</td>
<td>57.6</td>
<td>85.5</td>
<td>100.0 (74%)</td>
</tr>
<tr>
<td>Wodonga LGA</td>
<td>6.5</td>
<td>8.9</td>
<td>11.1 (71%)</td>
</tr>
<tr>
<td>Murray Valley</td>
<td>897.6</td>
<td>1,109.8</td>
<td>1,394.0 (55%)</td>
</tr>
<tr>
<td>Green Triangle</td>
<td>1,005.8</td>
<td>1,242.8</td>
<td>1,716.4 (71%)</td>
</tr>
</tbody>
</table>

**Source:** ABS (2007a).

* Data is nominal dollars and caution should therefore be exercised in interpreting movements in the EVAO between years as the data reflects price effects.

* Per cent change from 1997-2005 indicated in parenthesis.
### Appendix 12 Estimated value of agricultural operations (EVAO) for farming enterprises expressed as a proportion of total EVAO for all enterprises in 1997, 2001 and 2005

<table>
<thead>
<tr>
<th>Spatial unit</th>
<th>Year</th>
<th>Beef</th>
<th>Dairy</th>
<th>Sheep</th>
<th>Wheat -other crops</th>
<th>Sheep -beef</th>
<th>Mixed livestock-crops</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Towong</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Part A SLA</td>
<td>1997</td>
<td>30.1%</td>
<td>50.4%</td>
<td>2.2%</td>
<td>0.0%</td>
<td>15.3%</td>
<td>0.1%</td>
<td>1.7%</td>
</tr>
<tr>
<td></td>
<td>2001</td>
<td>40.7%</td>
<td>42.3%</td>
<td>0.3%</td>
<td>0.0%</td>
<td>13.2%</td>
<td>0.0%</td>
<td>3.4%</td>
</tr>
<tr>
<td></td>
<td>2005</td>
<td>43.6%</td>
<td>40.7%</td>
<td>1.8%</td>
<td>0.0%</td>
<td>13.4%</td>
<td>0.0%</td>
<td>0.4%</td>
</tr>
<tr>
<td>Towong</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Part B SLA</td>
<td>1997</td>
<td>34.8%</td>
<td>49.4%</td>
<td>0.3%</td>
<td>0.0%</td>
<td>9.9%</td>
<td>0.0%</td>
<td>5.6%</td>
</tr>
<tr>
<td></td>
<td>2001</td>
<td>42.6%</td>
<td>47.8%</td>
<td>1.0%</td>
<td>0.0%</td>
<td>7.3%</td>
<td>0.0%</td>
<td>1.3%</td>
</tr>
<tr>
<td></td>
<td>2005</td>
<td>47.4%</td>
<td>42.6%</td>
<td>1.0%</td>
<td>0.0%</td>
<td>7.9%</td>
<td>0.0%</td>
<td>1.1%</td>
</tr>
<tr>
<td>Towong</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LGA</td>
<td>1997</td>
<td>33.0%</td>
<td>49.8%</td>
<td>1.0%</td>
<td>0.0%</td>
<td>12.0%</td>
<td>0.0%</td>
<td>4.1%</td>
</tr>
<tr>
<td></td>
<td>2001</td>
<td>41.9%</td>
<td>45.8%</td>
<td>0.8%</td>
<td>0.0%</td>
<td>9.4%</td>
<td>0.0%</td>
<td>2.1%</td>
</tr>
<tr>
<td></td>
<td>2005</td>
<td>46.0%</td>
<td>41.9%</td>
<td>1.3%</td>
<td>0.0%</td>
<td>9.9%</td>
<td>0.0%</td>
<td>0.8%</td>
</tr>
<tr>
<td>Murray Valley</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1997</td>
<td>12.8%</td>
<td>15.6%</td>
<td>8.6%</td>
<td>4.1%</td>
<td>11.9%</td>
<td>16.6%</td>
<td>30.4%</td>
</tr>
<tr>
<td></td>
<td>2001</td>
<td>17.4%</td>
<td>14.2%</td>
<td>7.4%</td>
<td>6.5%</td>
<td>12.1%</td>
<td>12.8%</td>
<td>29.6%</td>
</tr>
<tr>
<td></td>
<td>2005</td>
<td>17.2%</td>
<td>13.2%</td>
<td>7.6%</td>
<td>3.6%</td>
<td>12.3%</td>
<td>14.3%</td>
<td>31.8%</td>
</tr>
<tr>
<td>Green Triangle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1997</td>
<td>6.5%</td>
<td>19.4%</td>
<td>21.5%</td>
<td>6.1%</td>
<td>20.2%</td>
<td>11.7%</td>
<td>14.7%</td>
</tr>
<tr>
<td></td>
<td>2001</td>
<td>8.5%</td>
<td>20.7%</td>
<td>16.3%</td>
<td>6.9%</td>
<td>18.1%</td>
<td>10.2%</td>
<td>19.1%</td>
</tr>
<tr>
<td></td>
<td>2005</td>
<td>10.0%</td>
<td>17.0%</td>
<td>19.5%</td>
<td>4.5%</td>
<td>22.0%</td>
<td>9.4%</td>
<td>17.6%</td>
</tr>
</tbody>
</table>

Appendix 13 Economic size of farms measured using the estimated value of agricultural operations (EVAO) in the Towong shire, Murray Valley and Green triangle in 1997, 2001 and 2005

<table>
<thead>
<tr>
<th>Spatial unit</th>
<th>Year</th>
<th>Farm enterprise</th>
<th>Small farm&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Medium farm</th>
<th>Large farm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Towong LGA</td>
<td>1997</td>
<td>Beef</td>
<td>87%</td>
<td>13%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>2001</td>
<td>Beef</td>
<td>70%</td>
<td>25%</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>2005</td>
<td>Beef</td>
<td>48%</td>
<td>52%</td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td>1997</td>
<td>Dairy</td>
<td>44%</td>
<td>50%</td>
<td>6%</td>
</tr>
<tr>
<td></td>
<td>2001</td>
<td>Dairy</td>
<td>28%</td>
<td>65%</td>
<td>8%</td>
</tr>
<tr>
<td></td>
<td>2005</td>
<td>Dairy</td>
<td>16%</td>
<td>78%</td>
<td>6%</td>
</tr>
<tr>
<td></td>
<td>1997</td>
<td>All</td>
<td>61%</td>
<td>34%</td>
<td>4%</td>
</tr>
<tr>
<td></td>
<td>2001</td>
<td>All</td>
<td>49%</td>
<td>43%</td>
<td>8%</td>
</tr>
<tr>
<td></td>
<td>2005</td>
<td>All</td>
<td>33%</td>
<td>64%</td>
<td>3%</td>
</tr>
<tr>
<td>Murray Valley</td>
<td>1997</td>
<td>Beef</td>
<td>84%</td>
<td>12%</td>
<td>4%</td>
</tr>
<tr>
<td></td>
<td>2001</td>
<td>Beef</td>
<td>65%</td>
<td>23%</td>
<td>11%</td>
</tr>
<tr>
<td></td>
<td>2005</td>
<td>Beef</td>
<td>56%</td>
<td>38%</td>
<td>6%</td>
</tr>
<tr>
<td></td>
<td>1997</td>
<td>Dairy</td>
<td>43%</td>
<td>47%</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>2001</td>
<td>Dairy</td>
<td>28%</td>
<td>53%</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>2005</td>
<td>Dairy</td>
<td>15%</td>
<td>57%</td>
<td>28%</td>
</tr>
<tr>
<td></td>
<td>1997</td>
<td>All</td>
<td>45%</td>
<td>29%</td>
<td>26%</td>
</tr>
<tr>
<td></td>
<td>2001</td>
<td>All</td>
<td>39%</td>
<td>29%</td>
<td>31%</td>
</tr>
<tr>
<td></td>
<td>2005</td>
<td>All</td>
<td>29%</td>
<td>36%</td>
<td>36%</td>
</tr>
<tr>
<td>Green Triangle</td>
<td>1997</td>
<td>Beef</td>
<td>64%</td>
<td>18%</td>
<td>18%</td>
</tr>
<tr>
<td></td>
<td>2001</td>
<td>Beef</td>
<td>50%</td>
<td>29%</td>
<td>22%</td>
</tr>
<tr>
<td></td>
<td>2005</td>
<td>Beef</td>
<td>37%</td>
<td>26%</td>
<td>36%</td>
</tr>
<tr>
<td></td>
<td>1997</td>
<td>Dairy</td>
<td>30%</td>
<td>55%</td>
<td>16%</td>
</tr>
<tr>
<td></td>
<td>2001</td>
<td>Dairy</td>
<td>14%</td>
<td>47%</td>
<td>39%</td>
</tr>
<tr>
<td></td>
<td>2005</td>
<td>Dairy</td>
<td>4%</td>
<td>36%</td>
<td>60%</td>
</tr>
<tr>
<td></td>
<td>1997</td>
<td>All</td>
<td>38%</td>
<td>35%</td>
<td>26%</td>
</tr>
<tr>
<td></td>
<td>2001</td>
<td>All</td>
<td>28%</td>
<td>35%</td>
<td>37%</td>
</tr>
<tr>
<td></td>
<td>2005</td>
<td>All</td>
<td>15%</td>
<td>36%</td>
<td>49%</td>
</tr>
</tbody>
</table>


<sup>a</sup>‘Small farm’ = EVAO <$200 000 per year, ‘Medium farm’ = EVAO $200 000 - $500 000 per year, ‘Large farm’ = EVAO >$500 000 per year. Data is nominal dollars and caution should therefore be exercised in interpreting movements in the proportions of enterprises in farm size classes between years as the data reflects price effects.
### Appendix 14  Sales statistics for rural properties 10 hectares or more in size in the Murray Valley during 1995-2005

<table>
<thead>
<tr>
<th>Local Government Area</th>
<th>Year</th>
<th>No. of properties sold</th>
<th>Total area of properties sold (ha)</th>
<th>Median property size (ha)</th>
<th>Median price ($/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpine</td>
<td>1995</td>
<td>10</td>
<td>470</td>
<td>38</td>
<td>3 936</td>
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*Source: Valuer-General Victoria (2006).*
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<td>104</td>
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<td>2005</td>
<td>154</td>
<td>16 938</td>
<td>66</td>
<td>3 962</td>
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</table>


^a Almost half of the sales were between forestry-related companies, with a median sale price of $660 per hectare. The median sale price for all other properties was $4 336 per hectare.
Appendix 16  Summary of selected forestry partnerships operating in Australia

<table>
<thead>
<tr>
<th>Entity</th>
<th>Agreement</th>
<th>Date</th>
<th>Nature of partnership</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm Forestry North East (FFORNE)</td>
<td>Farm Forestry Landowner Agreement</td>
<td>1996</td>
<td>Agreement between DNRE (Victorian government) and landowner</td>
</tr>
<tr>
<td>Department of Primary Industries, Victoria (DPI)</td>
<td>North East Firewood Plantation Project</td>
<td>2004</td>
<td>Agreement between DPI and landholder</td>
</tr>
<tr>
<td>Forestry NSW (State Forests)</td>
<td>Timber Forestry Right</td>
<td>2001</td>
<td>Agreement between State Forests and landowner</td>
</tr>
<tr>
<td>Forestry Plantations Queensland (FPQ)</td>
<td>Carbon Forestry Right</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Land Rental Agreement</td>
<td>2006</td>
<td>Agreement between FPQ and property owner</td>
</tr>
<tr>
<td></td>
<td>Joint Venture Agreement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forest Products Commission, WA (FPC)</td>
<td>Timber Sharefarming Agreement (‘Infinitree’ program)</td>
<td>2006</td>
<td>Agreement between FPC and landowner</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2007</td>
<td></td>
</tr>
<tr>
<td>South Australian Forestry Corporation (SAFC)</td>
<td>Green Triangle Treefarm Project</td>
<td>2006</td>
<td>Agreement between SAFC, its joint venture partners, and grower</td>
</tr>
<tr>
<td>HVP Plantations (HVP)</td>
<td>Plantation Sharefarming Scheme</td>
<td>1987</td>
<td>Agreement (initiated by Victorian government) between HVP and landowner</td>
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<tr>
<td>Hume Forests</td>
<td>Joint Venture Farm Forestry Scheme</td>
<td>1984</td>
<td>Agreement (initiated by ANM Forests) between Hume Forests and landowner</td>
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<tr>
<td>East Victoria Plantation Forest Company of Australia (EPFL)</td>
<td>Forest Property Agreement</td>
<td>1999</td>
<td>Agreement between EPFL and landowner</td>
</tr>
<tr>
<td>Green Triangle Plantation Forest Company of Australia (GPFL)</td>
<td>Forest Property Agreement</td>
<td>1997</td>
<td>Agreement between GPFL and landowner</td>
</tr>
<tr>
<td>Timbercorp Limited</td>
<td>Lease agreement</td>
<td>2006</td>
<td>Agreement between Timbercorp and lessor of forestry land</td>
</tr>
<tr>
<td>MIS companies (Gunn, Timbercorp, Willmott)</td>
<td>Grower Agreement, Lease Agreement, Wood Purchase Agreement</td>
<td>2006</td>
<td>Agreements between MIS forestry companies and growers</td>
</tr>
<tr>
<td>Private Forests Tasmania</td>
<td>Farm Forestry Joint Venture Agreement package</td>
<td>2006</td>
<td>Template agreement between joint venturers and landowner</td>
</tr>
<tr>
<td>Birnam Forests Pty Ltd</td>
<td>Timber Marketing Agreement</td>
<td>2007</td>
<td>Agreement between company and grower</td>
</tr>
<tr>
<td>Green Triangle Forest Products Limited (GTFP)</td>
<td>Farm Forestry Agreement</td>
<td>2002</td>
<td>Agreement between GTFP and landowner</td>
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<tr>
<td>Midway Pty Ltd</td>
<td>Wood Purchase Agreement</td>
<td>2001</td>
<td>Agreement between Midway and plantation owner</td>
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<tr>
<td>Department of Sustainability and Environment, Victoria (DSE)</td>
<td>Bush Tender – Agreement for Habitat Services</td>
<td>2003</td>
<td>Agreement between DSE and landholder</td>
</tr>
<tr>
<td>Murray Catchment Management Authority (MCMA)</td>
<td>Incentives program (e.g. for farm forestry)</td>
<td>2006</td>
<td>Agreement between MCMA and landholder</td>
</tr>
</tbody>
</table>

* Year the partnership started. All other years are the date of the agreement sighted.

Partnerships in bold operate in the Murray Valley.

Source: Personal communication with representatives of the entities, and study of documents provided, many 'commercial-in-confidence', 2007.