

**RURAL LAND USE TRENDS IN TASMANIA**  
**2003**

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**2003**

**November, 2003**

## **FOREWORD**

### **Background**

This report is the result of a study commissioned by the Department of Infrastructure, Energy and Resources, to update and extend information and analysis contained in *Rural Land Use Trends in Tasmania 2001* (Wise, Lord and Ferguson 2001) (the 2001 Report) with recently available data. This project has been undertaken in line with a Ministerial commitment given at the release of the 2001 Report.

The impetus for the 2001 Report was the significant amount of community concern, particularly in northern Tasmania, regarding the conversion of agricultural land to plantations, and the consequential loss of community infrastructure since around 1996. Due to the scarcity of available data, the 2001 Report was only able to report trends up to 1996. This report examines trends up to recent times.

In 2001 the State Government and the Local Government Association of Tasmania formed the Local Government Forestry Consultative Committee to identify and review issues of mutual concern. A priority issue identified by the Committee was to update the 2001 Report with a view to exploring further opportunities to undertake social and economic studies of the impacts of plantation development in rural areas. The Department of Infrastructure, Energy and Resources undertook to finance and manage the project to update the 2001 Report, and a working group of the Local Government Forestry Consultative Committee undertook the role of Steering Committee for the project.

This report has been prepared for the Department of Infrastructure, Energy and Resources by Davey & Maynard Agricultural Consulting.

### **Objectives and Scope of Project**

The objectives of the project were as follows:

- To update the 2001 Report with more comprehensive and accurate data.
- To produce a new report that would identify Statewide trends in rural land use with particular emphasis on plantations.

Activities within the scope of the project included:

- Update the statistical information contained in the 2001 Report and present the information in a way that is readable by the general community and relevant to Tasmania's three Natural Resource Management Regions.
- Collate and present available economic and employment data for all sectors covered by the report.
- Present and assess land capability information for plantations to determine whether plantations and other agricultural sectors are in competition.
- Review the agricultural sectors and commodities contained in the Report and consider adding commodities such as grapes, hops, and grains to the commodities already covered.
- Analyse and discuss the issues surrounding water availability and its impact on rural land use trends.

- Analyse and discuss the relevant drivers of rural land use change including government policies, industry plans and legislation.

The objective was not to present a socio-economic impact assessment of rural land use change, but to be a reference document outlining and analysing the changes, and identifying the trends, in rural land use during a period of rapid growth of the plantation industry in Tasmania.

Wherever possible the information in this report has been presented on a Natural Resource Management Regional basis. This should be of interest and assistance to the three Natural Resource Management Committees in preparing regional natural resource management strategies under the *Natural Resource Management Act 2002*.

Department of Infrastructure, Energy and Resources  
November, 2003

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# 1. EXECUTIVE SUMMARY

Most of the agricultural statistics in this report have been obtained directly from the Australian Bureau of Statistics on request. In most cases reasonably consistent time series data were available from 1985 to 2002 although there have been some changes over time in the definition of agricultural establishments, and in some recent years the information comes from a representative sample of rural establishments rather than from a full census.

Time series data for forestry land use is not as complete as for agriculture. Information used has come from Forestry Tasmania and Private Forests Tasmania as well as the Australian Bureau of Statistics.

Additional information on overall State land use came from a recent mapping study undertaken by Drenen<sup>1</sup> for the Department of Primary Industries, Water and Environment.

In assessing plantation distribution in relation to land capability further spatial analysis was undertaken by Davey & Maynard using land capability data from the Department of Primary Industries, Water and Environment in combination with plantation land use data obtained from Private Forests Tasmania and Forestry Tasmania.

## **Total Land Area of Agriculture and Forestry**

The total land area of Tasmania is around 6.8 million hectares. Agriculture and forestry activities utilise around 1.6 and 1.5 million hectares of this total – 24 and 22 per cent respectively. Of the estimated 1.5 million hectares of land used for forestry activities, production forestry<sup>2</sup> accounts for around 86 per cent and plantation forestry for the remaining 14 per cent.

## **Land Area of Agricultural Establishments**

According to Australian Bureau of Statistics figures the total area of agricultural establishments in the State is around 1.9 million hectares. The main reason for this figure being higher than the 1.6 million-hectare estimate above lies in the Australian Bureau of Statistics definition of “agricultural establishments”. Agricultural establishments include all establishments where agriculture provides the main source of income. As such it also includes some area of production and plantation forestry.

## **Farm Numbers**

Australian Bureau of Statistics figures appear to suggest that total farm numbers have declined by almost 20 per cent since 1986 – from 5,300 to 4,300. However, the apparent reduction is at least partly due to the inclusion or exclusion over time of establishments with relatively low output. With the exclusion of all establishments where the Estimated Value of Agricultural Operations is less than \$22,500, the number of agricultural establishments (farms) has been more consistent at around 3,000 to 3,400.

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<sup>1</sup> Drenen, A., Land Use Mapping at Catchment Scale, Tasmanian Report, DPIWE, March 2003

<sup>2</sup> Production forestry is defined as commercial production from native forests and related activities on public and private land (Bureau of Rural Sciences, Land Use Mapping at Catchment Scale, Principles, Procedures and Definitions, Edition 2, September 2001)

### **Agricultural and Plantation Land Use**

In recent years there has been a significant increase in the area of plantation forestry in the State. Since 1997, the first year that data is available for both private and public land, total plantation area has increased by 31 per cent from 158,200 hectares to 207,300 hectares. Sixty per cent of this area (124,400 hectares) is on private land.

While around 22,000 hectares or 18 per cent of plantations on private land has come from areas previously under pasture, it is difficult to ascertain any major impact of this in Australian Bureau of Statistics figures on agricultural land use or total output.

Sown pastures make up almost 50 per cent of the total area of agricultural establishments in the State – 800,000 to 900,000 hectares. Because of the fact that plantation development on what was previously agricultural land has tended to favour grazing land in relatively high rainfall areas, this should be the land use category most impacted by plantation development. In fact, the Australian Bureau Statistics estimates for the area of sown pasture have fluctuated from year to year so that no real trend is evident. To some extent this may be due to differences over time in the way in which data has been collected and interpreted.

There are no statistics that show the allocation of sown or native pasture areas to various livestock enterprises, however there are statistics on the numbers of stock that graze those pastures.

### **Stock Numbers**

The main trends in livestock numbers since 1985 are:

- Beef cattle numbers relatively constant over time but with a decline in the late 1990's and some recovery since then
- Substantial increase in dairy cattle numbers over the period but with some reduction in the past few years
- Substantial reduction in sheep numbers

The livestock enterprises potentially most affected by the expansion of plantation forestry on agricultural land are beef cattle and dairying. Sheep tend to be run in drier areas less suited to plantation forestry.

Because beef cattle returns are generally lower than for dairying, beef farms are more likely to be converted to plantation forestry than dairy farms. However, some dairy properties have been also been converted in recent years.

Total beef cattle numbers have declined by 17 per cent from 521,000 in 1996 to 432,000 in 2002. It is likely that some of this reduction is a result of the expansion of forestry plantation area. The relatively high prices paid by plantation prospectus companies for land in the late 1990s in combination with relatively low beef prices throughout much of the 1990s were the main drivers for this conversion.

Interestingly, however, while there was a sharp decline in total cattle numbers from 1996 to 2000, there has been some recovery in 2001 and 2002, possibly as a result of increasing beef prices. There is, in fact, a similar number of beef cattle in Tasmania in 2002 as there was throughout the late 1980s and early 1990s. This would tend to support the view that total cattle numbers have been influenced more by prices paid than by the amount of land taken up by plantation forestry.

Australian Bureau of Statistics figures show a steady expansion in total dairy cattle numbers from 1985 through to 1999 despite the growth in plantation forestry that occurred in the late 1990s. Conversion of

beef and sheep properties in higher rainfall areas to large-scale dairies was a factor in that growth. A substantial increase in irrigated dairying was also a factor. Since 1999 the statistics show a decline in total dairy cattle numbers. This is likely to be a response to low milk prices (except for 2001-02) and the continuing exit of smaller dairy farms with no compensating increase in large-scale dairy conversions. The exit of smaller less economic dairy farms has been assisted to some extent by the expansion in plantation forestry.

While total dairy cattle numbers appear to have declined somewhat from a high in 1999, total milk production continued to increase until 2002. Production in the 2001-02 season was a record 671 million litres. Lower milk prices and poor seasonal conditions in 2002-03 saw a reduction to less than 600 million litres – more in line with the three years prior to 2002. It appears that the long-term increase in State milk production has levelled off in recent years.

Sheep numbers have declined steadily since the late 1980s mainly as a result of low wool prices following the demise of the reserve price scheme that was in place prior to that time.

### **Crop Areas**

The overall area of crops grown in Tasmania (including fodder crops) is around 80,000 hectares or four per cent of the total area of agricultural establishments in the State. Trends since 1985 include:

- Total cereal area relatively constant but with an increase in wheat at the expense of barley
- Vegetable area relatively constant but with potato area up and peas down
- A significant increase in poppy area
- A recent increase in perennial horticulture – particularly grapes, cherries, apricots and walnuts
- “Other Crops” which includes fodder crops and cereals for hay and silage have shown a marked fall in total area

The area of poppies has increased from around 5,000 hectares in 1985 to over 16,000 hectares in 2002. This has also been a major driver of irrigation development throughout the State but particularly in the Northern Natural Resource Management Region. The reduction in “Other crops” is most likely due to a reduction in the area of forage crops grown for sheep.

### **Plantations and Land Capability**

Analysis of forestry plantations on various land capability classes suggest that only a small percentage of the total plantation area has been established on prime agricultural land (Classes 1, 2 and 3). Most of the prime agricultural land that has been converted to forestry plantations is in the North Western Natural Resource Management Region.

### **Irrigation Area**

The total area under irrigation in Tasmania has risen from around 40,000 hectares in 1985 to almost 70,000 hectares in 2002. Additional irrigation use on pasture and poppies makes up the bulk of the increase, but there has also been an increase for vegetables and perennial horticulture. Licensed water allocations have increased from 83,000 ML in 1986 to 357,000 ML in 2003 – mainly for capture into on-farm storage rather than as direct take from rivers or streams.

### **Employment**

According to the Australian Bureau of Statistics, direct employment in agriculture, forestry and fisheries is around 12,300 people or seven per cent of the total State workforce. The total employment associated with these industries is greater than this because the Australian Bureau of Statistics employment figures



do not include employment in businesses that service the production sector or the downstream processing that flows from it.

There was a decline in direct employment from 13,100 to 11,300 between the 1986 and 1991. However, there has been an increase back to around 12,300 since that time

### **Gross Value of Production**

The gross value of agricultural production in Tasmania in 2002 was \$903 million. This represented an increase of around 20 per cent over 2001 on the back of record high production and prices for both milk and poppies, and high beef and lamb prices.

In 2001 the gross value of agricultural production was around six per cent of Gross State Product. With inclusion of multiplier effects associated with industries dependent on agriculture, the total agricultural contribution was almost 20 per cent of Gross State Product.

Since 1985, the gross value of agricultural production has increased at a compound rate of 5.2 per cent per annum. With adjustment for inflation, the annual increase is reduced but there has been a steady upward trend since 1990 despite the decline in the wool production and prices following the demise of the reserve price scheme.

There are no equivalent statistics on the gross value of forestry ex forest or plantation in Tasmania.

Private Forests Tasmania publishes a range of stumpage prices for timber produced throughout Australia. Depending on the proportion of the various grades of timber produced in Tasmania, the total stumpage value of timber produced in recent years (both plantation and native) might be somewhere in the range of \$100 million to \$130 million. As for agriculture, this estimate is essentially a first market figure and does not include the value of harvesting and cartage or further value-adding within the State.

### **Land Use Drivers**

A wide range of drivers impact on land use patterns in Tasmania. While objective measures of the impacts of individual drivers are not available, a number of issues are reviewed.

For agriculture, terms of trade and productivity improvements are important drivers in farmers land use decisions. They will also impact on the degree to which forest plantations will compete for sown pasture areas in higher rainfall districts over the next few years. Changes to the taxation provisions associated with forestry prospectus companies have resulted in a recent increase in investment in those companies. At the same time, predicted increases in milk and beef prices (at least in nominal terms) will increase the competitiveness of those enterprises. Land prices are likely to increase in areas where plantations, dairying and beef cattle compete for land.

For some crops, the area planted will be limited by the requirements of the processing sector. While vegetable production, including potatoes are likely to show moderate growth over the next few years, there has been some downward adjustment to the poppy area as a result of existing high stocks relative to expected market demand.

In general, while there is a relatively small amount of prime agricultural land in Tasmania (Class 1-3), there is a large area of Class 4 land that can be used for irrigated cropping if correctly managed, and Class 4 and 5 land is suitable for both dryland and irrigated grazing. The availability of suitable land is not considered to be a major constraint to expansion in agricultural output at the present time. However, the availability of irrigation water could potentially restrict future agricultural development, although there is

still further potential to capture winter flows into storage in most catchments. This issue is being addressed through a number of initiatives being undertaken by the Department of Primary Industries, Water and Environment.

## 2. BACKGROUND

This section looks at the overall land use situation for Tasmania at the present time. Most of the data outlined comes from a recent land use mapping study undertaken by Drenen<sup>3</sup> for the Department of Primary Industries, Water and Environment. The estimates of agricultural and forestry plantation areas in that report are compared with data presented elsewhere by the Australian Bureau of Statistics and Forestry Tasmania.

### 2.1. TOTAL LAND AREA OF AGRICULTURE AND FORESTRY

The total land area of Tasmania is around 6.8 million hectares.

The land use mapping study by Drenen found that agriculture and forestry activities make up around 1.6 and 1.5 million hectares respectively of the 6.8 million-hectare total. On a percentage basis “Conservation and Natural Environment” is the most extensive land use at 50 per cent, followed by “Agriculture” 24 per cent, and “Forestry” 22 per cent (See Appendix 1 for details).

**Table 1 : Land Use, Tasmania**

Land Use	Area	
	Total (’000 ha)	Per cent (%)
Conservation and Natural Environment	3,440	50%
Forestry		
Production Forestry	1,286	19%
Plantation Forestry	214	3%
	1,501	22%
Agriculture		
Grazing Natural Vegetation	277	4%
Grazing Modified Pastures	1,224	18%
Irrigated Modified Pasture	57	1%
Cropping	75	1%
Perennial Horticulture	6	0%
Other	0.5	0%
	1,639	24%
Intensive Uses	89	1%
Water	174	3%
Total	6,843	100%

Source: Drenen, A., Land Use Mapping at Catchment Scale, Tasmanian Report, DPIWE, March 2003 (See Appendix 1)

Within the 1.50 million hectares of forestry area, 1.28 million hectares or 86 per cent was assessed as being production forestry plus 0.21 million hectares or 14 per cent of plantation forestry. For the purposes

<sup>3</sup> Drenen, A., Land Use Mapping at Catchment Scale, Tasmanian Report, DPIWE, March 2003

of this study, production forestry is defined as commercial production from native forests and related activities on public and private land. Plantation forestry is land on which plantations of trees have been established for production or environmental resource protection purposes<sup>4</sup>.

The 214,000 hectares of plantation forestry in the Drenen study compares with 207,000 hectares of public plus private plantation identified by Forestry Tasmania in their Annual Report to June 2002<sup>5</sup>.

The 1.6 million hectare estimate of agricultural land in the Drenen report compares with an Australian Bureau of Statistics estimate<sup>6</sup> of 1.9 million hectares of "agricultural land". The Australian Bureau of Statistics estimate is in fact the total area of establishments on which the main source of income is agriculture. As such it includes forested land that occurs on rural establishments. If around 400,000 to 500,000 hectares is deducted from the Australian Bureau of Statistics as being forest areas on agricultural establishments (Table 4), the net Australian Bureau of Statistics figure for land actually used for agriculture falls to around 1.4 to 1.5 million hectares. This is slightly less than the Drenen mapping estimate of 1.6 million hectares.

## 2.2. NATURAL RESOURCE MANAGEMENT REGIONS

Where possible, information presented in this report and its appendices has been segregated into the State's three Natural Resource Management Regions. These three regions stem from the *Natural Resource Management Act 2002*, which provided for the establishment of a Tasmanian Natural Resource Management Council and three regional committees for natural resource management. A major objective of the three Natural Resource Management Committees is the development of regional strategies for natural resource management.

The Tasmanian Natural Resource Management Framework provides the administrative mechanism to devolve decision-making for natural resource management from State and Australian Governments to regional communities, through the three regional committees (Southern, Northern and North Western).

The Natural Resource Management Regions comprise the following local government municipalities:

### **Southern Region:**

Brighton, Central Highlands, Clarence City, Derwent Valley, Glamorgan-Spring Bay, Glenorchy City, Hobart City, Huon Valley, Kingborough, Sorell, Southern Midlands and Tasman.

### **Northern Region:**

Break O'Day, Dorset, Flinders, George Town, Launceston City, Meander Valley, Northern Midlands and West Tamar.

### **North Western Region:**

Burnie City, Central Coast, Circular Head, Devonport City, Kentish, King Island, Latrobe, Waratah-Wynyard and West Coast.

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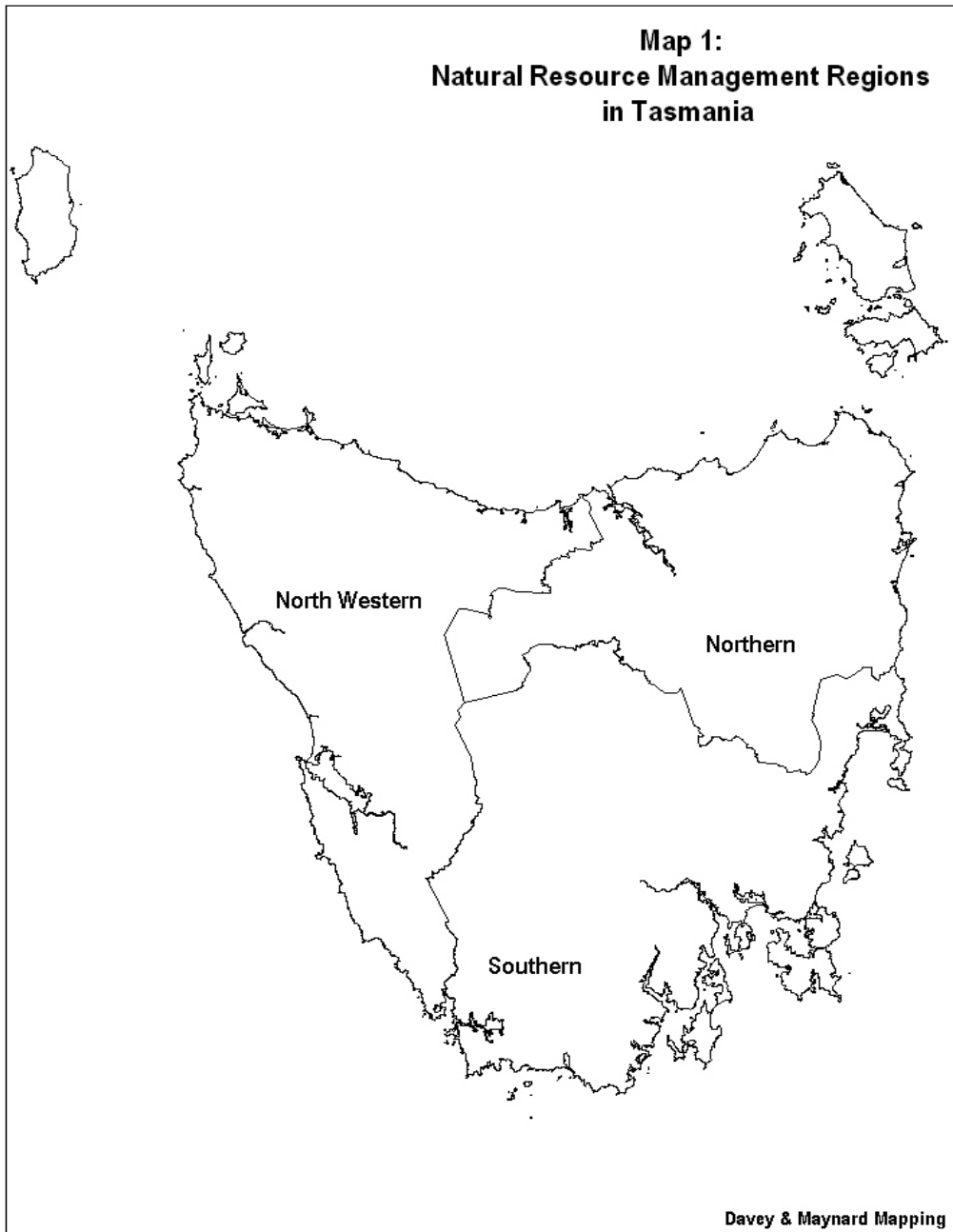
<sup>4</sup> Bureau of Rural Sciences, Land Use Mapping at Catchment Scale, Principles, Procedures and Definitions, September 2001.

<sup>5</sup> Forestry Tasmania Annual Report 2001-02.

<sup>6</sup> Agriculture Farms Land Use, Australian Bureau of Statistics, Agriculture Australia Cat No. 7113.0

The areas covered by the three Natural Resource Management Regions are illustrated in Map 1 below.

These three Natural Resource Management Regions closely match the three statistical regions used by the Australian Bureau of Statistics, namely Southern (including Greater Hobart), Northern and Mersey-Lyell. Statistics provided by the Australian Bureau of Statistics in relation to these three regions have been used in this report to represent the three Natural Resource Management Regions.



### 3. LAND USE TRENDS

This section outlines available data on land use trends for agriculture and plantation forestry over the period from 1985 to 2002.

Agricultural statistics have mainly been supplied by the Australian Bureau of Statistics directly on request. For most of the period those data comes from an annual census of agricultural establishments. For the 1998, 1999, 2000 and 2002 years the statistics are less reliable than for other years because they comes from a representative sample of agricultural establishments rather than a full census.

Forestry data comes from a range of sources including Forestry Tasmania and Private Forests Tasmania.

#### 3.1. AGRICULTURE

##### 3.1.1. NUMBER OF FARMS

On the surface Australian Bureau of Statistics figures appear to suggest that total number of farms or agricultural establishments<sup>7</sup> has declined by almost 20 per cent since 1986 – from 5,315 to 4,286 (Table 2). However, the apparent reduction is at least partly due to the inclusion, or exclusion, over time of establishments with relatively low total income.

The 1986 figures include all establishments with an Estimated Value of Agricultural Operations (EVAO) of more than \$2,500. For 1991 all establishments with an EVAO greater than \$20,000 are included, and for 1996 and 2001 all establishments with an EVAO of more than \$5,000 are included. This explains much of the variation in the number of establishments where EVAO is less than \$22,500 in Table 2.

**Table 2: Total Number of Agricultural Establishments, Tasmania**  
by Estimated Value of Agricultural Operations

EVAO (\$'000)	1986	1991	1996	2001
<22.5	2,033	227	1,208	1,153
22.5 - 100	2,256	1,665	1,617	1,428
100 - 200	625	912	857	732
200 - 500	338	576	738	708
>500	<u>63</u>	<u>183</u>	<u>220</u>	<u>267</u>
Total	5,315	3,563	4,640	4,286

Notes: 1986: Establishments included with EVAO greater than \$2,500

1991: Establishments included with EVAO greater than \$20,000

1996, 2001: Establishments included with EVAO greater than \$5,000

Source: Australian Bureau of Statistics, ABS data available on request, Agricultural Census (ANZIC by EVAO Range).

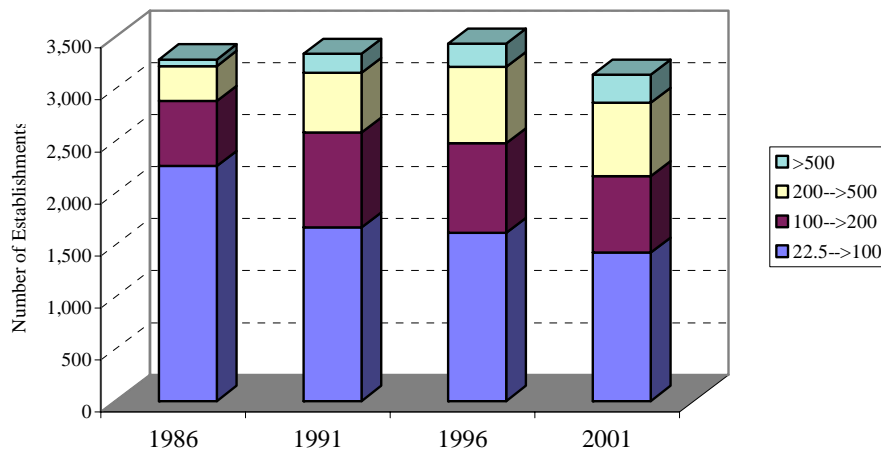
<sup>7</sup> An establishment is the smallest accounting unit of business within a State or Territory, controlling its productive activities and maintaining a specified range of detailed data enabling value added to be calculated. In general an establishment covers all operations at a physical location, but may consist of a group of locations provided they are within the same state or territory. The majority of establishments operate at one location only.

With the exclusion of establishments where the EVAO is less than \$22,500 the total number of establishments has been more consistent over time at around 3,000 to 3,400 (Figure 1).

Since 1986, the number of smaller establishments has declined while the number of larger establishments has increased. This is mainly a result of the trend in most agricultural sectors for increases in farm size and output. To some extent it is also due to increases in nominal prices for agricultural products.

**Figure 1: Total Number of Agricultural Establishments by Size – Smaller Farms Excluded**

For establishments with EVAO greater than \$22,500



Source: See Table 3.

At the present time a gross income of at least \$100,000 would normally be required for a farm business in Tasmania to be commercially viable on a stand-alone basis. On this basis there are currently around 1,700 commercially viable agricultural establishments in Tasmania. In fact, a gross income of \$200,000 is probably a more realistic threshold for stand-alone commercial viability. In 2001 there were slightly less than 1,000 establishments with an Estimated Value of Agricultural Operations (EVAO) of \$200,000 or more. It should be noted that so-called agricultural establishments often earn additional income from non-agricultural pursuits such as forestry or from off-farm sources.

Around three-quarters of the total agricultural establishments are in the Northern and North Western Natural Resource Management Regions (Table 3). These Regions also have a higher proportion of larger properties in terms of their estimated value of agricultural operations.

**Table 3: Number of Agricultural Establishments by Natural Resource Management Region**  
(2001)

EVAO (\$'000)	Southern	Northern	North Western	Tasmania
<22.5	381	366	407	1,153
22.5 - 100	406	535	486	1,428
100 - 200	164	261	308	732
200 - 500	115	269	322	708
>500	<u>59</u>	<u>102</u>	<u>103</u>	<u>267</u>
Total	1,125	1,534	1,626	4,286
	26%	36%	38%	100%

Source: Australian Bureau of Statistics, ABS data available on request, Agricultural Census (ANZIC by EVAO Range).



### 3.1.2. OVERALL AGRICULTURAL LAND USE

The total area of agricultural establishments in Tasmania is around 1.9 million hectares and appears to have remained fairly constant at around that level for the past 15 years or so (Figure 2).

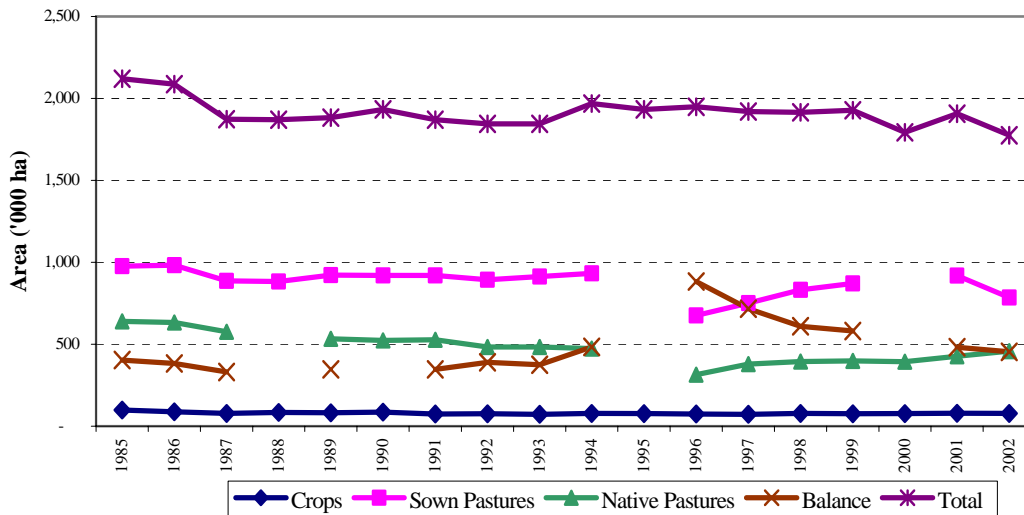
According to Australian Bureau of Statistics survey and census data, the total area of establishments where the main source of income is agriculture has declined from around 2.1 million hectares in 1984-85 to 1.8 million hectares in 2001-02. However, this apparent decline may be misleading. If the first two years are discounted, the total area of agricultural establishments has in fact been fairly steady at around 1.9 million hectares.

The reason for discounting the first two years is that in 1985 and 1986 rural establishments were defined as having an Estimated Value of Agricultural Operations (EVAO) of \$2,500 or more. From 1987 to 1991 the threshold was lifted to \$20,000 thereby excluding a large number of smaller establishments - and their land area. For 1992 and 1993 the threshold was lifted further to \$22,500. From 1994 to the present the minimum EVAO level has been reduced to \$5,000.

In addition, the apparent drop to around 1.8 million hectares in 2002 may require confirmation from a future census – 2002 was a survey year rather than a full census as was the case in 2001.

The total area of agricultural establishments in Figure 2 and Table 4 has been allocated to crops, sown pastures, native pastures and a balance figure, which includes timbered areas (native bush and plantations) occurring on agricultural establishments.

**Figure 2: Agricultural Land Use in Tasmania**



Source: See Table 4

**Table 4: Agricultural Land Use, Tasmania**

('000 hectares)

Year	Crops	Sown Pastures	Native Pastures	Balance	Total
1985	99	977	640	404	2,120
1986	88	983	633	383	2,087
1987	78	888	576	331	1,873
1988	85	883	na	na	1,871
1989	82	922	533	347	1,883
1990	86	920	525	na	1,933
1991	75	920	528	347	1,870
1992	76	894	484	391	1,845
1993	73	913	484	375	1,845
1994	78	933	474	484	1,969
1995	77	na	na	na	1,933
1996	75	676	315	883	1,949
1997	73	751	379	717	1,920
1998	78	832	395	610	1,915
1999	76	871	399	582	1,928
2000	77	na	394	na	1,794
2001	79	919	427	482	1,907
2002	78	785	458	454	1,775

Source: Australian Bureau of Statistics, ABS data available on request, Agricultural Commodity Survey (Appendix 4).

Crops (including fodder crops) make up around four per cent of the total area of agricultural establishments in Tasmania.

Sown pastures (including areas cut for hay and silage) make up almost 50 per cent of the total area of agricultural establishments in Tasmania. Some of the variations that occur between years may possibly be due to changes in the way in which overall land use questions have been posed and analysed by the Australian Bureau of Statistics over time. Based on Private Forests Tasmania data, the actual area of plantations in 2001 that were on land used for pasture five years earlier has been assessed at 22,400 hectares (Table 26). This represents around 2.4 per cent of the 919,000 hectares of sown pastures in 2001.

In the most recent agricultural census (2001), native pastures and "balance" which includes forest areas make up 22 per cent and 25 per cent of the total area respectively. While the figures appear to show some reduction in native pastures over time this may not be the case if figures for the first two years (1985 and 1986) are discounted – as discussed above. Other than these two years the native pasture figure has generally been in the range of 400,000 to 500,000 hectares. Similarly, despite what appears to be some anomalies in the mid 1990s the "balance" area has also remained in the 400,000 to 500,000 hectare range. As outlined above, this figure mainly reflects plantation and native forests on agricultural establishments. That is, establishments that have agriculture as their main source of income.

Overall, the data does not appear to support the view that there has been any significant change in agricultural land use over the past 15 years. The apparent 134,000 hectare reduction in sown pastures in

2002 comes from a survey rather than a full census and will need to be confirmed by future survey or census results.

**3.1.3. AREA OF HOLDINGS BY FARM TYPE**

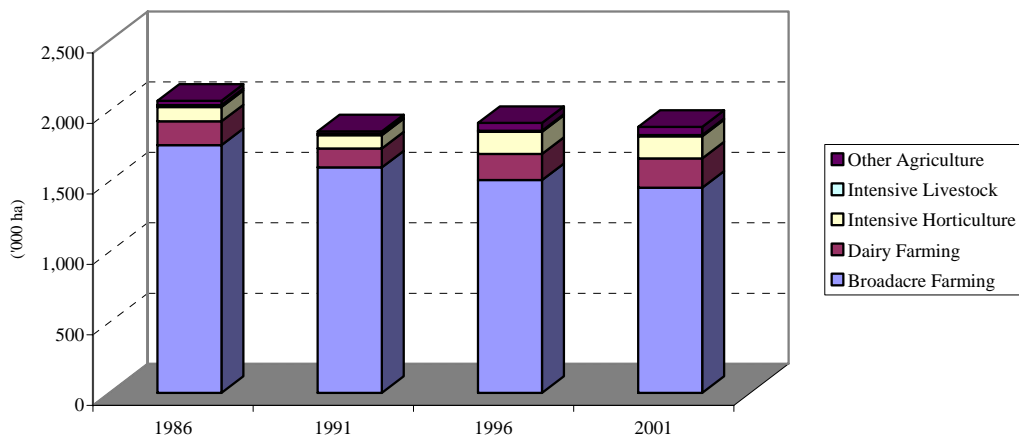
As noted above the total area of agricultural establishments in Tasmania is around 1.9 million hectares. These are farms where the main source of income is agriculture.

Figure 3 and Table 5 show the changes in areas and proportion by farm type from 1986 to 2001.

Around 75-80 per cent of total farm area is associated with establishments with broadacre farming as the main source of income. Broadacre farming includes sheep and beef farming and cereal cropping.

Also, as noted above, the apparent reduction in total area between the 1986 Census and more recent years is at least partly due to changes over time in the Estimated Value of Agricultural Operations criteria for including, or excluding, establishments in the agricultural census.

**Figure 3: Total Area of Agricultural Establishments by Farm Type**



Source: See Table 5

While “intensive livestock” and “other agriculture” are included in Figure 3 so that all farm types are represented, the actual areas occupied are very small (Table 5) and as a result are not readily visible in the graph.

**Table 5: Total Area of Agricultural Establishments by Farm Type, Tasmania**

Farm Type	1986 <sup>(1)</sup>		1991 <sup>(2)</sup>		1996 <sup>(3)</sup>		2001 <sup>(3)</sup>	
	Area	Per cent	Area	Per cent	Area	Per cent	Area	Per cent
	('000 ha)	(%)	('000 ha)	(%)	('000 ha)	(%)	('000 ha)	(%)
Broadacre Farming	1,757	85	1,599	86	1,510	79	1,456	77
Dairy Farming	170	8	135	7	186	10	208	11
Intensive Horticulture	101	5	95	5	156	8	157	8
Intensive Livestock	15	1	9	0	8	0	9	0
Other Agriculture	30	1	17	1	56	3	58	3
<b>Total</b>	<b>2,072</b>	<b>100</b>	<b>1,855</b>	<b>100</b>	<b>1,915</b>	<b>100</b>	<b>1,887</b>	<b>100</b>

(1) Estimated Value of Agricultural Operations (EVAO) > \$2,500

(2) Estimated Value of Agricultural Operations (EVAO) > \$20,000

(3) Estimated Value of Agricultural Operations (EVAO) > \$5,000

Source: Australian Bureau of Statistics, ABS data available on request, Agricultural Commodity Survey (Appendix 3).

### 3.1.4. CROPS

#### Total Crop Area

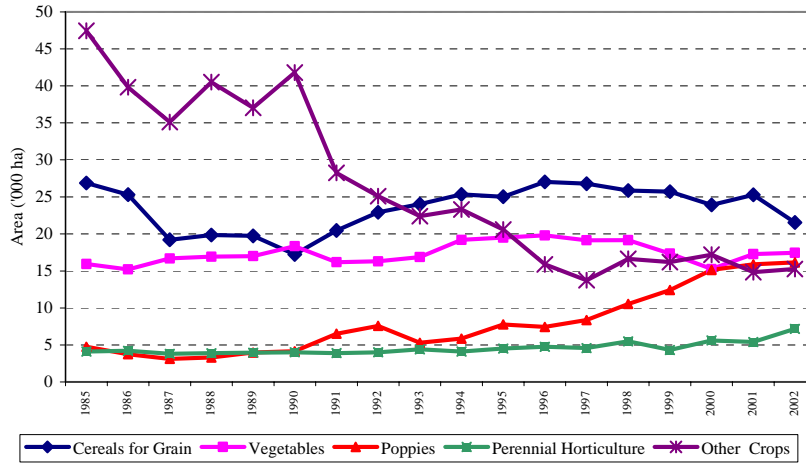
Currently there is almost 80,000 hectares of crops grown in Tasmania each year. Most of this is annual crops such as cereals, vegetables and poppies. There is also an area of around 7,000 hectares of perennial crops such as apples, cherries, apricots, walnuts and grapes (Table 6).

Since 1985 the area of cereals and vegetables has remained relatively constant. However, the area of poppies has increased more than threefold over the same period. This increase has occurred throughout the State but particularly in the Northern Natural Resource Management Region where it has been able to compensate for the reduction in income from sheep. It has been associated with an increase in the demand for irrigation water as most poppy crops are now irrigated.

In the past few years there has also been an increase in the area of perennial horticulture.

The "other crops" component of the total crop area consists mainly of fodder crops and cereals for hay/silage. It also includes crops such as legumes for grain and pyrethrum. The reduction in "other crops" area over time is most likely due to a substantial reduction in the area of fodder crops grown in association with the sheep industry, a practice that was more prevalent in the 1980s than at present. The "other crops" area was particularly high in 1985 and 1986. This may be partly due to the inclusion of additional smaller farms in the Australian Bureau of Statistics agricultural census data for these two years.

**Figure 4: Crop Areas, Tasmania**  
(‘000 hectares)



Source: See Table 6

**Table 6: Crop Areas, Tasmania**  
(‘000 hectares)

Year	Cereals for Grain	Vegetables	Poppies	Perennial Horticulture	Other Crops	Total
1985	26.9	15.9	4.7	4.1	47.4	99.1
1986	25.3	15.2	3.7	4.2	39.8	88.3
1987	19.2	16.7	3.1	3.8	35.1	77.9
1988	19.9	16.9	3.3	3.9	40.5	84.5
1989	19.7	17.0	4.0	4.0	37.0	81.7
1990	17.2	18.3	4.1	4.0	41.8	85.5
1991	20.5	16.2	6.5	3.9	28.3	75.3
1992	22.9	16.3	7.6	4.0	25.1	75.9
1993	24.0	16.9	5.3	4.4	22.4	73.0
1994	25.3	19.2	5.9	4.1	23.3	77.8
1995	25.0	19.5	7.8	4.5	20.6	77.4
1996	27.0	19.8	7.4	4.8	15.9	74.9
1997	26.8	19.1	8.4	4.6	13.7	72.6
1998	25.9	19.2	10.5	5.5	16.6	77.7
1999	25.7	17.3	12.4	4.3	16.2	76.0
2000	23.9	15.2	15.1	5.6	17.2	77.1
2001	25.3	17.3	15.9	5.4	14.8	78.7
2002	21.6	17.5	16.1	7.2	15.3	77.6

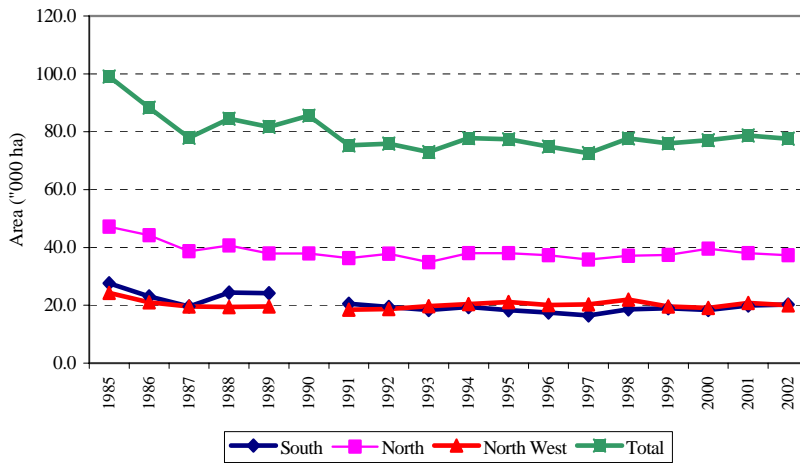
Source: Australian Bureau of Statistics, ABS data available on request, Agricultural Commodity Survey (Appendix 4).

Figure 5 and Table 7 show the total area of crops by Natural Resource Management Region.

The Northern Natural Resource Management Region currently grows almost 50 per cent of the total area of crops in the State, largely as a result of the large areas of cereals and “other crops” grown in this Region. The Southern and North Western Regions share the remaining 50 per cent on an almost equal basis.

Apart from 1985 and 1986 (discussed above), both the total crop area and the proportion of this in each of the three Natural Resource Management Regions has remained relatively constant since the mid 1980s.

**Figure 5: Total Crop Area by Natural Resource Management Region**  
(\*000 hectares)



Source: See Table 7

**Table 7: Total Crop Area by Natural Resource Management Region**  
(‘000 hectares)

	Southern	Northern	North Western	Total
1985	27.6	47.2	24.3	99.1
1986	23.1	44.2	21.0	88.3
1987	19.6	38.7	19.6	77.9
1988	24.4	40.7	19.4	84.5
1989	24.2	37.9	19.6	81.7
1990	na	37.9	na	85.5
1991	20.5	36.3	18.5	75.3
1992	19.4	37.8	18.7	75.9
1993	18.4	34.9	19.7	73.0
1994	19.4	38.0	20.4	77.8
1995	18.3	38.0	21.1	77.4
1996	17.5	37.3	20.1	74.9
1997	16.5	35.8	20.3	72.6
1998	18.6	37.1	22.0	77.7
1999	19.0	37.4	19.6	76.0
2000	18.4	39.6	19.1	77.1
2001	19.9	38.0	20.8	78.7
2002	20.3	37.3	20.0	77.6

Source: Australian Bureau of Statistics, ABS data available on request, Agricultural Commodity Survey (Appendix 4).

## Cereals

Most cereals are grown on broadacre farms in the Northern and Southern Natural Resource Management Regions, with only a small proportion in the North Western Region. Cereals are relatively low gross margin crops and therefore do not compete well with higher value crops on the better cropping land in the North Western Region.

**Table 8: Area of Cereals for Grain by Natural Resource Management Region**  
(‘000 hectares)

Year	Southern	Northern	North Western	Total
1985	6.8	17.2	2.9	26.9
1986	6.0	17.0	2.3	25.3
1987	4.4	13.0	1.9	19.2
1988	4.8	13.6	1.4	19.9
1989	5.7	12.8	1.3	19.7
1990	4.5	11.4	1.3	17.2
1991	5.3	13.8	1.4	20.5
1992	6.3	15.5	1.1	22.9
1993	7.0	15.8	1.1	24.0
1994	6.6	17.6	1.2	25.3
1995	6.8	17.0	1.2	25.0
1996	6.9	18.6	1.6	27.0
1997	6.1	18.9	1.8	26.8
1998	5.9	18.2	1.8	25.9
1999	6.3	17.7	1.7	25.7
2000	5.3	17.6	1.0	23.9
2001	7.1	17.1	1.1	25.3
2002	6.4	14.3	0.8	21.6

Source: Australian Bureau of Statistics, ABS data available on request, Agricultural Commodity Survey (Appendix 4).

While the total area of cereals since 1985 has been relatively stable at around 20,000 to 25,000 hectares, there have been changes over time in the make-up of that total area. In recent times the area of barley has declined while the area of wheat has increased (Table 9). The increase in the area of wheat grown has been associated with the introduction of higher yielding feed wheat varieties in recent years.



**Table 9: Cereal Areas, Tasmania**  
(‘000 hectares)

Year	Barley	Oats	Wheat	Triticale	Total
1985	12.4	9.9	2.5	2.2	26.9
1986	12.2	10.3	1.8	1.0	25.3
1987	8.5	7.8	1.7	1.2	19.2
1988	8.0	9.6	1.2	1.1	19.9
1989	7.8	10.2	0.8	0.8	19.7
1990	8.0	7.6	0.8	0.7	17.2
1991	9.8	9.3	0.6	0.8	20.5
1992	11.3	9.1	1.2	1.0	22.9
1993	12.3	9.2	1.5	0.8	24.0
1994	15.2	6.7	1.6	1.6	25.3
1995	14.0	8.3	1.3	1.5	25.0
1996	14.0	10.1	1.1	1.9	27.0
1997	14.5	8.1	1.9	2.2	26.8
1998	13.2	8.0	2.8	1.7	25.9
1999	11.2	8.0	4.0	2.5	25.7
2000	9.1	5.8	6.3	na	23.9
2001	9.7	6.6	6.6	2.3	25.3
2002	7.4	na	5.9	2.4	21.6

Source: Australian Bureau of Statistics, ABS data available on request, Agricultural Commodity Survey (Appendix 4).

## Vegetables

The largest vegetable growing area is in the North Western Natural Resource Management Region. However, there has been some reduction in that Region in recent years and some growth in the Northern Region due to the larger scale opportunities offered in areas such as the northern Midlands and the north-east, and less competition for cropping land.

The larger vegetable areas for all three Natural Resource Management Regions in 1995 appear to be an anomaly, possibly due to the way in which the census figures were collected or analysed.

**Table 10: Area of Vegetables by Natural Resource Management Region**  
(‘000 hectares)

Year	Southern	Northern	North Western	Total
1985	0.4	4.2	11.2	15.9
1986	0.4	4.4	10.4	15.2
1987	0.3	5.5	10.9	16.7
1988	0.5	5.2	11.3	16.9
1989	0.5	5.3	11.2	17.0
1990	0.6	6.1	11.7	18.3
1991	0.6	5.2	10.4	16.2
1992	0.4	6.1	9.7	16.3
1993	0.4	6.2	10.3	16.9
1994	0.7	7.3	11.2	19.2
1995	1.1	9.6	13.9	24.6
1996	1.1	6.8	11.9	19.8
1997	1.2	6.8	11.1	19.1
1998	1.3	6.5	11.4	19.2
1999	1.4	6.2	9.8	17.3
2000	1.0	5.5	8.7	15.2
2001	0.8	6.6	9.9	17.3
2002	0.8	7.0	9.6	17.5

Source: Australian Bureau of Statistics, ABS data available on request, Agricultural Commodity Survey.

Note: There appears to be an anomaly with Australian Bureau of Statistics figures for 1995 – all figures are too high.

Potatoes (mainly for processing) make up over 40 per cent of the total area of vegetables grown in the State and the area grown has increased steadily since 1985 (Table 11). Gross margins on potatoes tend to be at the higher end of the vegetable gross margin scale, compared to peas, for example, which earn a lower margin per hectare.

The increase in potato area has been a significant driver behind the demand for additional irrigation water (Section 4). Potatoes generally require between four and five megalitres of water per hectare per annum.

Processing potatoes in Tasmania are grown under contract to one of two companies (Simplot or McCains) and increases in area over time are dependent on these companies increasing contracts to farmers, or in some cases by growing additional areas themselves under joint venture arrangements with farmers.

Overall, the increase in potato area since 1985 has been largely offset by a reduction in the area planted to peas as the demand for frozen peas has fallen.

The onion area, which expanded from around 600 hectares in 1985 to 1,600 hectares in the mid 1990s has dropped back to around 1,100 hectares in more recent times.

The areas of carrots, beans and broccoli, while not as great as potatoes and peas, have all shown a steady increase in recent times.

**Table 11: Vegetable Areas, Tasmania**  
(‘000 hectares)

Year	Potatoes	Peas	Onions	Carrots	Beans	Broccoli	Other	Total
1985	5.2	7.0	0.6	0.3	0.2	1.3	1.3	15.9
1986	4.8	6.6	0.6	0.3	0.2	1.1	1.5	15.2
1987	5.7	6.7	0.7	0.3	0.3	1.2	1.7	16.7
1988	6.4	6.2	1.0	0.3	0.5	0.9	1.6	16.9
1989	6.0	6.3	1.1	0.4	0.5	1.0	1.7	17.0
1990	6.9	6.5	1.2	0.4	0.6	1.1	1.6	18.3
1991	5.7	5.6	1.4	0.3	0.5	0.9	1.6	16.2
1992	6.0	5.3	1.5	0.4	0.5	0.9	1.6	16.3
1993	6.1	6.0	1.2	0.4	0.4	1.0	1.8	16.9
1994	6.9	7.3	1.3	0.4	0.5	1.1	1.8	19.2
1995	6.1	7.4	1.5	0.4	0.7	1.0	7.6	24.6
1996	7.6	6.0	1.6	0.5	1.0	1.3	1.9	19.8
1997	7.4	6.2	1.2	0.5	0.9	1.3	1.7	19.1
1998	8.3	6.0	1.0	0.6	0.8	1.2	1.2	19.2
1999	7.6	5.1	1.1	0.6	0.8	1.2	1.1	17.3
2000	5.7	4.5	1.2	0.6	1.0	1.3	1.0	15.2
2001	7.5	4.6	1.0	0.7	0.9	1.4	1.2	17.3
2002	7.4	4.7	1.1	0.6	1.0	1.4	1.2	17.5

Source: Australian Bureau of Statistics, ABS data available on request, Agricultural Commodity Survey (Appendix 4).

Note : The area of “Other” Vegetables shown for 1995 appears to be an anomaly in the data held by Australian Bureau of Statistics for that year. The Total figure of 24,600 hectares for that year is probably also suspect – given that the totals both before and after are around 19,000 to 20,000 hectares.

## Poppies

There has been strong growth in poppy area (and yield per hectare) throughout the State over the past 10 to 15 years. Based on Australian Bureau of Statistics figures the total area planted has increased from 4,700 hectares in 1985 to 16,100 hectares in 2002 (Table 12). In particular, the Northern Natural Resource Management Region has shown a threefold increase in the 10 years from 1992 to 2002 and currently makes up around half of the total area.

According to industry sources, the area planted to poppies increased further to around 17,500 hectares in 2003, however, the area being grown for the 2004 harvest has been reduced as a result of a build-up in stocks relative to anticipated market demand. The reduced area is likely to be maintained for at least the next year or so. Both contracting companies (Glaxo Smith Kline and Tas Alkaloids)<sup>8</sup> expect areas to recover in several years and hopefully to continue to expand into the future.

The growth in poppy area has been one of the main drivers behind the expansion in irrigation water demand (Section 4), particularly in the Northern Natural Resource Management Region. Most poppy crops are irrigated and have an irrigation water requirement of between one and two megalitres per hectare per annum.

**Table 12: Area of Poppies by Natural Resource Management Region**  
(‘000 hectares)

Year	Southern	Northern	North Western	Total
1985	1.0	1.5	2.2	4.7
1986	0.7	1.1	1.9	3.7
1987	0.5	0.8	1.8	3.1
1988	0.8	0.9	1.6	3.3
1989	1.0	1.0	2.0	4.0
1990	1.0	1.0	2.1	4.1
1991	1.5	2.2	2.9	6.5
1992	1.8	2.6	3.2	7.6
1993	1.0	1.7	2.6	5.3
1994	1.6	2.0	2.3	5.9
1995	2.0	2.9	2.9	7.8
1996	1.8	2.7	3.0	7.4
1997	1.7	3.5	3.2	8.4
1998	2.3	4.3	3.9	10.5
1999	2.8	5.9	3.7	12.4
2000	3.1	7.7	4.3	15.1
2001	3.6	7.7	4.6	15.9
2002	3.5	8.0	4.7	16.1

Source: Australian Bureau of Statistics, ABS data available on request, Agricultural Commodity Survey.

<sup>8</sup> From personal discussion with management of the two companies.

### Perennial Horticulture

There has been strong growth in the area planted to perennial horticulture crops in recent years particularly in the Southern and Northern Natural Resource Management Regions (Table 13).

**Table 13: Area of Perennial Horticulture by Natural Resource Management Region**  
(‘000 hectares)

Year	Southern	Northern	North Western	Total
1985	3.0	0.7	0.5	4.1
1986	3.0	0.8	0.5	4.2
1987	2.8	0.8	0.5	3.8
1988	2.7	0.6	0.5	3.9
1989	2.8	0.7	0.5	4.0
1990	2.7	0.8	0.5	4.0
1991	2.6	0.8	0.5	3.9
1992	2.6	0.8	0.6	4.0
1993	2.9	0.9	0.6	4.4
1994	2.7	0.7	0.7	4.1
1995	2.9	0.9	0.7	4.5
1996	3.0	1.0	0.8	4.8
1997	2.9	1.0	0.7	4.6
1998	3.8	0.9	0.8	5.5
1999	3.1	0.7	0.6	4.3
2000	3.7	1.2	0.7	5.6
2001	3.5	1.2	0.7	5.4
2002	4.9	1.5	0.8	7.2

Source: Australian Bureau of Statistics, ABS data available on request, Agricultural Commodity Survey (Appendix 4).

Orchard fruit, which consists mainly of apples but more recently with increasing areas of cherries, apricots and walnuts, makes up the bulk of the area of perennial horticulture in the State.

While consistent data on the area of apples are not available over the period, in the late 1980s the total area planted was around 2,600 hectares. Data on total tree numbers (Appendix 4) show an increase from around 1.3 million at that time to 1.5 to 1.6 million currently. However, given that recent apple orchards are mostly planted at higher densities, the total area planted to apples may not have increased greatly (if at all) over the period.

The increase in orchard fruit in recent years is largely as a result of increased areas planted to cherries and apricots, almost exclusively in the Southern Natural Resource Management Region. This is a result of a growing realisation of the benefits of a relatively warm and dry climate in areas such as the Coal River Valley combined with the availability of irrigation water from the Coal River Irrigation Scheme and Hobart Water.

The area planted to walnuts has also shown steady growth since the mid 1990s and currently occupies a similar area of land to hops (Table 14). Walnuts are mainly being planted on the east coast (near Swansea), and with some more recent plantings in the Coal River Valley.

**Table 14: Perennial Horticulture Areas, Tasmania**  
(‘000 hectares)

Year	Orchard Fruit (1)	Walnuts	Berries	Grapes	Hops	Total
1985	2.85		0.32	0.07	0.87	4.11
1986	2.93		0.33	0.11	0.84	4.21
1987	2.85			0.10	0.85	3.80
1988	2.79		0.20	0.08	0.82	3.89
1989	2.85		0.19	0.10	0.81	3.95
1990	2.88		0.18	0.18	0.77	4.01
1991	2.75		0.17	0.20	0.78	3.90
1992	2.76	0.01	0.20	0.22	0.81	4.00
1993	3.07	0.01	0.21	0.29	0.83	4.41
1994	2.96	0.01	0.29	n.a	0.84	4.11
1995	3.07	0.02	0.27	0.40	0.77	4.52
1996	3.18	0.03	0.28	0.48	0.79	4.76
1997	3.06	0.08	0.25	0.48	0.71	4.59
1998	4.02	0.10	0.21	0.51	0.65	5.49
1999	3.26	0.21	0.17	n.a	0.69	4.32
2000	3.98	0.32	n.a	0.76	0.55	5.61
2001	3.42	0.41	n.a	0.92	0.65	5.41
2002	4.85	0.52	n.a	1.17	0.64	7.17

(1) Total area provided by ABS less Walnut area provided directly by Webster Walnuts

Source: Australian Bureau of Statistics, ABS data available on request, Agricultural Commodity Survey (Appendix 4).

### 3.1.5. LIVESTOCK

#### Total Livestock Numbers

The area of improved and native pastures on agricultural establishments in the State is outlined above (Table 4). As discussed, year to year variations in the Australian Bureau of Statistics estimates of sown and native pasture areas make it difficult to detect any real trends over time. There are no statistics that show the allocation of pasture areas to various livestock enterprises. However, there are statistics for the total numbers of grazing (and other) animals in the State (Table 15).

Sheep numbers have declined since 1985 due mainly to reduced returns to farmers. Higher feed prices in Tasmania tend to make pig and poultry production less economic than on the mainland, and numbers of pigs and poultry layers have also fallen. Beef cattle numbers have been relatively stable since 1985 although there has been a reduction since 1998. Dairy cattle numbers have increased over time but with some reduction since a peak in 1999. The apparent substantial drop in total dairy cattle numbers in 2002 comes from survey results rather than a census and needs to be interpreted with caution.

**Table 15: Livestock Numbers, Tasmania**  
(‘000 head)

Year	Dairy Cattle	Beef Cattle	Sheep & Lambs	Pigs	Poultry-Layers
1985	148	405	4,780	47	315
1986	143	426	5,083	45	na
1987	139	395	4,954	46	na
1988	134	408	4,747	48	na
1989	134	426	4,933	45	na
1990	136	433	5,337	42	na
1991	140	444	4,804	38	na
1992	146	447	4,295	40	na
1993	160	445	4,270	44	na
1994	169	507	4,324	46	219
1995	185	507	3,853	38	245
1996	197	521	3,862	27	199
1997	211	515	3,977	24	211
1998	218	510	3,869	24	250
1999	233	491	3,801	22	225
2000	206	411	3,341	18	189
2001	210	427	3,284	22	209
2002	187	432	3,380	18	232

Source: Australian Bureau of Statistics, ABS data available on request, Agricultural Commodity Survey (Appendix 4).

## Dairy Cattle

Total dairy cattle numbers have increased significantly since 1985, with a peak of 232,900 head in 1999 (Table 16).

The dairy industry is concentrated in the Northern and North Western Natural Resource Management Regions. Between 1985 and 2002 there has been an overall increase in both the Northern and North Western Natural Resource Management Regions but a reduction in the Southern Region.

**Table 16: Total Dairy Cattle Numbers by Natural Resource Management Region**  
(‘000 head)

Year	Southern	Northern	North Western	Total
1985	6.9	53.7	86.9	147.5
1986	6.6	50.5	85.8	142.9
1987	6.3	48.1	84.4	138.8
1988	5.8	47.0	81.1	133.9
1989	5.9	46.5	82.0	134.4
1990	6.1	47.9	81.9	135.9
1991	5.8	48.9	85.2	139.9
1992	5.8	49.9	90.3	146.0
1993	6.2	54.8	98.5	159.5
1994	6.3	59.5	103.1	168.9
1995	6.4	68.6	110.2	185.2
1996	6.5	72.4	117.8	196.7
1997	6.3	77.9	126.4	210.6
1998	7.8	79.7	130.2	217.7
1999	7.3	85.0	140.6	232.9
2000	5.1	80.4	120.6	206.1
2001	6.7	79.4	123.7	209.8
2002	4.4	79.5	103.2	187.1

Source: Australian Bureau of Statistics, ABS data available on request, Agricultural Commodity Survey (Appendix 4).

While there has been some reduction in total dairy cattle numbers since 1999, total milk production reached a record high in 2002 before falling somewhat in 2003 when lower milk prices coincided with difficult seasonal conditions (Figure 6).

Total dairy cattle numbers include young stock and so it is possible that milking cow numbers may not have fallen to the same extent as total dairy cattle numbers. Australian Bureau of Statistics results for 2002 which indicate that there may have been a significant reduction in total numbers, particularly in the North Western and Southern Regions, come from a representative survey rather than a full census and will need to be confirmed with later figures.

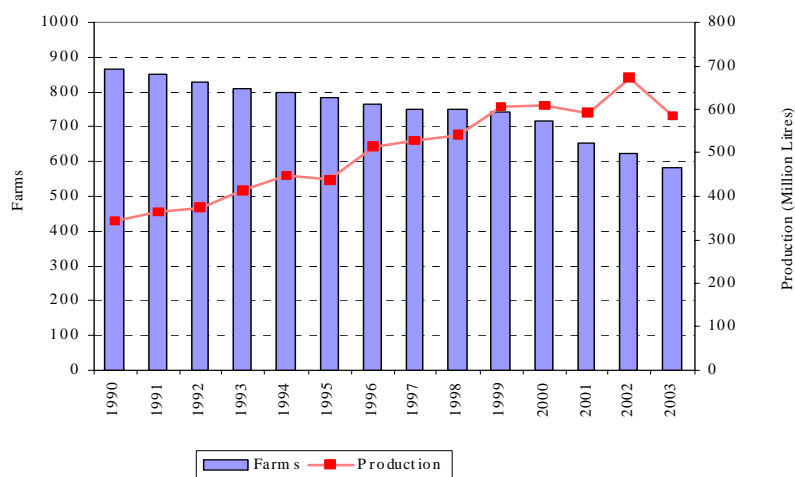
The growth in dairy cattle numbers through to 1999 occurred concurrent with the growth in plantation forestry that occurred in the late 1990s. Conversion of beef and sheep properties in higher rainfall areas to large-scale dairies was a factor in that growth. A substantial increase in irrigated dairying was another factor.



While there has been steady growth in dairy cattle numbers and production, total dairy farm numbers in Tasmania have fallen steadily over time (Figure 6) as average farm size and cows milked per farm have increased<sup>9</sup>. The increase in average farm size is a result of existing dairy farms buying neighbouring properties, new large-scale dairy conversions, and the exit of smaller dairy farms. The exit of smaller farms was assisted to some extent in the late 1990s by the relatively high land prices paid by the forestry prospectus companies at that time. As well as being smaller in area, some of the dairy exits were also likely to have been less productive, being in higher altitudes or on poorer soil types.

In 2002, excellent pasture production in spring and early summer, and a record high milk price resulted in total production reaching a record 671 million litres. In 2003, however, poor seasonal conditions and low prices resulted in a sharp reduction in production.

**Figure 6: Dairy Farm Numbers and Milk Production, Tasmania**



Source: Davey & Maynard, Tasmanian Dairy Industry Regional Profile, DRDC, January 2000 (updated with information provided by DPIWE)

If the peak of 2002 is ignored it appears that total milk production may have levelled off at around 600 million litres. Uncertainty over the future of the major manufacturing firm Bonlac, and recent low prices (apart from 2002), are the most likely causes of the apparent slow down in the long-running expansion of the State's dairy industry.

The availability of suitable land is unlikely to have been a factor in this apparent slow down in industry growth. Tasmania has a large area of suitable land throughout the State that could be converted to dairying, including properties of sufficient size to achieve a reasonable scale of operation. Adequate

<sup>9</sup> Davey & Maynard, Tasmanian Dairy Industry Regional Profile, DRDC, January 2002.

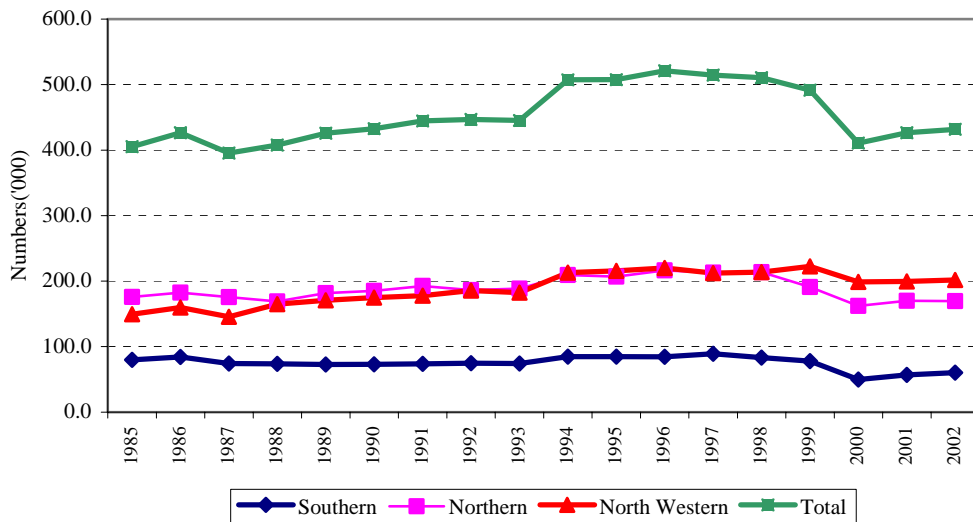
supplies of irrigation water may become a factor that limits growth in future years although there is potential for further storage of winter flood flows.

**Beef Cattle**

Since 1985 total beef cattle numbers have been relatively stable but with a peak in the late 1990s (Figure 7 and Table 17). As for dairying, the beef industry is concentrated in the Northern and North Western Natural Resource Management Regions. Currently around 85 per cent of all beef cattle are in these two regions. Total numbers have declined slightly since the peak in the late 1990s. The decline appears to be more significant in the Northern and Southern Regions than in the North Western Region.

Cattle numbers in the North Western Region have shown an overall increase over the period and have only declined slightly since 1999, despite the amount of pasture converted into plantations in that Region the late 1990s.

**Figure 7: Beef Cattle Numbers by Natural Resource Management Region**  
(‘000 head)



Source: See Table 17

**Table 17: Total Beef Cattle Numbers by Natural Resource Management Region**  
(‘000 head)

Year	Southern	Northern	North Western	Total
1985	79.7	175.9	149.5	405.1
1986	84.2	182.3	159.9	426.4
1987	74.3	175.5	145.6	395.4
1988	73.8	169.1	164.8	407.7
1989	72.8	181.9	170.9	425.6
1990	73.0	185.0	174.8	432.8
1991	73.9	192.7	177.8	444.4
1992	74.7	186.3	185.6	446.6
1993	74.2	188.6	182.3	445.1
1994	84.8	209.3	213.2	507.3
1995	84.8	206.9	215.7	507.4
1996	84.6	216.3	220.0	520.9
1997	89.0	213.1	212.4	514.5
1998	83.2	213.6	213.6	510.4
1999	77.8	191.0	222.6	491.4
2000	49.7	162.1	198.8	410.6
2001	56.8	170.0	199.7	426.5
2002	60.3	169.6	201.9	431.8

Source: Australian Bureau of Statistics, ABS data available on request, Agricultural Commodity Survey (Appendix 4).

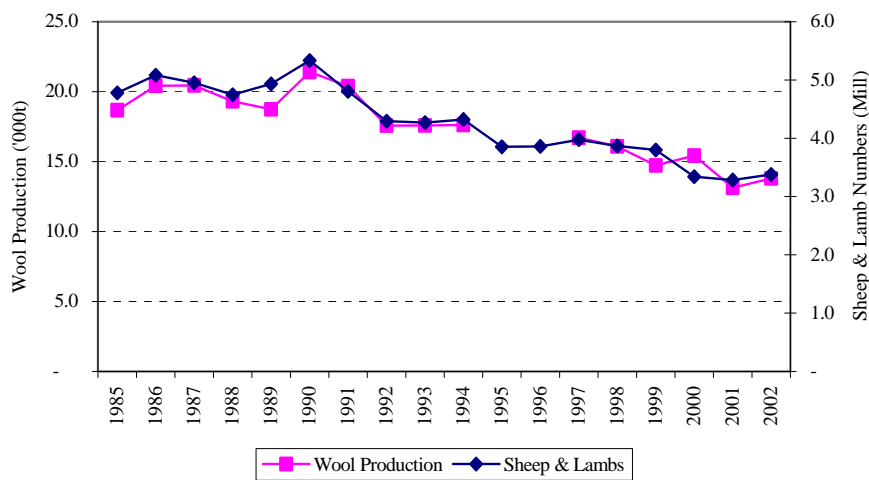
Total beef cattle numbers have declined by 17 per cent from around 521,000 in 1996 to 432,000 in 2002. It is likely that at least some of this reduction is a result of the expansion of forestry plantation area. Other factors include conversion of beef cattle areas into large-scale dairy farms and relatively low beef prices throughout much of the 1990s.

Interestingly, however, while there was a sharp decline in total cattle numbers from 1996 to 2000, there has been some recovery in 2001 and 2002, possibly as a result of increasing beef prices (Table 17). There is, in fact, a similar number of beef cattle in Tasmania in 2002 as there was throughout the late 1980s and early 1990s. This would tend to support the view that total cattle numbers have been influenced more by prices paid than by the amount of land taken up by plantation forestry.

**Sheep**

Total sheep numbers have declined by around 30 per cent since the latter half of the 1980s (Figure 8), following the demise of the reserve price scheme that had underpinned wool prices prior to that time. Along with the reduction in sheep numbers there has also been a 30 per cent reduction in wool production from around 20,000 to 14,000 tonnes.

**Figure 8: Sheep & Lamb Numbers and Wool Production, Tasmania**



Source: Australian Bureau of Statistics, ABS data available on request, Agricultural Commodity Survey (See Appendix 4).

The sheep industry is concentrated in the Southern and Northern Natural Resource Management Regions which include the drier Midland and east coast areas which have extensive grazing areas generally more suited to sheep than beef cattle (Table 18).

**Table 18: Total Sheep & Lamb Numbers by Natural Resource Management Region**  
(‘000 head)

Year	Southern	Northern	North Western	Total
1985	1,961	2,474	345	4,780
1986	2,144	2,584	355	5,083
1987	2,082	2,567	305	4,954
1988	1,945	2,475	326	4,747
1989	2,026	2,554	353	4,933
1990	2,128	2,821	388	5,337
1991	1,984	2,505	315	4,804
1992	1,825	2,215	255	4,295
1993	1,770	2,238	262	4,270
1994	1,775	2,272	276	4,324
1995	1,656	1,991	206	3,853
1996	1,696	1,994	172	3,862
1997	1,780	2,014	182	3,977
1998	1,768	1,927	174	3,869
1999	1,664	1,958	178	3,801
2000	1,352	1,808	181	3,341
2001	1,363	1,732	189	3,284
2002	1,452	1,753	174	3,380

Source: Australian Bureau of Statistics, ABS data available on request, Agricultural Commodity Survey (Appendix 4).

## Pigs

Total pig numbers have fallen by over 60 per cent since 1985 - due mainly to declining returns. Higher feed prices in Tasmania tend to make production less profitable than for other Australian States.

Pig numbers are highest in the Northern Natural Resource Management Region (Table 19). Since 1985, numbers have fallen in all three Regions, but particularly in the Southern and North Western Regions.

**Table 19: Total Pig Numbers by Natural Resource Management Region**  
(\*000 head)

Year	Southern	Northern	North Western	Total
1985	6.2	20.0	21.1	47.3
1986	6.8	19.6	18.5	44.9
1987	6.2	22.0	17.9	46.1
1988	5.6	23.3	18.8	47.7
1989	5.1	21.4	18.5	45.0
1990	3.9	20.7	17.6	42.2
1991	3.3	20.4	13.9	37.6
1992	2.6	23.7	13.7	40.0
1993	3.8	26.3	13.8	43.9
1994	3.4	28.0	14.4	45.8
1995	3.1	24.7	10.3	38.1
1996	1.9	20.6	4.0	26.5
1997	2.3	17.3	4.2	23.8
1998	3.2	14.9	6.2	24.3
1999	2.8	13.3	5.8	21.9
2000	1.8	11.4	4.4	17.6
2001	1.6	16.2	4.3	22.1
2002	1.3	13.3	3.2	17.8

Source: Australian Bureau of Statistics, ABS data available on request, Agricultural Commodity Survey (Appendix 4).

## Poultry

Poultry layer numbers have fallen in all three Natural Resource Management Regions since 1985, associated with deregulation of the egg market and lower returns (Table 20).

**Table 20: Total Poultry-Layer Numbers by Natural Resource Management Region**  
(‘000 birds)

Year	Southern	Northern	North Western	Total
1985	187.2	86.6	40.8	314.6
1986	n.a	n.a	n.a	n.a.
1987	n.a	n.a	n.a	n.a.
1988	n.a	n.a	n.a	n.a.
1989	n.a	n.a	n.a	n.a.
1990	n.a	n.a	n.a	n.a.
1991	n.a	n.a	n.a	n.a.
1992	n.a	n.a	n.a	n.a.
1993	n.a	n.a	n.a	n.a.
1994	160.1	40.3	18.5	218.9
1995	123.5	92.3	28.7	244.5
1996	103.6	70.0	25.8	199.4
1997	107.0	80.5	23.1	210.6
1998	106.9	126.6	16.6	250.1
1999	80.5	125.5	19.4	225.4
2000	103.2	59.8	26.3	189.3
2001	133.0	56.2	19.4	208.6
2002	126.4	74.4	30.9	231.7

Source: Australian Bureau of Statistics, ABS data available on request, Agricultural Commodity Survey (See Appendix 4).

### 3.2. FORESTRY

This section focuses on the plantation estate, primarily on private land.

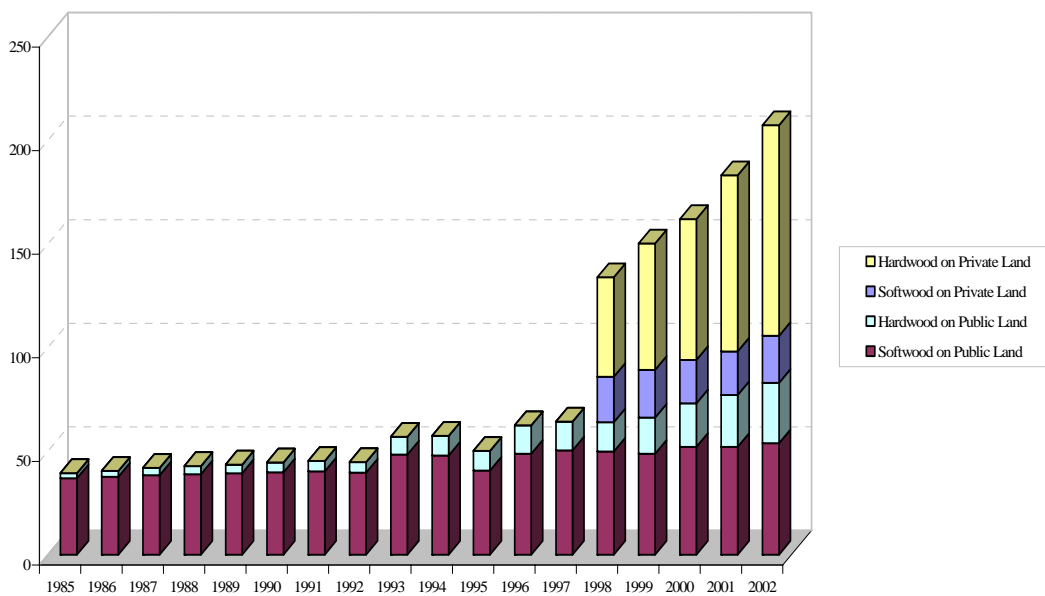
In June 2001 there were 3,352,000 hectares of forest in Tasmania covering 47 per cent of the State’s land area. In 2002 the area of plantation forest was about 207,000 hectares or 6 per cent of the total forest area. About 1,115,000 hectares of forest, including 124,000 hectares of plantation is on privately owned land.

Tree plantations are included as an agricultural use in the State Policy on Protection of Agricultural Land. In many respects tree plantations are farms growing a crop of trees, all be it a large crop grown over a long period of time.

#### 3.2.1. PLANTATION FORESTRY

Records for plantations on private land in Tasmania were not kept systematically prior to 1998 and are unreliable. Since 1998, there has been a 55 per cent increase in the total area, entirely due to the net increase in hardwood plantations (Figure 9 and Table 21).

**Figure 9: Area of Hardwood and Softwood Plantations on Private and Public Land in Tasmania**  
(‘000 hectares)



Source: Table 21



While the proportion of plantations on private land has varied from year to year, the figures from 1999 to 2002 indicate that this proportion is increasing. In 2002, plantations on private land occupied 124,000 hectares or 59 per cent of the total plantation area.

**Table 21: Plantations in Tasmania**  
(‘000 hectares)

	Softwood			Hardwood			Total		
	Private	Public	Total	Private	Public	Total	Private	Public	Total
1985	na	36.9	36.9	na	2.5	2.5	0.0	39.4	39.4
1986	na	37.6	37.6	na	2.8	2.8	0.0	40.4	40.4
1987	na	38.3	38.3	na	3.6	3.6	0.0	41.9	41.9
1988	na	38.8	38.8	na	4.0	4.0	0.0	42.8	42.8
1989	na	39.3	39.3	na	4.2	4.2	0.0	43.5	43.5
1990	na	39.7	39.7	na	4.8	4.8	0.0	44.5	44.5
1991	na	40.2	40.2	na	5.0	5.0	0.0	45.2	45.2
1992	na	39.6	39.6	na	5.1	5.1	0.0	44.7	44.7
1993	na	48.3	48.3	na	8.6	8.6	0.0	56.9	56.9
1994	na	47.8	47.8	na	9.6	9.6	0.0	57.4	57.4
1995	na	40.6	40.6	na	9.5	9.5	0.0	50.1	50.1
1996	na	48.7	48.7	na	13.7	13.7	0.0	62.4	62.4
1997	na	50.3	50.3	na	13.9	13.9	0.0	64.2	64.2
1998	22.0	49.8	71.8	48.0	14.1	62.1	70.0	63.9	133.9
1999	23.0	48.7	71.7	61.0	17.5	78.5	84.0	66.2	150.2
2000	21.0	52.0	73.0	68.0	21.0	89.0	89.0	73.0	162.0
2001	21.0	52.0	73.0	85.0	25.1	110.1	106.0	77.1	183.1
2002	22.7	53.8	76.5	101.7	29.1	130.8	124.4	82.9	207.3

Source: Annual Reports - Forestry Commission, Forestry Tasmania, Private Forests Tasmania

As described above, reliable data for plantations on private land is only available from 1998. Since that time there has been a significant increase in total hardwood plantations, particularly on private land.

The location of hardwood and softwood plantations on private and public land in Tasmania is shown in Map 2.

### 3.2.2. PLANTATIONS AND LAND CAPABILITY

Land capability classification is an internationally recognised means of classifying land and is used to evaluate the capability of land to support a range of agricultural uses on a long-term sustainable basis. It may be defined as a ranking of the ability of land to sustain a range of agricultural land uses without degradation of the land resource<sup>10</sup>.

Only private freehold agricultural land and small areas of Crown land that is either “unallocated” or leased to private operators has been evaluated for land capability in Tasmania. Agricultural land is broadly defined as land capable of being used for grazing and annual broad area cropping. Over the period from 1992 to 2002, the Department of Primary Industries Water and Environment conducted land capability surveys and produced maps on a 1:100,000 scale in the following Natural Resource Management Regions – Southern (Derwent, Nugent, D’Entrecasteaux), Northern (Forester, Pipers, South Esk, Meander, Tamar) and North-Western (Hunter, Circular Head, Inglis, Forth). The Tamar map is predominantly within the Northern Region and Forth is predominantly within the North-Western Region.

Land capability assessment takes into account those climatic and physical factors that affect the land’s long-term potential for sustainable grazing and crop production activities. It does not necessarily equate to the suitability of land for a specific purpose. Overall land suitability for a particular purpose takes into account other factors such as economics and availability of other essential inputs such as labour, roads, transport etc. Specific land uses, including forestry, are not incorporated into the capability system. However, knowledge of where plantations are located, and the land capability of those areas, allow a determination as to whether plantations and other agricultural sectors are in competition.

The Tasmanian system classifies land into seven classes. Class 1, 2 and 3 are collectively defined as prime agricultural land, as they represent the most productive areas with most enterprise versatility, and are at the least risk of degradation as a result of growing annual crops. Land capability class gives a general indication of land use (Table 22).

**Table 22 Land Capability Classes and Appropriate Land Use**

Class	Cropping Suitability	Pastoral Suitability	Land Use Options
1	High	High	Many
2			
3	Medium		
4	Low		
5	Unsuitable	Medium	Limited
6		Low	
7		Unsuitable	Extremely Limited

Source: Grose CJ (Ed ) 1999, Land Capability Handbook.

<sup>10</sup> Grose CJ (Ed ) 1999, Land Capability Handbook. Guidelines for the Classification of Agricultural Land in Tasmania. Second Edition, Department of Primary Industries, Water and Environment, Tasmania

For the purposes of this report, the area of plantation on Class 1-3 (prime agricultural land), Class 4, Class 5-7 and Unmapped has been determined. Prime agricultural land is significant as it forms the basis for the *State Policy for the Protection of Agricultural Land, 2000*. This Policy acts to protect prime agricultural land from development, except in prescribed circumstances. Tree farming and plantation forestry are included within the definition of agricultural land use.

Class 4 land has been separated out as it is currently used extensively for grazing throughout Tasmania but is increasingly being used for cropping, particularly in the Northern Natural Resource Management Region. The increase in cropping on Class 4 land is as a result of increases in the area of potatoes and poppies being grown in recent years and a demand for larger-scale areas. It has been facilitated to some extent by planting into raised beds to improve drainage.

Class 5-7 land is, by definition, unsuitable for sustained annual cropping.

The unmapped area represents the area of plantation not included in the Department of Primary Industries, Water and Environment's land capability maps or is located outside the area assessed for land capability. It can be reasonably assumed that plantations within the unmapped category do not conflict with normal agricultural production.

The land capability system normally allocates land to an individual class eg Class 1, Class 2 etc. However, there are many occasions where it has not been possible to allocate land to a single class. These have been recorded as complexes eg. Class 1/2. This example is predominantly Class 1. However, in strict land capability terms, it implies that at least 60 per cent of the land is Class 1, the remainder being Class 2. For the purposes of this report, any complex such as Class 1/2 has been included as Class 1.

Spatial data for Tasmanian plantations as at December 2001<sup>11</sup> has been used to determine the interaction between plantations and land capability<sup>12</sup>. A total of 195,100 hectares of plantation was present at that date (Table 23). Of this, 168,600 hectares (86 per cent) occurred on Class 5-7 or unmapped land. 22,100 hectares (11.3 per cent) occurred on Class 4 land, and 4,400 hectares (2.3 per cent) was located on prime agricultural land (Classes 1-3).

Most of the plantation area on prime agricultural land at the time was on Class 3 land within the North Western Natural Resource Management Region. The total area of prime agricultural land in the North Western Region is 66,300 hectares. The 3,800 hectare area occupied by plantation in this region represents 5.7 per cent of that total. The area of plantation on Class 1-3 land does not automatically indicate that plantations have displaced agriculture. Some may have been established on areas that were previously native forest or other vegetation that had been located on prime agricultural land. Some may have been established as plantations a long time ago.

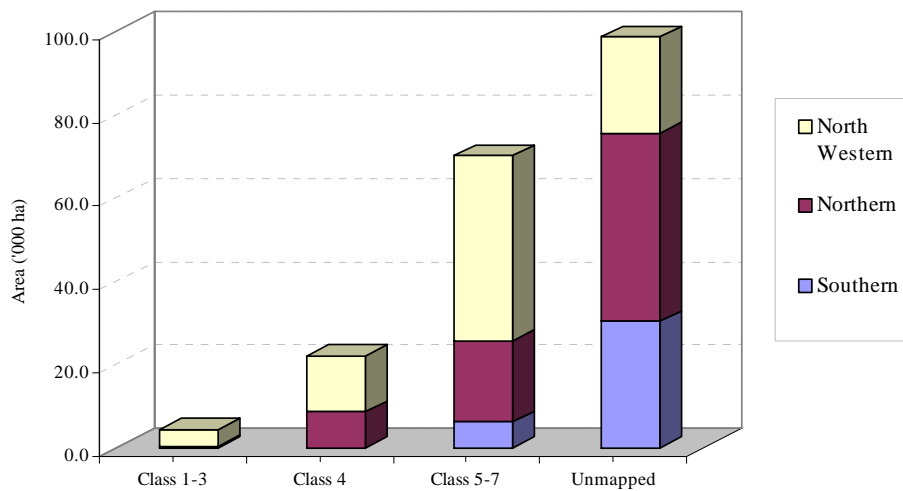
The Class 4 land occupied by plantation was also predominantly in the North Western Region. The total area of Class 4 land in the North Western Region is 106,100 hectares of which plantations occupied 13,500 hectares or 12.7 per cent.

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<sup>11</sup> Source: Private Forests Tasmania

<sup>12</sup> Source: Department of Primary Industries, Water and Environment

**Figure 10: Area of Plantation by Natural Resource Management Region, 2001**



Source: See Table 23

A small area of plantation exists on Class 1-3 land in the Northern Region but is obscure in the scale used in Figure 10 (See Table 23).

**Table 23: Area of Plantation by Natural Resource Management Region, 2001**

(‘000 hectares)

Class	Southern	Northern	North Western	Total
Class 1-3	0.0	0.6	3.8	4.4
Class 4	0.1	8.6	13.5	22.1
Class 5-7	6.3	19.6	44.2	70.1
Unmapped	<u>30.4</u>	<u>45.1</u>	<u>23.0</u>	<u>98.5</u>
<b>Total</b>	<b>36.8</b>	<b>73.8</b>	<b>84.5</b>	<b>195.1</b>

Source: Davey & Maynard spatial analysis of 2001 Forest Group Data Set provided by Private Forests Tasmania

Of the total hardwood plantations area of 117,400 hectares, 94,900 hectares (81 per cent) was located on Class 5-7 or unmapped land (Table 24). 18,500 hectares (16 per cent) was planted on Class 4 land. Hardwood accounts for the majority of plantations on Class 1-4 land within the North Western Natural Resource Management Region

4,100 hectares (4.4 per cent) of hardwood plantation was located on prime agricultural land. Of this 3,600 hectares was located with the North Western Natural Resource Management Region.

**Table 24: Area of Hardwood Plantation by Natural Resource Management Region, 2001**  
(\*000 hectares)

Class	Southern	Northern	North Western	Total
Class 1-3	0.0	0.5	3.6	4.1
Class 4	0.0	7.7	10.8	18.5
Class 5-7	3.5	18.3	38.6	60.4
Unmapped	<u>9.8</u>	<u>16.6</u>	<u>8.1</u>	<u>34.5</u>
Total	13.3	43.0	61.0	117.4

Source: Davey & Maynard spatial analysis of 2001 Forest Data Set provided by Private Forests Tasmania

For the softwood plantations, 73,800 hectares (95 per cent) was established on Class 5-7 and unmapped land (Table 25). 3,700 hectares (5 per cent) was located on Class 4 land. Only 300 hectares (0.4 per cent) was located on prime agricultural land.

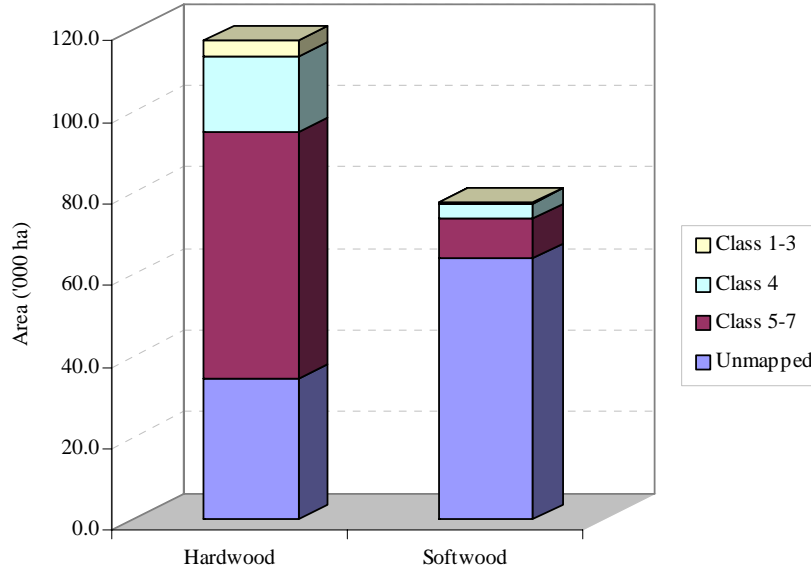
The proportion of unmapped land is much higher for softwood than for hardwood, as a greater proportion of Tasmania's softwood plantation is located outside of areas covered by land capability mapping.

**Table 25 Area of Softwood Plantation by Natural Resource Management Region, 2001**  
(\*000 hectares)

Class	Southern	Northern	North Western	Total
Class 1-3	0.0	0.1	0.2	0.3
Class 4	0.0	0.9	2.7	3.7
Class 5-7	2.9	1.3	5.6	9.7
Unmapped	<u>20.6</u>	<u>28.5</u>	<u>14.9</u>	<u>64.1</u>
Total	23.5	30.8	23.5	77.7

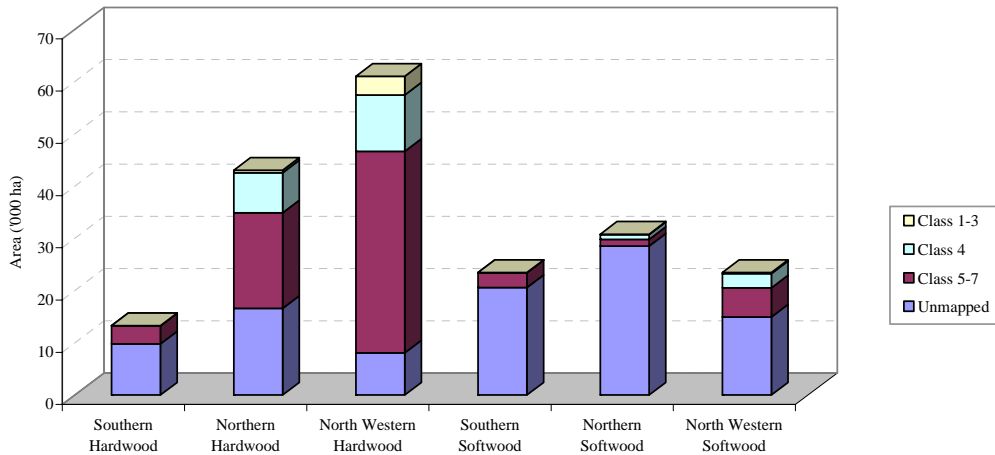
Source: Davey & Maynard spatial analysis of 2001 Forest Data Set provided by Private Forests Tasmania

**Figure 11: Area of Hardwood and Softwood Plantation by Land Capability Class Tasmania, 2001**



Source: See Tables 24 and 25

**Figure 12: Area of Hardwood and Softwood Plantation by Natural Resource Management Region, 2001**



Source: See Tables 24 and 25

In general, while there has been some development of plantations on the better classes of agricultural land, the bulk of the plantation area is on Class 5-7 or unmapped areas. The proportion of forestry plantation area on prime agricultural land is very small.

### 3.2.3. PREVIOUS LAND USE OF PLANTATIONS EXISTING IN 2001

A picture of the area of plantations in 2001 in relation to the pre-existing land use in 1996 has been established using spatial data – for both private and public land (Table 26). Determining previous land use prior to 1996 is not possible due to the lack of reliable data.

73,400 hectares (60 per cent) of the total area of plantation located on private land in 2001 was also used for plantations five years earlier in 1996. This could represent either the same plantation existing in each year, or a subsequent rotation on the same area of land.

For private land over the period from 1996 to 2001, 22,700 hectares (19 per cent) has been established on land that was previously native forest and an additional 22,400 (18 per cent) has been established on what was pasture for grazing purposes in 1996.

**Table 26: Plantations Area on Private Land in 2001 compared to Pre-Existing Land Use in 1996, Tasmania**  
(‘000 hectares)

1996 Vegetation	Southern	Northern	North Western	Total
Native Forest	2.8	7.2	12.7	22.7
Non Forest - Other	0.3	0.9	1.2	2.4
Plantation Hardwood	1.5	20.5	26.8	48.8
Plantation Softwood	11.3	1.6	11.7	24.6
Unknown	0.3	0.6	0.1	1.0
Pastures	<u>2.4</u>	<u>7.9</u>	<u>12.0</u>	<u>22.4</u>
Total	18.7	38.6	64.5	121.8

Source: Private Forests Tasmania

For the 74,800 hectares of plantation on public land in 2001, 54,500 hectares (73 per cent) was previously plantation in 1996 (Table 27). Over the period from 1996 to 2001, 18,300 hectares (24 per cent) has been established on land that was previously native forest, and 600 hectares established on what was previously pasture.

**Table 27: Plantation Area on Public Land in 2001 compared to Pre-Existing Land Use in 1996,  
Tasmania**  
(‘000 hectares)

Original Vegetation	Southern	Northern	North Western	Total
Native Forest	3.8	10.3	4.1	18.3
Non Forest - Other	0.8	0.4	0.3	1.4
Plantation Hardwood	4.0	4.6	2.1	10.7
Plantation Softwood	9.3	21.2	13.4	43.8
Unknown	-	-	-	-
Pastures	<u>0.1</u>	<u>0.3</u>	<u>0.2</u>	<u>0.6</u>
Total	18.0	36.7	20.1	74.8

Source: Forestry Tasmania

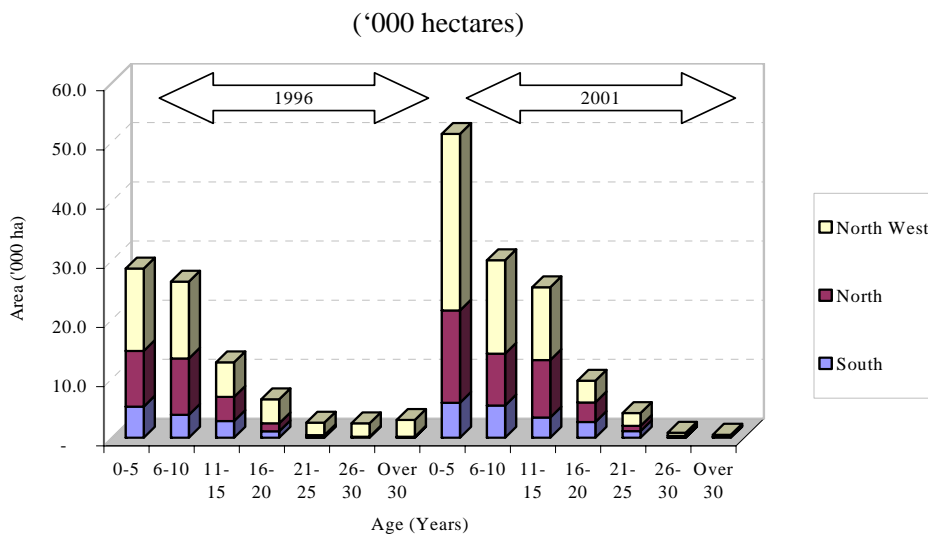


### 3.2.4. AGE OF PLANTATIONS

In 2001, the area of trees in the 0-5 year age category amounted to 51,000 hectares, or 42 per cent of all plantations on private land (Figure 13 and Table 28). This reflects the growth in plantation establishment in recent years, particularly in the Northern and North Western Natural Resource Management Regions.

The analysis of spatial data for plantation age categories revealed a certain area of plantation with an unknown age, due to uncertainties in the data held by Private Forests Tasmania. For the purposes of this report, the total area with an unknown age was allocated pro-rata over the remaining categories.

**Figure 13: Area of Plantations on Private Land by Age Groupings and Natural Resource Management Region (1996 and 2001)**



Source: Table 28

**Table 28: Area of Plantations on Private Land by Age Groupings and Natural Resource Management Region, 2001**

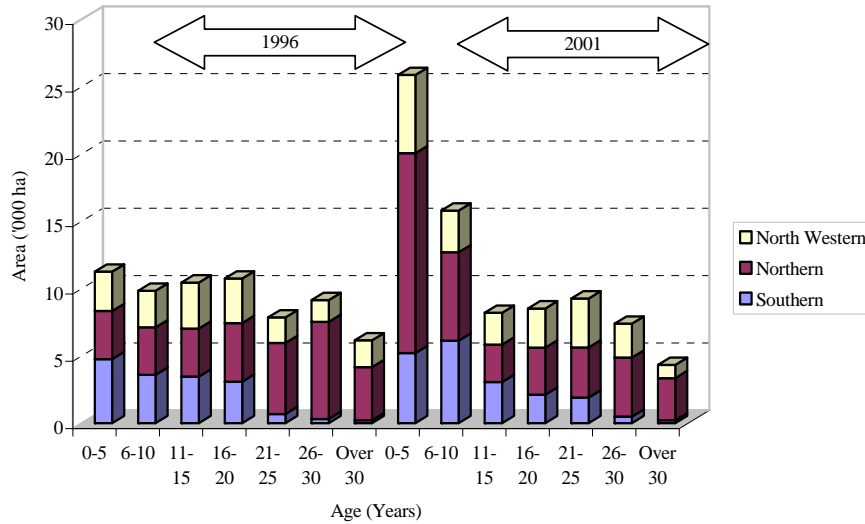
(\*000 hectares)

Age Group	Southern	Northern	North Western	Total
0-5	5.9	15.6	29.8	51.3
6-10	5.4	8.7	15.8	30.0
11-15	3.4	9.7	12.3	25.4
16-20	2.7	3.3	3.7	9.6
21-25	1.1	0.9	2.2	4.2
26-30	0.0	0.3	0.5	0.8
Over 30	<u>0.1</u>	<u>0.1</u>	<u>0.3</u>	<u>0.5</u>
Total	18.7	38.6	64.6	121.8

Source: Private Forests Tasmania

Thirty three per cent of the area of all plantations on public land in 2001 was five years old or less (Figure 14 and Table 29). Most of this is located in the Northern Natural Resource Management Region, reflecting the suitability and land availability in that Region for plantations.

**Figure 14: Area of Plantations on Public Land by Age Groupings and Natural Resource Management Region**  
(‘000 hectares)



Source: Table 29

**Table 29: Area of Plantations on Public Land by Age Groupings and Natural Resource Management Region, 2001**  
(‘000 hectares)

Age Group	Southern	Northern	North Western	Total
0-5	5.2	14.8	5.8	25.9
6-10	6.1	6.6	3.1	15.8
11-15	3.0	2.8	2.4	8.2
16-20	2.1	3.5	2.9	8.5
21-25	1.9	3.7	3.6	9.3
26-30	0.5	4.4	2.5	7.4
Over 30	<u>0.2</u>	<u>3.1</u>	<u>1.0</u>	<u>4.3</u>
<b>Total</b>	<b>19.1</b>	<b>38.9</b>	<b>21.3</b>	<b>79.3</b>

Source: Forestry Tasmania

## 4. IRRIGATION

### 4.1. AREA IRRIGATED

The total area under irrigation in Tasmania has risen from around 40,000 hectares in 1985 to almost 70,000 hectares in 2002 with irrigated dairying and an expansion in the area of potatoes and poppies being the main drivers (Table 30).

Irrigated pasture is the largest component of the total area irrigated – 40 to 45 per cent in recent years. Given its relatively high water use per hectare, pasture probably accounts for 55 to 60 per cent of the total irrigation water used in the State. Much of the increase in pasture irrigation is associated with an increase in irrigated dairying. A Department of Primary Industries, Water and Environment survey of dairy farms in 1997-98<sup>13</sup> indicated that 65 per cent of dairy farmers used irrigation on pastures and/or forage crops, up from 38 per cent five years earlier.

The growth in irrigation of “other crops” is likely to be mainly as a result of the expansion in the area of poppies.

**Table 30: Area Irrigated, Tasmania**  
(’000 hectares)

Year	Pasture	Cereals	Vegetables	Fruit	Other Crops	Total
1985	na	na	na	na	na	39.9
1986	na	na	na	na	na	na
1987	16.8	1.8	13.6	2.2	3.8	38.2
1988	na	na	na	na	na	na
1989	na	na	na	na	na	na
1990	21.6	1.7	14.7	2.1	4.0	44.1
1991	na	na	na	na	na	na
1992	20.2	2.2	13.8	2.5	7.1	45.8
1993	na	na	na	na	na	55.5
1994	33.0	2.3	16.5	2.9	6.4	61.1
1995	na	na	na	na	na	na
1996	na	na	na	na	na	45.4
1997	24.8	2.2	15.3	2.6	6.8	51.7
1998	31.4	2.9	18.0	3.1	12.3	65.1
1999	na	na	na	na	na	58.3
2000	28.2	1.7	17.2	3.4	11.9	62.2
2001	30.2	2.5	17.4	3.9	13.9	67.9
2002	29.3	2.2	17.2	4.2	14.2	67.6

Source: Australian Bureau of Statistics, ABS data available on request, Agricultural Commodity Survey (See Appendix 6).

<sup>13</sup> Department of Primary Industries, Water and Environment, Tasmanian Dairy Farm Survey Report (1997-98 Season)

Most of the irrigation area in the State is in the Northern and North Western Natural Resource Management Regions (Table 31).

The total area irrigated has increased substantially since 1985 in each of the three Natural Resource Management Regions, and particularly in the Northern Region, in line with the increase in poppy and vegetable production in that Region and in the area of pasture irrigated. (Table 31 and Appendix 6).

The area of pasture irrigated has also increased substantially in the North Western Natural Resource Management Region. In both the Northern and North Western Regions the increase in pasture irrigation is mainly associated with an increase in irrigated dairying.

**Table 31: Total Area Irrigated by Natural Resource Management Region**  
(\*000 hectares)

Year	Southern	Northern	North Western	Total
1985	10.7	13.6	15.5	39.9
1986	na	na	na	na
1987	9.9	13.5	14.7	38.2
1988	na	na	na	na
1989	na	na	na	na
1990	10.8	17.3	16.0	44.1
1991	11.2	17.7	17.3	46.2
1992	9.9	17.6	18.3	45.8
1993	11.1	24.5	19.9	55.5
1994	18.7	22.3	20.1	61.1
1995	na	na	na	na
1996	10.1	17.4	17.8	45.4
1997	10.8	21.4	19.5	51.7
1998	13.1	26.8	25.2	65.1
1999	13.1	24.9	20.3	58.3
2000	12.4	23.3	26.6	62.2
2001	13.8	30.0	24.1	67.9
2002	13.0	30.9	23.7	67.6

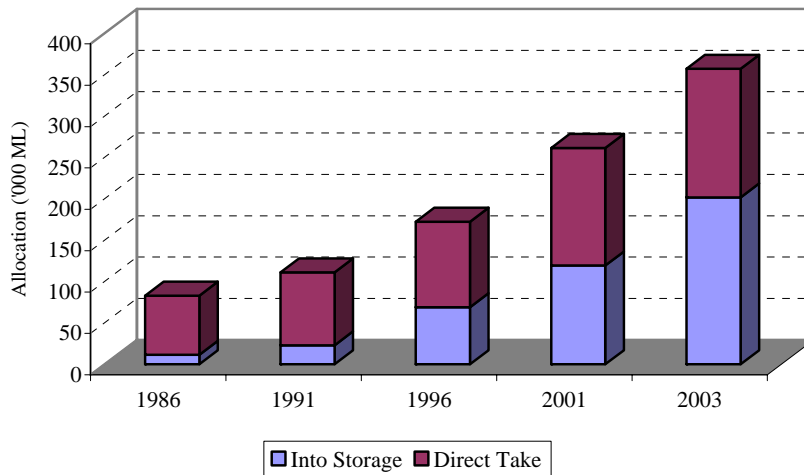
Source: Australian Bureau of Statistics, ABS data available on request, Agricultural Commodity Survey.

#### 4.2. IRRIGATION WATER ALLOCATION

The total licensed water allocation for irrigation has increased greatly over the past 15 years (Figure 15 and Table 32). Most of that increase has been in the form of water taken into on-farm storage (17-fold increase) compared to direct take from rivers and streams (2-fold increase).

A comparison of Tables 31 and 32 suggests that water use per hectare has also increased over time, in line with the increase in pasture irrigation and more intensive use on crops.

**Figure 15: Irrigation Water Allocations, Tasmania**



Source: Table 32

**Table 32: Total Irrigation Water Allocation, Tasmania**  
(‘000 Megalitres)

Water Allocation	1986	1991	1996	2001	2003
Into Storage	11.5	23.0	68.9	119.4	201.8
Direct Take	<u>71.5</u>	<u>88.1</u>	<u>103.3</u>	<u>142.1</u>	<u>155.4</u>
Total	83.0	111.1	172.2	261.5	357.2

Source: Department of Primary Industries, Water and Environment Water Management Branch

## 5. EMPLOYMENT

### 5.1. EMPLOYMENT BY INDUSTRY, TASMANIA

Australian Bureau of Statistics figures show that direct employment in “Agriculture, Forestry and Fishing” is around 12,000 people or seven per cent of the total State workforce. This does not include employment in businesses that service agriculture, forestry and fishing, or processing or manufacturing operations that depend on these sectors.

Total employment in agriculture, forestry and fishing in fact fell from 13,066 in 1986 to 11,314 in 1991 but rose again to 11,977 and 12,261 respectively in the 1996 and 2001 censuses (Table 33).

**Table 33: Employment by Industry**

Industry	1986	1991	1996	2001
Agriculture, Forestry and Fishing	13.1	11.3	12.0	12.3
Mining	3.3	2.3	1.8	1.6
Manufacturing	24.7	23.2	22.2	21.1
Electricity, Gas and Water Supply	5.1	3.0	0.9	1.8
Construction	11.3	9.4	10.7	9.3
Wholesale, Retail Trade	31.3	31.4	33.4	35.8
Accommodation, Cafes & Restaurants	0.0	0.0	8.4	9.5
Transport and Storage	8.3	7.4	7.1	7.9
Communication Services	3.6	2.6	2.7	2.8
Finance, Property, Business, Services	12.2	13.4	17.3	18.6
Government Administration and Defence	9.0	10.1	11.9	9.7
Education, Health & Community Services	35.0	35.1	34.3	36.3
Personal and Other Services	11.9	13.2	11.7	11.2
Not Stated/Classified	5.7	16.1	7.9	4.8
<b>Total</b>	<b>174.4</b>	<b>178.4</b>	<b>182.2</b>	<b>182.5</b>

Source: Australian Bureau of Statistics Census of Population and Housing

These statistics refer to employment in specific Australian Bureau of Statistics industry codes. As such they do not represent the full employment impact for what is more commonly described as a particular industry. In the case of “Agriculture, Forestry and Fishing”, for example, the statistics show people directly employed in the sector but exclude contractors, transport workers and manufacturing employees who are directly dependent on those sectors.

## 6. VALUE OF PRODUCTION

### 6.1. VALUE OF AGRICULTURAL PRODUCTION

The gross value of agricultural production in 2002 was \$903 million, up 20 per cent from the previous year (Figure 15). The relatively high value for 2002 was a result of record milk and poppy production and price, and high beef and lamb prices.

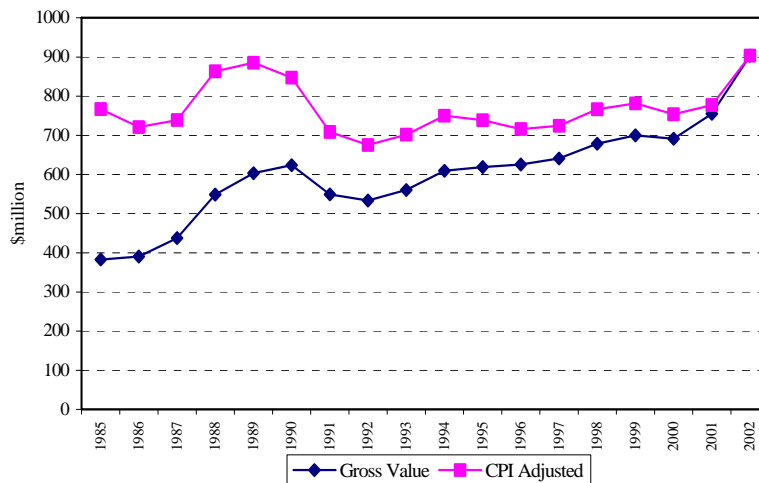
Gross value of agricultural production is essentially an ex farm value of production estimate, and as such, does not include any multiplier effects associated with agriculture – including downstream processing and manufacturing. A multiplier of around three is normally accepted for agriculture in Tasmania, so the total value of agriculture to Tasmania is likely to be approximately \$2,710 million.

On this basis, in 2001 the \$755 million total gross value of agricultural production would have represented a total of \$2,265 million or around 20 per cent of the total Gross State Product in that year.

There has been a steady increase in the gross value of agricultural production over time (5.2 per cent each year compound since 1984-85). When the annual figures are adjusted for inflation the increase over time is reduced somewhat, but there has a slight upward trend since 1990.

The increase in value evident in the late 1980s was a result of the increase in wool production and wool price prior to the demise of the reserve price scheme that was in place at the time.

Figure 16: Gross Value of Agricultural Production

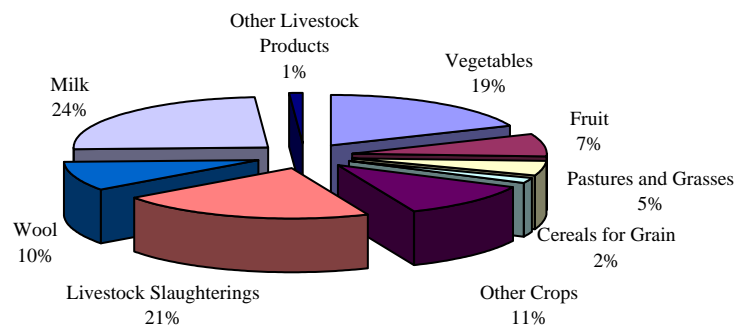


Source: Australian Bureau of Statistics, Cat No. 7503.0, Value of Agricultural Commodities Produced, Australia

Currently, milk (24 per cent), livestock slaughterings (21 per cent), and vegetables (19 per cent) are the main components of the total gross value of agricultural production (Figure 17).

Wool makes up around 10 per cent of the total gross value compared to 26 per cent in 1990.

**Figure 17: Gross Value of Agricultural Production, 2002**



Source: Australian Bureau of Statistics, Cat No. 7503.0, Value of Agricultural Commodities Produced, Australia



Since 1985, the largest dollar increase has been for milk and vegetables. The largest per centage increase has been for “Other Crops” which includes poppies (Table 34).

**Table 34 Increase in Gross Value of Agricultural Production, Tasmania  
1985 to 2002**

Agricultural Sector	Increase in GVP	
	(\$m)	(%)
Crops		
Vegetables	110.1	190%
Fruit	36.0	121%
Pastures and Grasses	29.0	203%
Cereals for Grain	6.8	86%
Other Crops	<u>79.1</u>	<u>353%</u>
Total Crops	261.0	197%
Livestock Slaughterings	77.7	67%
Livestock Products		
Wool	14.1	19%
Milk	165.1	302%
Other Livestock Products	<u>2.8</u>	<u>39%</u>
Total Livestock Products	182.0	135%
Total Gross Value	520.7	136%

Source: Australian Bureau of Statistics, Cat No. 7503.0, Value of Agricultural Commodities Produced, Australia (Appendix 5)

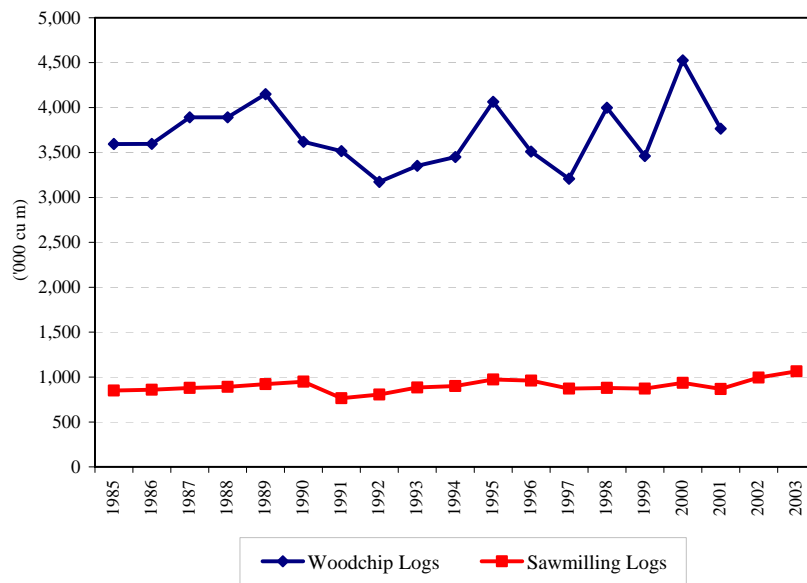
## 6.2. VALUE OF FORESTRY PRODUCTION

There is no Australian Bureau of Statistics publication that sets out the ex forest or plantation gross value of forestry production along the lines of that described for agriculture in Section 6.1. In order to give an indication of the change in output for the forestry sector, Australian Bureau of Statistics time series data is summarised below for logs delivered and timber produced since 1985 (Table 35 and Figure 18 and Figure 19). Some recent stumpage prices for Tasmanian timber are also outlined.

The total volume of sawmilling logs delivered has been relatively stable over the period from 1985. In contrast the volume of logs delivered for pulp and paper manufacturing has fluctuated over time but with a general upward trend since the early 1990s (Figure 18). There are no figures available on woodchipping logs since 1991.

The figures presented relate to production from all forests not just from plantations. They include public and private production, native and plantation timber, and both hardwood and softwood.

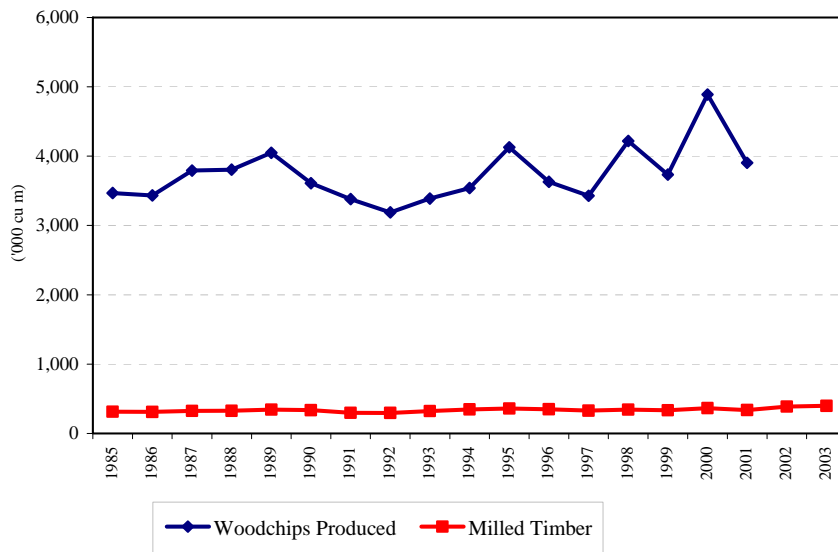
**Figure 18: Logs Delivered, Tasmania**



Source: See Table 35

As expected the amount of timber produced closely parallels the amount of logs delivered with a relatively flat level of production for milled timber and a fluctuating production of woodchips, but trending upwards since the early 1990s (Figure 19).

**Figure 19: Timber Produced, Tasmania**



Source: See Table 35

**Table 35: Logs Delivered and Timber Produced**  
(‘000 Cubic Metres)

Year	Logs Delivered			Timber Produced		
	Woodchips	Sawmilling	Total	Woodchips	Milled Timber	Total
1985	3,595	851	4,446	3,468	315	3,783
1986	3,596	859	4,455	3,434	312	3,746
1987	3,891	880	4,771	3,792	325	4,117
1988	3,892	893	4,785	3,805	328	4,133
1989	4,149	922	5,071	4,047	344	4,391
1990	3,619	949	4,568	3,609	337	3,946
1991	3,516	765	4,281	3,381	297	3,678
1992	3,173	806	3,979	3,188	297	3,485
1993	3,351	883	4,234	3,388	324	3,712
1994	3,449	900	4,349	3,540	348	3,888
1995	4,064	973	5,038	4,126	360	4,486
1996	3,510	961	4,471	3,629	349	3,978
1997	3,207	872	4,079	3,429	329	3,757
1998	3,998	880	4,878	4,218	344	4,562
1999	3,460	872	4,331	3,733	334	4,067
2000	4,527	936	5,463	4,888	366	5,254
2001	3,766	868	4,633	3,903	339	4,243
2002	na	994	na	na	387	na
2003	na	1,063	na	na	399	na

Source: Australian Bureau of Statistics, ABS data available on request, Tasmanian Statistical Indicators 1303.6.

It should be noted that the “Sawmilling” and “Milled Timber” statistics in Table 35 include veneers as well as sawn timber.

Table 36 shows a range of stumpage prices for timber harvested in Tasmania in 2002.

**Table 36: Stumpage Price Ranges, Tasmania, 2002**

	Lower Range (\$/m3)	Upper Range (\$/m3)
Softwood Plantation		
Sawlog Veneer	50	78
Sawlog Prime	40	65
Sawlog Residual	20	30
Pulp Standard	5	10
Hardwood Native Forest		
Sawlog Veneer	35	70
Sawlog Prime	25	45
Sawlog Residual	15	28
Pulp Standard	5	22
Hardwood Plantation		
Pulp Standard	5	25

Source: PrivateForests Tasmania, Tasmanian Market Information Update for Farm Forestry Number 4, June 2002

Based on Table 35 and Table 36 and depending on the proportion of the various timber types sold, the stumpage value of timber produced in Tasmania in recent years might be somewhere in the range of \$100 million to \$130 million.

Say	4 million m <sup>3</sup> of pulp logs	@	\$15	\$60 million
	1 million m <sup>3</sup> of sawlogs	@	\$40-50	<u>\$40 – 50 million</u>
	Total			\$100 – 130 million

This is from all forests (native and plantation) and across all lands (private and State).

In 1999-00 the industry value added figure for the Wood and Wood Product Manufacturing sector was \$399 million<sup>14</sup>. This is in addition to the ex forest gross value estimate above and hence cannot be directly compared with agriculture gross value of production figure. “Log Sawmilling and Timber Dressing” made up around 50 per cent of the total (\$197.6 million) with the remainder coming from “Other Wood Product Manufacturing” and “Paper and Paper Product Manufacturing”.

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<sup>14</sup> Australian Bureau of Statistics, Manufacturing Industry Tasmania 1999-2000, Cat No. 8221.6, Dec 2001.

## **7. DRIVERS OF LAND USE CHANGE**

A wide range of factors have impacted on current land use in Tasmania and will continue to impact on changes in rural land use in Tasmania over the next five to 10 years. A number of these drivers are discussed in this section along with some of the general issues facing agriculture and forestry.

### **7.1. AGRICULTURE**

Drivers of agricultural land use in Tasmania include:

- Terms of trade
- Productivity improvement
- Processing company capacity and requirements
- Fresh market fruit and vegetable potential
- Irrigation water availability
- Land availability
- Natural resource management issues
- Tasmanian Food Industry Strategy
- “Clean and Green” image

Each of these drivers is discussed below.

#### **Terms of Trade**

Prices received and paid are important drivers in agricultural land use. Commodity prices can fluctuate substantially between years. In real terms some show a long-term downward trend.

In terms of the likely short to medium term trend, the Australian Bureau of Agricultural and Resource Economics Outlook Conference in early 2003 forecast an overall Australian decline in farmer’s terms of trade from an index value of 103.3 in 2002-03 to 88.3 in 2007-08<sup>15</sup>.

The following price changes (in nominal terms) have been forecast by Australian Bureau of Agricultural and Resource Economics for agricultural products for the five-year period from 2002-03 to 2007-08:

- The Eastern Market Indicator for wool to fall from 1,070 c/kg (clean) to 780 c/kg
- Australian net pool returns for wheat to fall from \$265/t to \$224/t
- Saleyard prices for cattle to increase slightly from 237 c/kg dressed to 243 c/kg
- Saleyard prices for lamb to fall from 326 c/kg dressed to 293 c/kg
- Saleyard prices for pig meat to increase from 254 c/kg dressed to 288 c/kg
- Farm gate milk prices to increase from 28.5 c/l to 30.0 c/l. This represents a slight fall in real terms

Price projections are not provided for the smaller agricultural sectors such as grapes, cherries, apricots and walnuts that have shown growth in recent years. However, there is no apparent reason to suggest that growth cannot continue in these crops.

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<sup>15</sup> Australian Bureau of Agriculture and Resource Economics, Australian Commodities 03.1, Outlook 2003, March Quarter 2003.

Poppies have been a major contributor to the recent growth in gross value of agricultural production in Tasmania. Prices paid to farmers for the 2003-04 crop have been reduced (along with crop area) and will probably remain down for the next year or so.

The index of prices paid by farmers is expected to increase from 107.0 in 2002-03 to 116.6 in 2007-08. This represents an average farm inflation rate of 1.7 per cent per annum.

The overall projection is for a general reduction in terms of trade for agriculture over the next few years. However, there is potential for improvements in productivity to at least partly offset the impact of this trend.

Differences in terms of trade movements within agriculture and between it and forestry will impact on land usage over the next five years. The indication that milk and beef prices are likely to increase (at least in nominal terms) may restrict further conversion of higher rainfall pasture areas to plantations – depending on a range of other factors including wood and timber prices.

### **Productivity Improvement**

Where terms of trade are static or declining, improvements in productivity are required to maintain or improve the contribution of a particular sector.

In the past, important industries such as dairying, vegetables and poppies have shown a capacity to continue to improve overall productivity and output. In the case of dairying, for example, larger farm and herd sizes, increased irrigation and increased output per person have led to a substantial increase in total output despite a reduction in total dairy farm numbers. The question for this and other major sectors is whether such improvements in productivity can be maintained into the future.

Achieving larger scale of operation is likely to be important in the growth of dairying and vegetable production (as well as other industries) and is likely to see continued expansion in the Northern Natural Resource Management Region where larger scale properties are more common. For the same reason amalgamation of properties is also likely to be an ongoing trend, particularly in some of the more traditional North Western Natural Resource Management Region areas. Leasing of additional land is another method used to increase the overall scale of operation.

For the processed vegetable industry in general, and specifically potatoes, it has been suggested by industry sources that increases in yield per hectare, and thereby some overall reduction in factory input costs, will be required before any major expansion in processing facilities and crop area is contemplated.

### **Processing Company Capacity and Requirements**

A significant proportion of Tasmania's agricultural production is "value-added" before leaving the State. The capacity of manufacturing plants to handle increased throughput and the requirements of those companies will be a direct determinant of agricultural land use trends in the future.

While no major constraint issues have been raised in the short-term, it is possible that there may be medium-term (5-10 year) constraints for both milk manufacturing and processing facilities and vegetable processing facilities.

In relation to the dairy industry, there are seven manufacturers and processors within the State plus several farm cheese operations. Bonlac, with factories at Devonport and Wynyard, is the largest manufacturer, accounting for around 60 per cent of the State's milk. It is also the only company actively encouraging increased output. While Bonlac's manufacturing capacity may be an issue in the future if

milk production continues to expand, there are a number of options, including reasonably economic expansion at the Devonport site, that should enable expansion to continue providing milk prices are sufficiently high to encourage further production.

While there are no immediate capacity constraints in the processed vegetable sector, there may be some medium to longer term issues. For example, the potato processing industry is a major component of the vegetable sector, both in terms of land use and total value of production. Simplot is the largest processor and has factories at Ulverstone and Scottsdale, with processing to be centralised at Ulverstone from December 2003. With a gradual increase in throughput predicted over the next five or six years it is anticipated that factory capacity will be reached at that time. Longer-term expansion will depend on the industry becoming more competitive with overseas producers such as New Zealand. The other major processor, McCains, is smaller than Simplot but does have some further potential for expansion.

Oversupply of medicinal alkaloids as a result of the world market conditions and increased poppy crop production in Tasmania over the past two seasons has led to a reduction of crop area and price for the 2003-04 year. Industry sources suggest that this situation may remain for the next year or so but longer-term increases in area are possible. Part of the crop is processed locally and part in Victoria. The recent cut back in area planted should mean that lack of factory capacity is unlikely to be an issue in the foreseeable future.

### **Fresh Market Potential**

Recent contact with fresh vegetable operators has indicated potential for some increase in output over the next few years. This will depend on a number of factors including mainland prices, freight access and cost, availability of casual labour, greater access to water for irrigation and control of costs.

Improvements in shipping frequency with the introduction of the two Bass Strait ferries also has the potential to increase the demand for a range of fresh vegetables and fruits. The introduction of a third ferry in early 2004 may also expand opportunities for Tasmanian produce into Sydney.

### **Irrigation Water Availability**

The availability of water for irrigation has been identified by the State Government and farmer and industry bodies as a key factor in the maintenance of current agricultural output, and the potential for expansion. As such it is likely to be a key driver of rural land use trends in the future.

In recent years a number of legislative changes and other government initiatives have been made which will affect water availability for irrigation. Some of these are outlined below:

#### *Water Management Act, 1999*

This Act provides for the preparation of statutory water management plans, the development of which are currently progressing on a priority basis agreed with the Commonwealth. These provide for an environmental flow, and are also a vehicle for integrating the priorities for use of water on a catchment scale.

The Act also provides for transferability of water licences. For the first three years this was limited to temporary or conditional transfers but that limitation is no longer in place. This limitation has recently elapsed and will increasingly allow for the transfer of irrigation water to higher value enterprises such as vegetables and perennial horticulture.



### *Environmental Flow Requirements*

Since 1995, environmental flows in summer have been protected on water courses that were considered stressed (or more developed) by implementing a policy of not issuing any new water licences on these systems and also by implementing restriction thresholds on water extraction during summer. Such restrictions are only lifted for those water resources when an appropriate environmental flow regime has been established. Additional temporary allocations have been provided on some rivers where environmental flow requirements are expected to be readily met.

Environmental water requirements have been determined for many of Tasmania's rivers. These environmental water requirements will be used in developing environmental water provisions through Water Management Plans.

Under the *Water Management Act 1999*, in areas where a water management plan has not been developed, the Minister may approve applications for new water allocations (including water taken into dams) only when this would meet the objectives of the Act. The Act's objectives include the sustainable use of the water resources and the maintenance of ecological processes and genetic diversity for aquatic ecosystems.

The Department of Primary Industries, Water and Environment has developed guidelines to provide guidance for issuing new water allocations from water courses during winter under the *Water Management Act 1999*<sup>16</sup>. They aim to provide a clear, consistent and equitable approach to the granting of new winter water allocations while protecting the health of the State's rivers and estuaries and the rights of existing users.

### *The Water Development Plan for Tasmania*

The State Government has released a Water Development Plan for Tasmania that identifies strategic initiatives to manage and develop the State's freshwater resources<sup>17</sup>.

Specific opportunities identified by the Water Development Plan to date are:

- Increase availability and reliability of irrigation water supplies in the Meander region through the construction of the Meander Dam
- Increase irrigation opportunities in the South East through identifying the best options for providing water to productive parcels of agricultural land
- Transport water from the Great Lake/Arthurs Lake area for irrigation in the Clyde, Derwent and Jordan Catchments
- Increase irrigation in the Circular Head Region
- Investigate water development opportunities in the north east in the St Patricks and Ringarooma catchments plus other options
- Investigate water development opportunities in the north east including a potential scheme at Jetsonville and a winter storage at Headquarters Road on a tributary of the Greater Forester River

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<sup>16</sup> Department of Primary Industries, Water and Environment, Water Resources Policy # 1/2003, Guidelines to assess applications for new water allocations from water courses during winter, 2003.

<sup>17</sup> Department of Primary Industries, Water and Environment, About the Water Development Plan for Tasmania, web site: [dpiwe.tas.gov.au](http://dpiwe.tas.gov.au)

- Increase irrigation supplies in the South Esk basin (eg proposed Chimney Hill Dam on the Elizabeth River)
- Link domestic water needs with irrigation needs on the East Coast
- Make available water for irrigation from the Wesley Vale pipeline
- Make available water for irrigation from the various Cradle Coast Water domestic water supply systems along the North West Coast

#### *Impact of Forestry Plantations on Catchment Run-Off*

A further issue in relation to the availability of irrigation water supplies for agriculture that has arisen in recent years is the impact of fast growing plantations on catchment run-off.

Forestry plantation development has the potential to impact on water supplies by increasing evapo-transpiration and thereby reducing groundwater recharge and run-off. The impact may be beneficial or detrimental depending on the specific circumstances:

- Beneficial – a reduction in ground water recharge may eventually lower water tables in areas where dryland salinity is a risk.
- Beneficial – reduced flooding risk and soil degradation during heavy rainfall events by increasing water retention (except immediately following harvesting).
- Detrimental – a reduction in run-off has the potential to impact on down-stream water users and on environmental flow.

Some initial analysis of the impact of forestry plantations has been undertaken in Tasmania. Bren and O'Shaughnessy<sup>18</sup> looked at the possible impact of forestry developments in the St Patricks and North Esk catchments on Launceston's water supply. A model was prepared that suggested a small reduction in water supply as a result of current and past logging regimes. However, some projections of increased plantation activities suggested a maximum diminution of about 8-10 per cent in the flows in the future should such activities come to pass. This could cause a small increase in uncertainty of supply in the months of February to March by exacerbating the existing situation. In response to this projection a working group associated with the study noted that the 8-10 per cent reduction in annual water yield would only occur if all suitable cleared land was converted to fast growing plantation and that that situation was unlikely to occur.

The issue of detrimental impacts in catchments where there is a large proportion of quickly growing trees was raised in the Resource Planning and Development Commission inquiry into implementation of the Regional Forest Agreement<sup>19</sup>. It considered that the Natural Resource Management Framework (see below) should specifically address the interrelationship between forest management, water yields and the water management and planning process.

In general terms plantation forestry has the potential to significantly reduce stream flows available for irrigation if new plantations replace pasture or other relatively low water use vegetation cover in a significant proportion of the catchment area. This is more likely to be an issue with smaller catchments and localised areas rather than on a broad scale basis.

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<sup>18</sup> Bren, L., and O'Shaughnessy, P., An Analysis of the Growth of Eucalypt Forests on Launceston's Water Supply, Report prepared for Forest Practices Board, December 2001.

<sup>19</sup> Resource Planning and Development Commission, Inquiry on the Progress with Implementation of the Tasmanian Regional Forest Agreement (1997), December 2002.

### **Land Availability**

The proportion of high quality cropping land or prime agricultural land (ie Classes 1, 2 & 3) in Tasmania is relatively small. Annual crops can be grown on Class 4 land but there are often limitations, which may require drainage to be installed, or the use of raised bed technology. Longer spells between cropping phases may also be required to limit the possibility of structural decline given the more fragile nature of some of these soils.

On the other hand there is a large amount of Class 4 and 5 land throughout the State, which although it has some limitations in terms of annual cropping potential, has considerable potential for irrigated pasture production - as well as beef and sheep production and plantation development. Providing milk prices are sufficiently high this would allow for a significant expansion in dairy production in the State.

In the drier areas of Tasmania and where drainage and frost are not limiting, lower class land has potential for expansion of perennial horticulture such as grapes, cherries and apricots. In the Coal River Valley, for example, non-prime land on east and north facing slopes is preferred for vineyards over flat, higher land capability land on the valley floor.

### **Natural Resource Management Issues**

A number of natural resource management issues have the potential to impact on land use into the future:

#### *Water Quality*

Reductions in effluent and fertiliser run-off will continue to be required from both a community and legislative point of view.

There are a number of State and Local Government policy instruments in this regard, including the *State Policy on Water Quality and Management*. The Department of Primary Industries Water and Environment has an overarching brief under the *Environmental Management and Pollution Control Act* to reduce the potential for environmental harm or nuisance. Municipal councils throughout the State also have a role in relation to pollution from dairy farms, stock crossings etc.

In addition, the Tasmanian Farmers and Graziers Association which represents the overall interests of farmers in the State has been involved in the development of guidelines for land managers, dairy effluent etc. A code of practice has been developed by the Australian Fertiliser Association to cover spreading, handling, transport and storage of fertilisers.

The State and Local Governments and community groups have also been involved in improving waterways through Natural Heritage Trust funded programs such as Rivercare. Natural Heritage Trust devolved grant projects have been used for on-ground works associated with the protection of rivers and streams in a number of municipalities.

#### *Salinity*

Salinity is an issue that has the potential to limit the expansion of agriculture in the State, particularly in a number of areas that have been identified as "at risk". In general, these are in dryland areas where removal of vegetation from surrounding hills has resulted in a rise in water tables, bringing naturally saline groundwater closer to the surface. Where such areas are then converted to irrigated cropping it is

important that efficient application practices, drainage and monitoring are employed to ensure that crop damage does not occur.

The National Action Plan for Salinity and Water Quality has identified 21 priority areas for salinity in Australia. One of these “Midlands” is in Tasmania and covers much of the Eastern part of the State.

The Australian Bureau of Statistics undertook a survey in 2001 as a supplement to the Agricultural Census. The Tasmanian results of that survey are outlined in Table 37 and compared to other estimates of salinity or risk of salinity for the State.

Non-irrigated farms accounted for 93 per cent of the agricultural land showing signs of salinity Australia-wide. Northern Territory, Australian Capital Territory and Tasmania were assessed as being the areas least affected by salinity.

**Table 37: Area of Salinity in Tasmania**

Study	PMSEIC (1)	NLWRA (2)	ABS (3)
Year	1999	2001	2002
Area Measured	Salinity Affected Land	At Risk of Salinity	Showing Signs of Salinity
Assessment Method	Expert Assessment	Analysis of Land Systems	Reported by Farmers
Area (ha)	20,000	54,000	6,000

(1) Prime Minister's Science, Engineering and Innovation Council , 1999

(2) National Land and Water Resources Audit, 2001

(3) ABS Survey, Salinity on Australian Farms, Ref 4615.0, 2002

While salinity has the potential to cause problems in a number of agricultural areas in the State it does not mean that agriculture in general, or irrigated agriculture in particular, will be precluded. Prevention of over-irrigation, attention to drainage, and monitoring of water tables and salinity levels can permit irrigated agriculture to continue in a sustainable manner. In this regard modern irrigation technology including centre-pivot irrigators is capable of more accurately applying water to pasture and crops than in the past.

#### *State Policy for the Protection of Agricultural Land*

The *State Policy for the Protection of Agricultural Land, 2000* was introduced for the purpose of protecting agricultural land from development that could reduce, inhibit or extinguish agricultural productivity. The Policy specifically targets prime agricultural land (defined as being Class 1, 2 or 3 under the land capability classification system in Tasmania) from development, except under certain circumstances. Municipal Council planning schemes throughout Tasmania have been modified to facilitate the administration of this Policy. The Policy, which recognises plantation forestry as an agricultural crop, has a total of seven principles.

*Principle 1.* Prime agricultural land is a resource to be protected from conversion to non-agricultural use and development.

- Principle 2.* A dwelling or other use or development may only be permitted on prime agricultural land where the provisions of the planning scheme have been reviewed to ensure it properly reflects the intent of the State Policy.
- Principle 3.* Use or development of any building that is an integral part of an agricultural use on prime agricultural land will be determined to be consistent with this Policy.
- Principle 4.* Provision of public utilities or other infrastructure or a proposal of significant economic benefit to the region may cause prime agricultural land to be converted to non-agricultural use. Such conversion must: (i) comply with the planning scheme or amendment; and (ii) have the Resource Planning and Development Commission confirm there is an overriding need for a use or development for community benefit and a suitable alternative site is not available.
- Principle 5.* Protection of other than prime agricultural land from conversion to non-agricultural use will be determined through planning schemes.
- Principle 6.* Adjoining non-agricultural use and development should not unreasonably fetter agricultural uses.
- Principle 7.* Planning schemes will make provisions for the appropriate protection of the range of non-prime agricultural lands within a specified irrigation scheme.

While the State Policy should be effective in preventing the alienation of land from agriculture, difficulties have been experienced for both owners and Council officials in its implementation. Land owners particularly affected are those who have purchased small parcels of land within rural areas. Applications for development are now subject to a land capability assessment. Some owners are now finding that they cannot build a house on these blocks or if a building permit is granted, that there are restrictions on where the house can be built.

The Policy also has implications for urban development. Some Councils have re-zoned good agricultural land on the fringes of towns from residential to rural. Future expansion of townships will need to be focused on areas that are not classified as prime agricultural land.

#### *Native Vegetation Clearing Controls*

Community concern in relation to clearing of native vegetation for agricultural purposes has led to recent amendments to the *Forest Practices Act 1985 (Tas)*. These have extended the ambit of the Act to all forest clearing operations on all land tenures, and not just those involved in commercial forestry operations.

This means that the provisions of the Forest Practices Code, and specifically those relating to streamside reserves, erosion control, soil management, and pollution control, now relate to most forest clearing operations.

#### *Land Covenants*

Under the *Regional Forest Agreement* provision was made for protection of certain forest types on private land that were not adequately protected on public land. An agreed target of 100,000 hectares was established in November 1997 and the Private Forest Reserve Program was launched in 2000. To date the total area of forests protected by covenants on private land is 20,623 hectares<sup>20</sup> on 127 properties. Most of these properties are in the Southern Natural Resource Management Region (mainly south east and east coasts). A likely longer term figure for total forests protected on private land is 60,000 to 70,000 hectares.

<sup>20</sup> Dr.S.Smith, Manager, Private Forest Reserves Program, Oct 2003, pers.comm.

More recently, the State Government has announced its intention to work with farmers for protection of non-forest native vegetation, particularly areas of native grassland such as poa (tussock grass) and themeda (kangaroo grass) communities.

### **Tasmanian Food Industry Strategy**

The Food Industry Council of Tasmania was established in June 1999. The Council is a body of industry representatives advising the Minister for Economic Development.

The Agriculture, Aquaculture, Fishing, Food and Beverages Industry Audit in 1999 estimated that the turnover of the food industry was approximately \$1.7 billion per annum.<sup>21</sup> The State Government has a target of doubling the value of primary industry output by the year 2010.

The Food Industry Council of Tasmania considers that doubling the annual turnover of the food industry to \$3.4 billion by the year 2010 would be an achievable and complementary objective.<sup>22</sup> Eight strategies were decided upon in 2000 and a set of objectives and broad actions was set down for each of these strategies.

### **“Clean and Green” Image**

The Tasmanian Government and a number of industry sectors have decided to promote Tasmania’s “clean and green” image to improve overall returns from agriculture and to further develop tourism based around that general image. Promotion of this image has the potential to affect land use patterns over time.

### *Genetically Modified Organism Moratorium*

The State Government has instituted a moratorium on the use of Genetically Modified Organisms in Tasmania, particularly in relation to food production. Some industries, and individual companies, are likely to benefit from that moratorium from a marketing point of view. On the other hand, there is potential for some agricultural sectors to become less competitive over time as their mainland and overseas competitors are able to reduce costs of production, or improve quality, as a result of this technology.

### *Organic Production*

Tasmania has a small but growing organic industry.

While there are only a few “commercial” organic producers, organic farms are found throughout the State and are involved in varying enterprises from wine to sheep’s cheese. A survey of the industry in November 2002 by the Organic Coalition<sup>23</sup> indicated that over 70 per cent of the estimated farm gate value of the 39 respondents came from vegetables and herbs.

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<sup>21</sup> Department of Primary Industries, Water and Environment, Agriculture, Aquaculture, Fishing, Food and Beverages Industry Audit, 1999.

<sup>22</sup> Tasmanian Food Industry Strategy, July 2000.

<sup>23</sup> Organic Coalition of Tasmania, Report on Tasmanian Organic Industry Survey, November 2002, March 2003.

A recent Department of Primary Industries, Water and Environment overview of the industry reports 86 certified organic producers in Tasmania with another 50 in various stages of conversion, producing an estimated \$3.4 million worth of product on 4,000 hectares of land<sup>24</sup>. The report states that there are approximately a dozen larger scale operations but the majority of the organic farmers are small-scale operations where lifestyle and philosophy play a big part in the reason for being involved.

Overall it is not anticipated that organic production will have a significant impact on rural land use in Tasmania in the foreseeable future.

## 7.2. FORESTRY

Plantation industry drivers include the following

- Regional Forest Agreement
- Plantations for Australia: The 2020 Vision
- Forestry Growth Plan
- Plantation Prospectus Companies
- Markets and Timber Prices
- Landcare and Natural Resource Management Initiatives

### Regional Forest Agreement

Under the Regional Forest Agreement, the Commonwealth provided Tasmania (Forestry Tasmania) with \$68 million to establish approximately 20,000 hectares of new plantations to replace eucalypt sawlog forgone through additional reservation. This program is nearing completion but has been a driver for Forestry Tasmania to purchase private land since 1997.

### Plantations for Australia: The 2020 Vision

In 1997 the Commonwealth government, in conjunction with State governments and the forest industry, launched "*Plantations for Australia: The 2020 Vision*". The aim of the 2020 Vision is to promote the expansion of the national plantation resource by addressing market impediments to efficient plantation development<sup>25</sup>

The 2020 Vision envisages a major expansion of Australia's timber plantation resources.

A number of major drivers behind the expansion of forest plantations in the latter part of the 1990s were outlined by Richard Stanton, the National Plantations Co-ordinator for the 2020 Vision<sup>26</sup>:

- Resource for off-shore manufacturers.
- Domestic investment opportunity – 70 per cent of expansion funded by domestic investors. through a range of prospectus based projects. Taxation deferral benefits for taxpayers on high marginal tax rates.

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<sup>24</sup> Department of Primary Industries, Water and Environment, Overview of Organic Farming in Tasmania, Food & Agriculture, [www.dpiwe.tas.gov.au](http://www.dpiwe.tas.gov.au)

<sup>25</sup> Ministerial Council on Forestry, Fisheries and Aquaculture 1997.

<sup>26</sup> Stanton, R., An Overview of Timber Plantation Development in Australia – Drivers, Trends and Prospects, Plantations, Farm Forestry and Water, Rural Industries Research and Development Corporation Publication No. 01/20, July 2000.

- Agricultural industry decline - sheep and cattle grazing.
- Ownership changes – sale of significant areas of mature forests.
- Regional Forest Agreements – increase in confidence in the industry, especially in Tasmania.
- Maturing plantation industry – softwoods planted in the 1960s and 1970s.
- Greenhouse and carbon trading – the potential to use plantations for storing carbon under the Kyoto Protocol raised the interest of investors.
- Natural resource management factors – trees have been identified as having a key role in improving natural resource management benefits.
- 2020 Vision confidence – positive and expansionary outlook.

### **Forestry Growth Plan**

The *Forestry Growth Plan* was announced by the Tasmanian Government in 1998. The aim of the Plan is to build a world scale plantation resource to support internationally competitive and value-adding forest industries. Within the State there are three plantation “nodes” in the South, North East and North West. This plan builds on the Regional Forest Agreement funded plantations.

The value-adding that is envisaged under the Plan includes expanded sawmilling of softwood and rotary peeled veneer from hardwood (eg Southwood in the Huon and at Smithton).

### **Plantation Prospectus Companies**

The rapid expansion of forestry plantations on private land in recent times was largely based on plantation prospectus companies – Forest Enterprises Australia and Gunns Ltd in particular. Prospectus companies attract private investment to finance establishment of plantations on company freehold and leasehold land.

A taxation benefit that allowed 100 per cent deductibility of up-front establishment expense was a key feature behind the plantation establishment that occurred in the mid to late 1990’s.

Until November 1999 the “13 month rule” allowed expenditure on establishment of plantations to be included as a tax deduction up to 13 months prior to the expense having been incurred. After November 1999 the rule was changed so that expenditure incurred by an investor was only deductible when the service had been performed rather than being immediately deductible. This change resulted in dramatic reduction in investment funds and a scaling back of plantation development on private land. More recently the tax rule has been changed back to 12 months and investment in plantation prospectus companies has increased. This is likely to lead to interest in further expansion of plantations on cleared agricultural land.

### **Land Prices**

The rapid expansion of plantation forestry in the mid to late 1990s resulted in an increase in land prices for areas with soils, rainfall and altitude suitable for plantation development. For example, “back-country” grazing and seed potato properties that had been valued at around \$2,500 per hectare increased to \$3,700 to \$4,000 per hectare. The higher prices were paid for undulating basalt soils in areas such as Circular Head and inland from Burnie and Ulverstone. Reasonable quality land at Nietta which is a relatively high (400-500m) and cold area reached prices of \$3,000-\$3,500 per hectare. \$3,750 per hectare was paid for land at Preston.



According to the Government Valuer (pers. comm.) in mid 2000, the five-year government revaluation of potential forest properties in the Central Coast municipality resulted in a conservative increase of 30 per cent over the previous valuation – more realistically probably a 50 per cent increase. At the same time the value of higher value cropping and dairying properties had not changed.

While the high land prices may have eased somewhat since that time, they did allow owners of relatively uneconomic “back-country” properties to sell up and either exit agriculture or relocate to more productive areas.

### **Markets and Timber Prices**

Growing and attractive markets that have been established for plantation grown timber (Radiata Pine and Eucalypt pulpwood) have also attracted farmers and investors.

In relation to timber production in general, the Australian Bureau of Agriculture and Resource Economics expects increases in the supply of hardwood chips from plantations in Australia, Chile and South Africa to exceed expected increases in demand in Asia to 2007. As a result the price of hardwood chips is expected to continue to fall. “The world price for hardwood chips has fallen at an average rate of 6.7 per cent a year since 1995 in real terms. If current rates of productivity improvement continue, the price of hardwood chips will continue to fall at a similar rate until 2007”<sup>27</sup>.

In relation to Tasmanian woodchip prices it appears that while export prices are somewhat cyclical they have been reasonably constant over time. In general, Tasmanian woodchips are of higher quality than mainland Australia reflecting higher pulp yields. It is expected that markets for Tasmanian plantation grown woodchips will remain strong in both domestic and overseas markets. Gunns Ltd has a strategy to considerably expand the area of hardwood plantation on private land. This is likely to be a strong driver for land use change in suitable areas.

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<sup>27</sup> Australian Bureau of Agriculture and Resource Economics, Australian Commodities 03.1, Outlook 2003, March Quarter 2003.

## **8. APPENDICES**

**8.1. APPENDIX 1, LAND USE MAPPING AT CATCHMENT SCALE**

## APPENDIX 1

### Land Use Mapping at Catchment Scale

Land Use	Area	
	Total	Per cent
	(ha)	(%)
Conservation and Natural Environment		
Nature Conservation	1,982,603	29.0%
Managed Resource Protection	727,816	10.6%
Other Minimal Use	<u>729,617</u>	<u>10.7%</u>
	3,440,036	50.3%
Production from Relatively Natural Environments		
Grazing Natural Vegetation	277,377	4.1%
Production Forestry	<u>1,286,295</u>	<u>18.8%</u>
	1,563,672	22.8%
Production from Dryland Agriculture and Plantations		
Plantation Forestry	214,255	3.1%
Grazing Modified Pastures	1,224,053	17.9%
Cropping	1,039	0.0%
Perennial Horticulture		0.0%
Seasonal Horticulture		<u>0.0%</u>
	1,439,348	21.0%
Production from Irrigated Agriculture		
Irrigated Plantation Forestry		0.0%
Irrigated Modified Pasture	56,667	0.8%
Irrigated Cropping	74,054	1.1%
Irrigated Perennial Horticulture	5,812	0.1%
Irrigated Seasonal Horticulture	<u>454</u>	<u>0.0%</u>
	136,987	2.0%
Intensive Uses		
Intensive Horticulture	107	0.0%
Intensive Animal Production	21	0.0%
Manufacturing and Industrial	3,755	0.1%
Residential	58,189	0.9%
Services	9,693	0.1%
Utilities	4,590	0.1%
Transport & Communication	4,652	0.1%
Mining	7,442	0.1%
Water Treatment & Disposal	<u>654</u>	<u>0.0%</u>
	89,104	1.3%
Water		
Lake	1,335	0.0%
Reservoir/Dam	95,671	1.4%
River	13,950	0.2%
Channel/Aqueduct	51	0.0%
Marsh/Wetland	7,862	0.1%
Estuary/Coastal Waters	<u>55,425</u>	<u>0.8%</u>
	174,295	2.5%
<b>Total</b>	<b>6,843,440</b>	<b>100.0%</b>

Source: Drenen, A., Land Use Mapping at Catchment Scale, Tasmanian Report, DPIWE, March 2003

## Land Use Mapping at Catchment Scale

### Revised Headings

Land Use	Area	
	Total	Percent
	(ha)	(%)
Conservation and Natural Environment		
Nature Conservation	1,982,603	29.0%
Managed Resource Protection	727,816	10.6%
Other Minimal Use	<u>729,617</u>	<u>10.7%</u>
	3,440,036	50.3%
Forestry		
Production Forestry	1,286,295	18.8%
Plantation Forestry	214,255	3.1%
Irrigated Plantation Forestry	<u>0</u>	<u>0.0%</u>
	1,500,550	21.9%
Agriculture		
Grazing Natural Vegetation	277,377	4.1%
Grazing Modified Pastures	1,224,053	17.9%
Cropping	1,039	0.0%
Perennial Horticulture	0	0.0%
Seasonal Horticulture	0	0.0%
Irrigated Modified Pasture	56,667	0.8%
Irrigated Cropping	74,054	1.1%
Irrigated Perennial Horticulture	5,812	0.1%
Irrigated Seasonal Horticulture	454	0.0%
Intensive Animal Production	<u>21</u>	<u>0.0%</u>
	1,639,477	24.0%
Intensive Uses		
Intensive Horticulture	107	0.0%
Manufacturing and Industrial	3,755	0.1%
Residential	58,189	0.9%
Services	9,693	0.1%
Utilities	4,590	0.1%
Transport & Communication	4,652	0.1%
Mining	7,442	0.1%
Water Treatment & Disposal	<u>654</u>	<u>0.0%</u>
	89,083	1.3%
Water		
Lake	1,335	0.0%
Reservoir/Dam	95,671	1.4%
River	13,950	0.2%
Channel/Aqueduct	51	0.0%
Marsh/Wetland	7,862	0.1%
Estuary/Coastal Waters	<u>55,425</u>	<u>0.8%</u>
	174,295	2.5%
<b>Total</b>	<b>6,843,440</b>	<b>100.0%</b>

Source: Drenen, A., Land Use Mapping at Catchment Scale, Tasmanian Report, DPIWE, March 2003

**8.2. APPENDIX 2, POPULATION CENSUS**

**Australian Bureau of Statistics Census of Population and Housing**  
**Industry by Natural Resource Management Regions for Persons Employed**

Industry	Southern				Northern				North Western				Tasmania (1)			
	1986	1991	1996	2001	1986	1991	1996	2001	1986	1991	1996	2001	1986	1991	1996	2001
Agriculture, Forestry and Fishing	4,121	3,891	4,248	4,301	4,562	3,788	3,877	4,073	4,362	3,605	3,843	3,850	13,066	11,314	11,977	12,261
Mining	229	339	205	144	351	298	288	285	2,716	1,630	1,314	1,119	3,298	2,269	1,809	1,550
Manufacturing	9,666	9,141	9,070	8,921	7,893	7,358	7,163	6,562	7,155	6,676	5,997	5,613	24,718	23,188	22,239	21,125
Electricity, Gas and Water Supply	2,786	1,963	437	1,200	687	498	150	353	1,579	519	266	233	5,052	2,980	853	1,787
Construction	5,915	4,762	5,514	4,693	2,812	2,547	2,816	2,479	2,598	2,083	2,360	2,137	11,325	9,408	10,696	9,326
Wholesale, Retail Trade	14,594	14,721			9,349	9,489			7,374	7,175			31,318	31,405		
Wholesale Trade			3,641	3,621			2,834	2,797			1,954	1,973			8,439	8,402
Retail Trade			11,889	13,370			7,320	8,074			5,722	5,881			24,944	27,354
Accommodation, Cafes and Restaurants			4,323	5,042			2,290	2,570			1,739	1,823			8,356	9,458
Transport and Storage	3,215	2,924	2,908	3,281	2,736	2,462	2,084	2,546	2,024	1,737	1,922	1,963	8,252	7,362	7,071	7,899
Communication Services	2,217	1,519	1,635	1,698	791	631	621	675	552	418	391	404	3,560	2,571	2,657	2,781
Finance, Property, Business, Services	7,059	7,786			3,060	3,450			2,089	2,195			12,208	13,444		
Finance and Insurance			3,107	2,556			1,312	1,316			795	567			5,216	4,443
Property and Business Services			6,813	8,095			3,037	3,531			2,171	2,440			12,096	14,113
Government Administration and Defence	6,166	6,948	8,812	6,716	1,563	1,618	1,743	1,628	1,249	1,542	1,382	1,290	9,002	10,118	11,945	9,692
Education			7,692	7,892			3,806	4,294			2,884	2,844			14,390	15,040
Community Services	19,059	18,740			8,979	9,541			6,986	6,695			35,036	35,084		
Health and Community Services			10,296	11,346			5,740	6,001			3,869	3,888			19,918	21,261
Recreational, Personal, Other Services	6,511	7,127			3,266	3,709			2,134	2,332			11,911	13,175		
Cultural and Recreational Services			2,547	2,718			1,725	1,111			436	470			4,716	4,310
Personal and Other Services			4,084	3,905			1,677	1,708			1,197	1,263			6,965	6,888
Non-Classifiable Economic Units	646	498	666	727	333	313	468	421	209	221	386	359	1,188	1,034	1,520	1,508
Not stated	2,095	6,957	2,983	1,639	1,233	4,449	1,859	1,005	1,134	3,646	1,554	669	4,464	15,073	6,404	3,324
<b>Total</b>	<b>84,279</b>	<b>87,316</b>	<b>90,870</b>	<b>91,865</b>	<b>47,615</b>	<b>50,151</b>	<b>50,810</b>	<b>51,429</b>	<b>42,161</b>	<b>40,474</b>	<b>40,182</b>	<b>38,786</b>	<b>174,398</b>	<b>178,425</b>	<b>182,211</b>	<b>182,522</b>

(1) Tasmanian Total includes "Off-Shore and Migratory (SD)"

**Australian Bureau of Statistics Census of Population and Housing  
Summary**

Industry by Natural Resource Management Regions for Persons Employed  
('000 People)

Combined Industries	Southern				Northern				North Western				Tasmania (1)			
	1986	1991	1996	2001	1986	1991	1996	2001	1986	1991	1996	2001	1986	1991	1996	2001
Agriculture, Forestry and Fishing	4	4	4	4	5	4	4	4	4	4	4	4	13	11	12	12
Mining	0	0	0	0	0	0	0	0	3	2	1	1	3	2	2	2
Manufacturing	10	9	9	9	8	7	7	7	7	7	6	6	25	23	22	21
Electricity, Gas and Water Supply	3	2	0	1	1	0	0	0	2	1	0	0	5	3	1	2
Construction	6	5	6	5	3	3	3	2	3	2	2	2	11	9	11	9
Wholesale, Retail Trade	15	15	16	17	9	9	10	11	7	7	8	8	31	31	33	36
Accommodation, Cafes & Restaurants			4	5			2	3			2	2			8	9
Transport and Storage	3	3	3	3	3	2	2	3	2	2	2	2	8	7	7	8
Communication Services	2	2	2	2	1	1	1	1	1	0	0	0	4	3	3	3
Finance, Property, Business, Services	7	8	10	11	3	3	4	5	2	2	3	3	12	13	17	19
Government Administration and Defence	6	7	9	7	2	2	2	2	1	2	1	1	9	10	12	10
Education, Health & Community Services	19	19	18	19	9	10	10	10	7	7	7	7	35	35	34	36
Personal and Other Services	7	7	7	7	3	4	3	3	2	2	2	2	12	13	12	11
Not Stated/Classified	3	7	4	2	2	5	2	1	1	4	2	1	6	16	8	5
<b>Total</b>	<b>84</b>	<b>87</b>	<b>91</b>	<b>92</b>	<b>48</b>	<b>50</b>	<b>51</b>	<b>51</b>	<b>42</b>	<b>40</b>	<b>40</b>	<b>39</b>	<b>174</b>	<b>178</b>	<b>182</b>	<b>183</b>

(1) Tasmanian Total includes "Off-Shore and Migratory (SD)"



**8.3. APPENDIX 3, AREA OF HOLDINGS BY INDUSTRY CLASSIFICATION**

**Total Area of Holdings**  
**by Industry Classification and Natural Resource Management Region**  
Australian Bureau of Statistics Agricultural Census Data  
(hectares)

Industry Classification	Southern				Northern				North Western				Tasmania			
	1986 <sup>(1)</sup>	1991 <sup>(2)</sup>	1996 <sup>(3)</sup>	2001 <sup>(3)</sup>	1986 <sup>(1)</sup>	1991 <sup>(2)</sup>	1996 <sup>(3)</sup>	2001 <sup>(3)</sup>	1986 <sup>(1)</sup>	1991 <sup>(2)</sup>	1996 <sup>(3)</sup>	2001 <sup>(3)</sup>	1986 <sup>(1)</sup>	1991 <sup>(2)</sup>	1996 <sup>(3)</sup>	2001 <sup>(3)</sup>
Plant Nurseries	2,201	3,884	11,566	5,091	636	553	1,429	329	671	1,068	759	853	3,508	5,505	13,754	6,273
Cut Flower & Flower Seed		0	664	603		0	407	85		0	239	435		0	1,310	1,123
Vegetable Growing	2,013	5,569	15,787	10,552	3,817	15,581	50,133	55,610	16,605	49,093	50,950	54,517	22,435	70,243	116,870	120,679
Potatoes	1,777				10,749				35,409				47,935	0	0	0
Grape Growing	94	263	3,386	3,847	1,251	1,583	1,851	2,240			215	279	1,345	1,846	5,452	6,366
Orchard & Other Fruit	22,883				2,021				559				25,463			
Apple & Pear Growing		13,471	12,538	11,137		1,518	1,619	988		580	704	882		15,569	14,861	13,007
Stone Fruit Growing		538	883	4,652		166	176	231				0		704	1,059	4,883
Fruit Growing nec		707	1,197	3,203		331	283	834		42	1,227	238		1,080	2,707	4,275
Grain Growing	259	459	1,004	2,575	803	1,756	2,396	4,592	92	112	386	394	1,154	2,327	3,786	7,561
Sheep - Cereal Grains	8,558				32,205				766				41,529			
Beef Cattle - Cereal Grains	957				848				80				1,885			
Sheep & Grain-Beef Farming		5,612	25,570	19,942		13,895	33,869	37,941		424	367	174		19,931	59,806	58,057
Sheep - Beef Farming	182,704	150,402	170,070	157,790	324,772	292,143	248,534	217,379	49,040	45,305	20,120	16,728	556,516	487,850	438,724	391,897
Sheep Farming	530,174	497,237	392,846	412,976	359,801	376,604	317,012	285,691	22,841	16,132	2,143	2,232	912,816	889,973	712,001	700,899
Beef Farming	36,624	23,267	50,399	66,305	85,623	61,343	108,337	105,180	120,686	114,371	136,577	125,661	242,933	198,981	295,313	297,146
Dairy Farming	12,723	6,673	13,830	7,726	66,656	55,053	67,375	91,376	90,314	72,869	104,571	109,188	169,693	134,595	185,776	208,290
Poultry Farming (Meat)	2,545	1,197	1,979	824	1	0	117	17			89	139	2,546	1,197	2,185	980
Poultry Farming (Eggs)	426	367	283	86	667	525	619	629	30	18	26	27	1,123	910	928	742
Pig Farming	2,871	960	1,252	3,178	6,430	5,086	3,291	2,695	1,783	778	629	935	11,084	6,824	5,172	6,808
Horse Farming		3,502	1,884	1,526		848	1,495	1,715		514	485	1,406		4,864	3,864	4,647
Deer Farming		2,848	8,899	272		1,457	5,131	88			578	119		4,305	14,608	479
Agriculture nec	12,031				15,079				3,071				30,181			
Livestock Farming nec			5,731	247		196	12,300	97		13	853	604		209	18,884	948
Crop & Plant Farming nec		2,776	5,776	22,383		3,364	9,254	25,498		1,600	3,214	4,425		7,740	18,244	52,306
<b>Agriculture</b>	<b>818,840</b>	<b>719,732</b>	<b>725,544</b>	<b>734,915</b>	<b>911,359</b>	<b>832,002</b>	<b>865,628</b>	<b>833,215</b>	<b>341,947</b>	<b>302,919</b>	<b>324,132</b>	<b>319,236</b>	<b>2,072,146</b>	<b>1,854,653</b>	<b>1,915,304</b>	<b>1,887,366</b>

(1) Estimated Value of Agricultural Operations (EVAO) > \$2,500

(2) Estimated Value of Agricultural Operations (EVAO) > \$20,000

(3) Estimated Value of Agricultural Operations (EVAO) > \$5,000

Source: Australian Bureau of Statistics, ABS Data available on Request, Agricultural Census, ASGC by ANZIC.

**Total Area of Holdings**  
**by Industry Classification and Natural Resource Management Region**  
**Summary 1**

Australian Bureau of Statistics Agricultural Census Data  
(hectares)

Industry Classifications Combined	Southern				Northern				North Western				Tasmania			
	1986 <sup>(1)</sup>	1991 <sup>(2)</sup>	1996 <sup>(3)</sup>	2001 <sup>(3)</sup>	1986 <sup>(1)</sup>	1991 <sup>(2)</sup>	1996 <sup>(3)</sup>	2001 <sup>(3)</sup>	1986 <sup>(1)</sup>	1991 <sup>(2)</sup>	1996 <sup>(3)</sup>	2001 <sup>(3)</sup>	1986 <sup>(1)</sup>	1991 <sup>(2)</sup>	1996 <sup>(3)</sup>	2001 <sup>(3)</sup>
Nurseries & Flowers	2,201	3,884	12,230	5,694	636	553	1,836	414	671	1,068	998	1,288	3,508	5,505	15,064	7,396
Vegetable Growing	3,790	5,569	15,787	10,552	14,566	15,581	50,133	55,610	52,014	49,093	50,950	54,517	70,370	70,243	116,870	120,679
Grape Growing	94	263	3,386	3,847	1,251	1,583	1,851	2,240	0	0	215	279	1,345	1,846	5,452	6,366
Orchard & Other Fruit	22,883	14,716	14,618	18,992	2,021	2,015	2,078	2,053	559	622	1,931	1,120	25,463	17,353	18,627	22,165
Grain Growing	259	459	1,004	2,575	803	1,756	2,396	4,592	92	112	386	394	1,154	2,327	3,786	7,561
Sheep Farming	530,174	497,237	392,846	412,976	359,801	376,604	317,012	285,691	22,841	16,132	2,143	2,232	912,816	889,973	712,001	700,899
Beef Farming	36,624	23,267	50,399	66,305	85,623	61,343	108,337	105,180	120,686	114,371	136,577	125,661	242,933	198,981	295,313	297,146
Sheep/Beef/Grain Farming	192,219	156,014	195,640	177,732	357,825	306,038	282,403	255,320	49,886	45,729	20,487	16,902	599,930	507,781	498,530	449,954
Dairy Farming	12,723	6,673	13,830	7,726	66,656	55,053	67,375	91,376	90,314	72,869	104,571	109,188	169,693	134,595	185,776	208,290
Poultry Farming	2,971	1,564	2,262	910	668	525	736	646	30	18	115	166	3,669	2,107	3,113	1,722
Pig Farming	2,871	960	1,252	3,178	6,430	5,086	3,291	2,695	1,783	778	629	935	11,084	6,824	5,172	6,808
Other	12,031	9,126	22,290	24,428	15,079	5,865	28,180	27,398	3,071	2,127	5,130	6,554	30,181	17,118	55,600	58,380
	818,840	719,732	725,544	734,915	911,359	832,002	865,628	833,215	341,947	302,919	324,132	319,236	2,072,146	1,854,653	1,915,304	1,887,366

(1) Estimated Value of Agricultural Operations (EVAO) > \$2,500

(2) Estimated Value of Agricultural Operations (EVAO) > \$20,000

(3) Estimated Value of Agricultural Operations (EVAO) > \$5,000

**Total Area of Holdings**  
**by Industry Classification and Natural Resource Management Region**  
**Summary 2**

Australian Bureau of Statistics Agricultural Census Data  
('000 hectares)

Industry Classifications Combined	Southern				Northern				North Western				Tasmania			
	1986 <sup>(1)</sup>	1991 <sup>(2)</sup>	1996 <sup>(3)</sup>	2001 <sup>(3)</sup>	1986 <sup>(1)</sup>	1991 <sup>(2)</sup>	1996 <sup>(3)</sup>	2001 <sup>(3)</sup>	1986 <sup>(1)</sup>	1991 <sup>(2)</sup>	1996 <sup>(3)</sup>	2001 <sup>(3)</sup>	1986 <sup>(1)</sup>	1991 <sup>(2)</sup>	1996 <sup>(3)</sup>	2001 <sup>(3)</sup>
Intensive Horticulture <sup>(4)</sup>	29	24	46	39	18	20	56	60	53	51	54	57	101	95	156	157
Broadacre Farming <sup>(5)</sup>	759	677	640	660	804	746	710	651	194	176	160	145	1,757	1,599	1,510	1,456
Dairy Farming	13	7	14	8	67	55	67	91	90	73	105	109	170	135	186	208
Intensive Livestock <sup>(6)</sup>	6	3	4	4	7	6	4	3	2	1	1	1	15	9	8	9
Other <sup>(7)</sup>	12	9	22	24	15	6	28	27	3	2	5	7	30	17	56	58
	819	720	726	735	911	832	866	833	342	303	324	319	2,072	1,855	1,915	1,887

(1) Estimated Value of Agricultural Operations (EVAO) > \$2,500

(2) Estimated Value of Agricultural Operations (EVAO) > \$20,000

(3) Estimated Value of Agricultural Operations (EVAO) > \$5,000

(4) Plant Nurseries, Cut Flowers & Flower Seed, Vegetable Growing, Grapes Growing, Orchard & Other Fruit, Apple & Pear Growing, Stone Fruit Growing, Fruit Growing nec

(5) Grain Growing, Sheep-Cereal Grains, Meat Cattle-Cereal Grains, Grain-Sheep, Grain-Beef Farming, Sheep-Beef Farming, Sheep Farming, Beef Farming

(6) Poultry Farming (Meat), Poultry Farming (Eggs), Pig Farming

(7) Horse Farming, Deer Farming, Agriculture nec, Livestock Farming nec, Crop & Plant Farming nec

#### **8.4. APPENDIX 4, AGRICULTURAL LAND USE AND PRODUCTION**

**Agricultural Land Use & Production - Southern Natural Resource Management Region**

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
	Census	Census	Census	Census	Census	Census	Census	Census	Census	Census	Census	Census	Census	Survey	Survey	Survey	Census	Survey
<b>Total Rural Establishments (no.)</b> (1)	1,469	1,409	881	822	849	899	853	784	813	1,171	1,188	1,174	1,146	1,138	1,129	1,123	1,126	1,060
<b>Land Utilisation</b> ('000 ha)																		
Crops	27.6	23.1	19.6	24.4	24.2	n.a	20.5	19.4	18.4	19.4	18.3	17.5	16.5	18.6	19.0	18.4	19.9	20.3
Crops & Pastures for Hay	8.0	6.4	5.3	4.9	8.1	5.8	6.9	7.0	7.9	1.1	n.a	8.9	9.2	5.3	7.3	5.9	7.5	6.9
Other	0.0	0.3	0.2	0.0	0.2	n.a	0.6	0.9	1.2	5.9	n.a	-0.6	-0.3	-0.3	-0.5	-0.6	-0.6	-0.1
Pastures & Crops	35.6	29.8	25.1	29.3	32.5	n.a	28.0	27.3	27.5	26.4	26.0	25.8	25.4	23.6	25.8	23.7	26.8	27.1
Sown Pastures	294.5	297.3	268.6	265.5	271.0	n.a	270.6	256.6	256.9	268.8	n.a	181.2	201.1	235.8	243.0	240.0	289.0	253.3
Native Pastures	316.9	303.3	278.9	n.a	258.8	248.0	259.9	240.0	238.2	223.8	n.a	141.6	174.1	189.9	181.7	178.1	204.3	217.6
Balance of Establishment	199.1	194.4	159.5	n.a	165.5	n.a	167.7	179.0	173.0	237.2	n.a	389.1	322.8	301.9	294.0	206.3	222.1	206.1
Total	846.1	824.8	732.1	736.1	727.8	771.3	726.2	702.9	695.6	756.2	753.1	737.7	723.4	751.2	744.5	648.1	742.2	704.1
<b>Livestock Numbers</b> ('000)																		
Dairy cattle	6.9	6.6	6.3	5.8	5.9	6.1	5.8	5.8	6.2	6.3	6.4	6.5	6.3	7.8	7.3	5.1	6.7	4.4
Beef cattle	80	84	74.3	73.8	72.8	73.0	73.9	74.7	74.2	84.8	84.8	84.6	89.0	83.2	77.8	49.7	56.8	60.3
Sheep and lambs	1,961	2,144	2,082	1,945	2,026	2,128	1,984	1,825	1,770	1,775	1,656	1,696	1,780	1,768	1,664	1,352	1,363	1,452
Pigs	6.2	6.8	6.2	5.6	5.1	3.9	3.3	2.6	3.8	3.4	3.1	1.9	2.3	3.2	2.8	1.8	1.6	1.3
Poultry - Layers	187.2	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	160.1	123.5	103.6	107.0	106.9	80.5	103.2	133.0	126.4
<b>Wool</b>																		
Total Wool (t)	7,308	8,520	8,773	8,013	7,643	8,572	8,306	7,182	7,252	7,334	n.a	n.a	7,372	7,522	6,375	6,994	5,289	5,925
<b>Cereals for Grain</b>																		
Barley																		
Area(ha)	2,047	2,487	1,469	1,396	1,646	1,838	2,576	3,365	3,448	4,168	3,702	3,578	3,478	3,118	3,087	2,356	3,436	2,512
Production (t)	4,695	4,502	2,892	2,900	4,277	4,128	5,806	7,302	8,659	8,596	5,711	9,054	8,570	6,793	8,180	5,443	8,048	8,765
Oats																		
Area (ha)	2,785	2,168	1,848	2,671	3,502	2,245	2,368	2,288	2,765	1,708	2,393	2,744	2,024	2,050	2,515	1,541	2,358	2,400
Production (t)	4,168	2,580	2,109	3,173	5,851	3,842	3,930	4,241	5,886	2,741	2,813	4,496	3,400	3,087	3,140	2,483	3,494	4,681
Wheat																		
Area (ha)	1,206	1,062	881	548	420	366	234	566	646	574	490	397	420	497	604	833	1,004	919
Production (t)	2,069	1,795	2,173	1,146	870	877	694	1,124	1,939	887	774	1,186	1,202	1,118	1,498	1,728	2,384	3,307
Triticale																		
Area (ha)	718	258	185	177	45	86	103	64	147	126	189	169	152	132	89	n.a	272	403
Production (t)	1,512	433	436	276	133	226	308	133	439	343	396	505	431	524	184	235	881	2,891
Total Cereals for Grain (2)																		
Area (ha)	6,757	5,975	4,383	4,793	5,654	4,535	5,281	6,290	7,042	6,622	6,774	6,887	6,101	5,917	6,294	5,347	7,101	6,398
Production (t)	12,444	9,310	7,610	7,495	11,229	9,111	10,738	12,830	16,982	12,584	9,694	15,241	13,689	11,523	13,001	9,889	14,807	19,736
<b>Cereals for Hay</b>																		
Area (ha)	648	301	361	540	668	351	429	443	355	387	528	509	438	351	464	257	627	103
<b>Vegetables</b>																		
Potatoes																		
Area (ha)	212	173	162	183	202	268	211	220	197	250	217	176	215	111	218	145	252	320
Production (t)	3,015	1,263	2,056	3,971	4,706	7,030	5,654	6,183	5,497	6,949	5,121	4,812	4,890	2,366	7,019	4,197	8,820	7,715
Peas (processing)																		
Area (ha)	0	32	0	10	24	131	175	21	1	198	320	520	722	914	972	646	304	312
Production (t)	0	0	0	21	149	675	969	1,032	0	1,015	1,575	2,906	4,632	5,491	5,253	3,454	1,584	1,410

(1) Before 1986-87 Estimated Value of Agricultural Operations (EVAO) \$2 500 and over  
 1986-87 to 1990-91 Estimated Value of Agricultural Operations (EVAO) \$20 000 and over  
 1991-92 to 1992-93 Estimated Value of Agricultural Operations (EVAO) \$22 500 and over  
 1993-94 to present Estimated Value of Agricultural Operations (EVAO) \$5,000 and over

(2) In several cases where there was no ABS total for Cereal Area or Production, an estimate has been included as the sum of Barley, Oats, Wheat & Triticale.

**Agricultural Land Use & Production - Southern Natural Resource Management Region**

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
<b>Vegetables (Continued)</b>																		
Onions																		
Area (ha)	2.0	2.0	2.0	2.5	11.0	0.5	0.0	12.0	1.0	1.1	18.1	59.0	21.9	20.0	22.0	0.0	0.1	0.0
Production (t)	15.0	19.0	20.0	6.8	514	1.4	0.0	451	40	14.3	639	2,254	1,028	777	949	0.0	0.9	0.0
Carrots																		
Area (ha)	11.0	9.0	7.0	7.1	8.0	5.0	4.0	4.4	6.9	3.8	4.8	9.0	2.2	1.0	0.0	0.0	14.6	0.0
Production (t)	129.0	112.0	178.0	134.7	114.0	70.0	61.0	40.9	72.0	60.2	76.0	99.5	39.0	3.0	0.0	0.0	528.4	0.0
Beans (Processing)																		
Area (ha)	0.0	0.0	0.0	49.5	0.0	0.0	5.0	0.0	0.0	0.1	45.0	82.4	49.2	0.0	0.0	34.4	0.0	0.0
Production (t)	0.0	0.2	0.0	150.6	0.0	0.0	0.0	0.0	0.0	0.2	186.4	257.2	291.8	0.0	0.0	101.0	0.0	0.0
Broccoli																		
Area (ha)	6.2	6.1	6.6	4.0	5.0	4.5	5.1	17.0	16.6	27.5	13.6	35.5	36.5	24.0	33.0	20.4	57.5	18.2
Production (t)	27.8	20.2	30.7	17.7	16.8	12.8	25.5	59.4	82.0	93.1	57.5	215.5	224.1	196.4	243.5	120.5	383.3	15.8
Other Vegetables Area (ha)	219	217	136	202	214	202	194	164	138	191	494	189	175	181	132	158	215	183
Total Vegetables Area (ha)	450	439	314	458	464	611	594	438	360	671	1,113	1,072	1,222	1,251	1,377	1,003	844	834
<b>Poppies</b>																		
Area (ha)	1,028	703	507	798	993	1,032	1,461	1,810	1,018	1,596	1,967	1,792	1,690	2,251	2,818	3,112	3,587	3,541
<b>Oilseeds</b>																		
Area (ha)	3.0	14.0	5.6	35.0	0.0	6.0	5.1	51.0	67.2	132.2	n.a	n.a	27.3	5.0	186.0	0.0	25.1	32.0
Production (t)	1.0	4.0	7.5	27.5	0.0	6.0	2.6	46.6	97.1	168.8	n.a	n.a	31.1	6.0	218.0	0.0	84.2	51.0
<b>Pyrethrum</b>																		
Area (ha)	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	109.8	193.0	n.a	n.a	7.5	4.0	4.0	n.a	n.a	n.a
<b>Hops</b>																		
Area (ha)	422	350	337	330	325	316	315	313	317	318	295	272	252	250	274	228	230	230
<b>Apples</b>																		
Area (ha)	2,062	2,128	2,059	2,044	2,128	2,117	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
Trees ('000)	1,005	1,046	1,006	1,042	1,048	1,081	1,050	1,127	1,157	1,092	1,158	1,237	1,228	1,196	n.a	1,076	1,161	1,118
Production (t)	52,598	48,280	40,429	43,639	45,154	48,917	38,546	42,483	47,542	45,372	46,338	41,032	42,829	36,098	n.a	44,900	42,269	36,740
<b>Apricots</b>																		
Trees ('000)	23.1	24.5	20.5	17.6	18.9	20.6	15.5	16.9	30.4	37.3	42.8	38.7	44.1	26.3	37.0	37.7	84.9	75.5
Production (t)	203.6	242.4	151.2	212.6	65.8	119.3	105.4	97.9	118.3	228.7	365.1	211.9	204.3	145.0	50.3	n.a	295.6	85.0
<b>Cherries</b>																		
Trees ('000)	10.4	19.3	19.7	10.8	11.9	13.6	14.4	18.8	54.2	59.6	70.1	69.2	73.2	60.9	78.4	146.1	167.8	271.3
Production (t)	28.0	18.5	19.3	32.7	25.0	57.3	85.2	53.3	89.1	39.1	128.4	129.3	115.3	137.0	171.9	193.0	549.1	338.3
<b>Total Orchard Fruit &amp; Nuts</b>																		
Area (ha)	2,258	2,337	2,241	2,208	2,288	2,282	2,158	2,094	2,370	2,203	2,262	2,350	2,328	3,177	2,671	3,262	2,863	4,157
<b>Grapes</b>																		
Area (ha)	29.4	33.7	27.7	n.a	32.2	33.5	39.8	48.5	80.9	n.a	143.6	175.3	161.6	205.0	n.a	254.1	386.0	506.8
<b>Berry Fruit</b>																		
Area (bearing and not) (ha)	254	242	162	142	124	109	94	97	128	169	165	158	134	162	143	n.a	n.a	n.a
<b>Total Area Irrigated</b>																		
Area (ha)	10,735	n.a	9,899	n.a	n.a	10,834	11,203	n.a	11,117	18,720	n.a	10,144	10,763	13,145	13,103	13,136	13,840	12,970

Source: Australian Bureau of Statistics, ABS data available on request, Agricultural Commodity Survey  
Agricultural Census data 1984-85 to 1996-97, and 2000-01. Survey data 1997-98, 1998-99, 1999-00 and 2001-02.

### Agricultural Land Use & Production - Northern Natural Resource Management Region

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
	Census	Census	Census	Census	Census	Census	Census	Census	Census	Census	Census	Census	Census	Survey	Survey	Survey	Census	Survey
<b>Total Rural Establishments (no.)</b> (1)	1,911	1,863	1,334	1,283	1,300	1,350	1,304	1,257	1,285	1,663	1,594	1,644	1,605	1,584	1,583	1,597	1,534	1471
<b>Land Utilisation ('000 ha)</b>																		
Crops	47.2	44.2	38.7	40.7	37.9	37.9	36.3	37.8	34.9	38.0	38.0	37.3	35.8	37.1	37.4	39.6	38.0	37.3
Crops & Pastures for Hay	22.6	26.9	22.4	19.8	27.9	25.2	25.0	34.4	31.2	1.9	n.a	30.2	24.8	26.9	27.8	27.0	29.0	24.0
Other	2.2	3.2	4.1	3.2	4.3	n.a	6.2	-5.6	8.3	31.4	n.a	-0.4	0.3	-0.6	-0.3	n.a	0.5	1.2
Pastures & Crops	72.0	74.3	65.2	63.7	70.1	n.a	67.5	66.6	74.4	71.3	58.0	67.1	60.9	63.4	64.9	n.a	67.5	62.5
Sown Pastures	432.0	428.7	398.4	402.1	409.6	411.8	412.6	403.5	401.2	407.6	n.a	296.5	337.7	372.1	375.7	410.2	360.0	322.3
Native Pastures	272.3	272.6	250.3	n.a	231.1	229.7	224.1	208.7	221.6	225.7	n.a	136.5	167.3	169.2	179.8	187.0	198.8	195.5
Balance of Establishment	144.1	142.1	127.8	n.a	130.5	n.a	132.7	156.5	145.7	179.6	n.a	379.9	301.2	232.5	235.0	n.a	214.5	194.1
Total	920.4	917.7	841.7	834.1	841.3	852.7	836.9	835.3	842.9	884.2	853.6	880.0	867.1	837.2	855.4	835.8	840.8	774.4
<b>Livestock Numbers ('000)</b>																		
Dairy cattle	53.7	50.5	48.1	47.0	46.5	47.9	48.9	49.9	54.8	59.5	68.6	72.4	77.9	79.7	85.0	80.4	79.4	79.5
Beef cattle	175.9	182.3	175.5	169.1	181.9	185.0	192.7	186.3	188.6	209.3	206.9	216.3	213.1	213.6	191.0	162.1	170.0	169.6
Sheep and lambs	2,474	2,584	2,567	2,475	2,554	2,821	2,505	2,215	2,238	2,272	1,991	1,994	2,014	1,927	1,958	1,808	1,732	1,753
Pigs	20.0	19.6	22.0	23.3	21.4	20.7	20.4	23.7	26.3	28.0	24.7	20.6	17.3	14.9	13.3	11.4	16.2	13.3
Poultry - Layers	86.6	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	40.3	92.3	70.0	80.5	126.6	125.5	59.8	56.2	74.4
<b>Wool</b>																		
Total Wool (t)	10,205	10,667	10,616	10,122	9,895	11,480	10,784	9,365	9,359	9,361	n.a	n.a	8,648	7,860	7,697	7,758	7,142	7,210
<b>Cereals for Grain</b>																		
Barley																		
Area (ha)	7,989	8,021	5,737	5,764	5,369	5,328	6,296	7,420	8,148	10,332	9,362	9,293	9,823	8,979	7,346	6,406	5,716	4,576
Production (t)	19,199	18,698	14,003	15,613	14,614	12,546	16,818	22,301	23,728	28,744	18,563	26,266	22,999	21,527	19,327	15,362	16,402	16,065
Oats																		
Area (ha)	6,802	7,777	5,771	6,692	6,554	5,183	6,703	6,657	6,304	4,815	5,803	7,187	5,943	5,743	5,356	4,265	4,178	3,223
Production (t)	11,192	13,259	8,824	11,877	11,707	8,626	14,394	13,733	12,717	9,475	8,231	13,635	10,310	11,283	11,057	6,809	8,972	7,226
Wheat																		
Area (ha)	1,129	608	661	463	260	293	257	486	716	883	685	548	1,333	2,052	2,942	5,131	5,311	4,653
Production (t)	2,108	1,698	1,876	1,686	1,009	1,008	1,048	1,352	2,907	3,596	1,569	2,169	5,403	8,805	13,368	16,465	21,405	20,481
Triticale																		
Area (ha)	1,252	590	786	670	502	480	483	778	537	1,338	1,171	1,523	1,781	1,348	2,009	1,775	1,823	1,874
Production (t)	2,697	1,573	2,103	2,126	1,630	1,419	1,742	2,486	1,680	4,666	3,808	5,009	5,689	5,204	7,263	5,236	6,524	5,876
Total Cereals for Grain (2)																		
Area (ha)	17,172	16,996	12,956	13,616	12,767	11,420	13,802	15,514	15,839	17,571	17,021	18,551	18,919	18,153	17,674	17,598	17,098	14,331
Production (t)	35,196	35,228	26,806	31,463	29,077	23,759	34,050	40,426	41,214	47,031	32,171	47,079	44,440	46,870	51,060	43,871	53,302	49,649
<b>Cereals for Hay</b>																		
Area (ha)	1,213	1,065	697	1,432	1,510	683	719	1,232	968	936	985	1,655	783	1,627	1,268	1,654	794	579.8
<b>Vegetables</b>																		
Potatoes																		
Area (ha)	766	758	1,007	1,180	1,331	1,676	1,456	1,754	1,891	2,247	1,897	2,047	2,538	2,780	2,994	2,230	2,806	2,851
Production (t)	30,441	31,662	38,124	50,689	57,838	75,001	57,126	63,860	80,131	88,936	75,866	79,067	105,493	119,771	135,661	103,197	116,029	128,560
Peas (processing)																		
Area (ha)	2,987	3,121	3,800	3,263	3,238	3,520	2,869	3,477	3,551	4,198	3,374	3,323	3,141	2,821	2,348	2,193	2,659	3,029
Production (t)	13,330	12,976	12,179	13,750	14,442	15,055	13,444	17,564	16,551	19,824	20,753	14,054	14,971	14,774	13,052	14,930	14,874	17,190

(1) Before 1986-87 Estimated Value of Agricultural Operations (EVAO) \$2 500 and over  
1986-87 to 1990-91 Estimated Value of Agricultural Operations (EVAO) \$20 000 and over  
1991-92 to 1992-93 Estimated Value of Agricultural Operations (EVAO) \$22 500 and over  
1993-94 to present Estimated Value of Agricultural Operations (EVAO) \$5,000 and over

(2) In several cases where there was no ABS total for Cereal Area or Production, an estimate has been included as the sum of Barley, Oats, Wheat & Triticale.

**Agricultural Land Use & Production - Northern Natural Resource Management Region**

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
<b>Vegetables (Continued)</b>																		
Onions																		
Area (ha)	45	37	37	45	45	80	109	155	136	189	347	378	248	219	253	365	313	331.6
Production (t)	2,094	1,757	1,627	1,852	2,287	3,936	5,858	7,784	7,168	10,192	16,511	18,661	11,133	9,613	13,527	18,350	13,365	18,022
Carrots																		
Area (ha)	23	22	26	28	38	90	54	65	78	82	79	86	75	89	58	55	83	72
Production (t)	927	978	1,268	1,042	1,562	4,211	2,341	3,481	4,342	5,003	4,202	4,140	3,437	5,174	3,833	2,677	5,978	5708
Beans (Processing)																		
Area (ha)	90	90	174	258	279	323	320	324	217	237	249	416	440	371	301	377	339	331
Production (t)	837	605	716	1,622	2,275	2,758	2,035	2,188	1,346	1,208	1,488	1,345	3,536	2,887	2,598	3,266	2,788	3274
Broccoli																		
Area (ha)	1.8	0.4	0.1	0.1	0.1	0.1	1.1	2.6	4.0	7.3	24.9	89.5	62.4	56.0	95.0	162.2	244.2	255.7
Production (t)	6.1	2.4	0.4	0.5	0.6	1.4	8.7	16.7	20.0	53.0	152.5	704.9	594.0	538.1	764.6	1,549.8	2,114.9	2,194.5
Other Vegetables Area (ha)	334	363	428	389	406	388	404	335	307	363	3,625	510	322	130	157	126	137	151
Total Vegetables Area (ha)	4,247	4,391	5,472	5,163	5,337	6,077	5,213	6,112	6,184	7,322	9,595	6,848	6,827	6,466	6,206	5,509	6,581	7,020
<b>Poppies</b>																		
Area (ha)	1,525	1,110	832	947	1,030	1,016	2,168	2,600	1,661	1,977	2,882	2,692	3,460	4,349	5,859	7,685	7,728	7,950
<b>Oilseeds</b>																		
Area (ha)	41	21	6	9	4	80	16	8	26	18	n.a	n.a	53	163	687	881	275	513
Production (t)	25	15	4	34	9	36	13	8	32	25	n.a	n.a	35	151	974	1521	349	946
<b>Pyrethrum</b>																		
Area (ha)	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	39	36	n.a	n.a	42	154	195	n.a	n.p	n.a
<b>Hops</b>																		
Area (ha)	277	296	327	307	310	316	315	324	329	335	294	336	275	214	222	158	226	215
<b>Apples</b>																		
Area (ha)	283	284	292	266	270	265	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
Trees ('000)	115	118	115	110	123	135	147	153	157	170	175	156	194	191	n.a	174	191	192
Production (t)	4,817	4,613	4,067	5,150	4,000	4,644	4,202	3,912	3,849	3,945	3,785	4,149	4,695	4,427	n.a	4,593	4,043	6,234
<b>Apricots</b>																		
Trees ('000)	2.0	2.0	0.0	0.0	0.5	0.8	0.8	0.7	1.3	1.2	1.3	2.6	2.2	0.0	8.0	0.0	0.0	n.a
Production (t)	0.0	0.2	0.0	0.0	0.0	2.8	5.0	0.0	2.0	0.0	2.9	0.1	0.5	0.9	0.0	0.0	0.0	n.a
<b>Cherries</b>																		
Trees ('000)	1.0	1.3	0.2	0.2	0.2	0.2	2.1	2.7	3.0	3.5	3.0	4.3	6.8	5.5	2.4	0.0	20.8	10.5
Production (t)	6.5	10.0	0.0	0.0	0.0	0.1	15.1	16.1	10.3	11.0	15.3	18.4	12.3	2.0	1.8	0.0	22.0	91.3
<b>Total Orchard Fruit &amp; Nuts</b>																		
Area (ha)	328	328	320	296	296	294	298	286	296	323	337	357	366	370	432	538	455	622
<b>Grapes</b>																		
Area (ha)	43	77	68	n.a	72	151	160	168	202	n.a	242	283	305	292	n.a	487	521	636
<b>Berry Fruit</b>																		
Area (bearing and not) (ha)	37.1	52.8	38.1	43.2	41.0	50.7	52.2	58.7	64.4	62.7	61.7	59.6	54.1	30.0	20.0	na	na	n.a
<b>Total Area Irrigated</b>																		
Area (ha)	13,634		13,522			17,284	17,733		24,460	22,309		17,441	21,434	26,764	24,940	26,299	29,958	30,913

Source: Australian Bureau of Statistics, ABS data available on request, Agricultural Commodity Survey

Agricultural Census data 1984-85 to 1996-97, and 2000-01. Survey data 1997-98, 1998-99, 1999-00 and 2001-02.



### Agricultural Land Use & Production - North Western Natural Resource Management Region

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
	Census	Census	Census	Census	Census	Census	Census	Census	Census	Census	Census	Census	Census	Survey	Survey	Survey	Census	Survey
<b>Total Rural Establishments (no.) (1)</b>	2,120	2,043	1,422	1,399	1,451	1,450	1,406	1,372	1,420	1,829	1,792	1,822	1,785	1,761	1,734	1,710	1,626	1495
<b>Land Utilisation ('000 ha)</b>																		
Crops	24.3	21.0	19.6	19.4	19.6	n.a	18.5	18.7	19.7	20.4	21.1	20.1	20.3	22.0	19.6	19.1	20.8	20.0
Crops & Pastures for Hay	23.6	25.5	18.8	19.5	23.7	21.1	22.7	22.5	23.7	1.0	n.a	25.3	20.1	22.9	25.0	21.4	22.9	22.3
Other	2.7	4.4	4.3	3.5	4.9	n.a	6.5	5.3	7.8	30.0	n.a	-0.1	-0.4	-0.5	-0.6	n.a	-0.3	-0.1
Total Crops	50.6	50.9	42.7	42.4	48.2	n.a	47.7	46.5	51.2	51.4	43.2	45.3	40.0	44.4	44.0	n.a	43.4	42.2
Sown Pastures	191.6	190.4	165.4	164.6	172.2	167.4	168.7	169.8	174.7	185.5	n.a	134.7	158.2	170.3	193.7	193.5	210.9	155.6
Native Pastures	50.7	57.2	47.0	n.a	43.0	46.8	44.4	35.3	24.3	24.8	n.a	37.3	38.0	36.3	37.7	28.9	24.1	44.7
Balance of Establishment	60.5	46.1	44.0	n.a	50.9	n.a	46.3	55.0	55.9	66.7	n.a	113.8	93.2	75.2	52.5	n.a	45.3	54.1
Total	353.4	344.6	299.1	300.3	314.3	309.4	307.1	306.6	306.1	328.4	326.1	331.1	329.4	326.2	327.9	309.6	323.7	296.6
<b>Livestock Numbers ('000)</b>																		
Dairy cattle	86.9	85.8	84.4	81.1	82.0	81.9	85.2	90.3	98.5	103.1	110.2	117.8	126.4	130.2	140.6	120.6	123.7	103.2
Beef cattle	149.5	159.9	145.6	164.8	170.9	174.8	177.8	185.6	182.3	213.2	215.7	220.0	212.4	213.6	222.6	198.8	199.7	201.9
Sheep and lambs	345.2	355.0	304.8	326.2	352.5	387.7	314.8	255.2	261.8	276.4	206.3	172.3	182.4	173.5	178.2	181.2	188.9	174.1
Pigs	21.1	18.5	17.9	18.8	18.5	17.6	13.9	13.7	13.8	14.4	10.3	4.0	4.2	6.2	5.8	4.4	4.3	3.2
Poultry - Layers	40.8	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	18.5	28.7	25.8	23.1	16.6	19.4	26.3	19.4	31
<b>Wool</b>																		
Total Wool (t)	1,167	1,241	1,060	1,183	1,200	1,356	1,303	1,032	979	918	n.a	n.a	686	703	650	680	703	659
<b>Cereals for Grain</b>																		
Barley																		
Area (ha)	2,315	1,701	1,280	865	805	817	894	559	704	705	905	1,148	1,201	1,058	734	336	516	341
Production (t)	5,807	4,522	3,787	3,036	3,132	2,646	3,355	2,189	2,898	3,416	2,798	3,143	3,668	2,597	2,537	1,376	1,542	1,608
Oats																		
Area (ha)	263	319	146	197	177	139	185	201	155	128	119	138	144	182	90	0	79	n.p
Production (t)	495	692	282	502	367	356	502	603	373	529	243	314	272	528	205	0	150	n.p
Wheat																		
Area (ha)	121	167	186	168	92	133	108	115	92	145	86	110	148	257	476	340	321	289
Production (t)	212	522	690	984	320	802	706	773	622	839	425	713	944	1,727	2,640	1,618	1,766	1,552
Triticale																		
Area (ha)	249	145	254	210	228	176	174	178	159	109	128	202	243	237	374	203	157	153
Production (t)	272	475	858	971	967	904	844	769	439	623	739	1,180	1,176	1,229	2,288	850	975	955
Total Cereals for Grain (2)																		
Area (ha)	2,949	2,341	1,866	1,450	1,306	1,276	1,378	1,112	1,130	1,152	1,239	1,598	1,765	1,792	1,742	964	1,091	822
Production (t)	6,786	6,211	5,617	5,519	4,789	4,723	5,425	4,412	4,377	5,579	4,205	5,349	6,117	6,221	7,922	3,844	4,433	4,141
<b>Cereals for Hay</b>																		
Area (ha)	690	853	299	656	730	332	217	542	639	653	147	357	239	429	489	383	171	265
<b>Vegetables</b>																		
Potatoes																		
Area (ha)	4,231	3,901	4,575	5,017	4,468	4,908	4,059	3,992	4,027	4,366	3,955	5,343	4,682	5,446	4,398	3,316	4,473	4,269
Production (t)	170,016	160,560	183,245	193,643	194,306	215,458	172,685	179,726	184,274	195,537	174,751	218,157	207,066	251,022	184,802	159,778	206,170	213,075
Peas (processing)																		
Area (ha)	4,018	3,450	2,908	2,932	3,057	2,876	2,584	1,846	2,403	2,858	3,728	2,168	2,350	2,248	1,730	1,676	1,645	1,366
Production (t)	17,963	14,886	10,497	14,772	14,967	14,724	12,225	10,162	11,164	14,215	15,576	12,774	12,753	11,607	9,824	10,152	7,521	7,194

(1) Before 1986-87 Estimated Value of Agricultural Operations (EVAO) \$2 500 and over  
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**Agricultural Land Use & Production - North Western Natural Resource Management Region**

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
<b>Vegetables (Continued)</b>																		
Onions																		
Area (ha)	560	584	693	933	1,042	1,165	1,313	1,340	1,041	1,061	1,117	1,196	922	779	785	788	660	767
Production (t)	27,274	29,636	31,668	50,251	53,555	61,767	67,560	70,033	52,097	60,502	56,388	70,204	47,517	41,555	45,996	44,365	28,849	44,942
Carrots																		
Area (ha)	302	254	296	309	360	340	271	331	340	271	342	364	396	512	555	561	609	574
Production (t)	12,119	12,268	13,677	15,279	17,050	17,169	12,687	14,472	14,787	14,359	17,261	17,016	19,070	26,776	32,719	32,391	34,019	30,034
Broccoli																		
Area (ha)	64	158	149	193	218	244	220	183	217	286	365	458	416	394	449	583	559	682
Production (t)	362	1,007	1,134	1,415	1,526	1,949	1,647	1,217	1,606	2,118	2,523	2,746	3,435	2,946	3,715	4,410	4,454	6,383
Beans (Processing)																		
Area (ha)	1,315	1,100	1,161	880	968	1,132	866	927	936	1,067	925	1,170	1,165	1,169	1,051	1,104	1,065	1,114
Production (t)	8,568	8,912	5,631	7,536	8,758	9,453	6,802	7,055	7,483	6,369	6,787	7,852	10,224	9,276	9,220	10,353	9,580	9,024
Other Vegetables Area (ha)	743	935	1,112	1,036	1,084	992	1,051	1,127	1,376	1,290	3,505	1,176	1,154	899	798	708	842	831
Total Vegetables Area (ha)	11,233	10,382	10,894	11,300	11,196	11,656	10,364	9,746	10,340	11,199	13,936	11,874	11,084	11,447	9,766	8,735	9,853	9,603
<b>Poppies</b>																		
Area (ha)	2,195	1,935	1,770	1,572	1,953	2,092	2,880	3,174	2,619	2,280	2,916	2,951	3,213	3,942	3,737	4,343	4,567	4,654
<b>Oilseeds</b>																		
Area (ha)	8.0	0.0	0.0	0.0	1.5	0.0	2.0	0.0	0.0	0.0	n.a	n.a	0.0	0.0	0.0	0.0	3.8	n.a
Production (t)	6.2	0.0	0.0	0.0	0.9	0.0	2.0	0.0	0.0	0.0	n.a	n.a	0.0	0.0	0.0	0.0	5.4	n.a
<b>Pyrethrum</b>																		
Area (ha)	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	857	888	n.a	n.a	695	796	1,008	n.a	n.p	n.p
<b>Hops</b>																		
Area (ha)	170	189	189	183	173	133	153	173	182	188	179	180	188	190	189	160	190	190
<b>Apples</b>																		
Area (ha)	244	250	264	269	256	291	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
Trees ('000)	99	104	97	99	97	126	150	172	192	228	251	257	254	274	n.a	261	246	236
Production (t)	4,209	4,091	3,592	4,069	3,483	3,718	2,540	4,045	4,823	5,636	6,927	7,217	8,125	6,168	n.a	8,044	9,794	8,643
<b>Apricots</b>																		
Trees ('000)	0.0	0.3	0.1	0.0	0.0	2.3	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	n.a
Production (t)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	n.a
<b>Cherries</b>																		
Trees ('000)	0.4	0.0	0.0	0.0	0.1	0.7	5.3	5.0	22.6	24.2	18.7	26.0	45.2	32.8	39.9	71.8	56.5	72.9
Production (t)	0.3	0.1	0.1	0.2	0.0	0.0	0.1	0.1	6.2	4.0	25.0	43.9	57.3	46.3	78.3	124.5	81.5	112.2
<b>Total Orchard Fruit &amp; Nuts</b>																		
Area (ha)	261	270	285	283	266	302	293	393	418	453	484	502	439	570	368	501	518	593
<b>Grapes</b>																		
Area (ha)	1.5	0.6	0.7	n.a	0.0	0.0	0.0	0.0	6.0	n.a	14.6	16.8	17.7	16.0	n.a	20.0	17.0	24.6
<b>Berry Fruit</b>																		
Area (bearing and not) (ha)	27.4	31.8	n.a	19.2	26.0	22.8	24.3	45.0	14.8	58.9	40.5	67.6	66.5	18.0	5.0	n.a	n.a	n.a
<b>Total Area Irrigated</b>																		
Area (ha)	15,535	n.a	14,744	n.a	n.a	15,970	17,262	n.a	19,879	20,064	n.a	17,819	19,541	25,154	20,271	23,657	24,092	23,739

Source: Australian Bureau of Statistics, ABS data available on request, Agricultural Commodity Survey  
Agricultural Census data 1984-85 to 1996-97, and 2000-01. Survey data 1997-98, 1998-99, 1999-00 and 2001-02.

### Agricultural Land Use & Production - Tasmania

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
	Census	Census	Census	Census	Census	Census	Census	Census	Census	Census	Census	Census	Census	Survey	Survey	Survey	Census	Survey
<b>Total Rural Establishments (no.) (1)</b>	5,500	5,315	3,637	3,504	3,600	3,699	3,563	3,413	3,518	4,663	4,574	4,640	4,536	4,483	4,446	4,430	4,286	4,026
<b>Land Utilisation ('000 ha)</b>																		
Crops	99.1	88.3	77.9	84.5	81.7	85.5	75.3	75.9	73.0	77.8	77.4	74.9	72.6	77.7	76.0	77.1	78.7	77.6
Crops & Pastures for Hay	54.2	58.8	46.5	44.2	59.7	52.1	54.6	63.9	62.8	4.0	n.a	64.4	54.1	55.1	60.1	54.3	59.4	53.2
Other	4.9	7.9	8.6	6.7	9.4	12.2	13.3	0.6	17.3	67.3	n.a	-1.1	-0.4	-1.4	-1.4	n.a	-0.4	1.0
Pastures & Crops	158.2	155.0	133.0	135.4	150.8	149.8	143.2	140.4	153.1	149.1	127.2	138.2	126.3	131.4	134.7	n.a	137.7	131.8
Sown Pastures	918.1	916.4	832.4	832.2	852.8	856.1	851.9	829.9	832.8	861.9	n.a	612.4	697.0	778.2	812.4	843.7	859.9	731.2
Native Pastures	639.9	633.1	576.2	n.a	532.9	524.5	528.4	484.0	484.1	474.3	n.a	315.4	379.4	395.4	399.2	394.0	427.2	457.8
Balance of Establishment	403.7	382.6	331.3	n.a	346.9	n.a	346.7	390.5	374.6	483.5	n.a	882.8	717.2	609.6	581.5	n.a	481.9	454.3
Total	2,119.9	2,087.1	1,872.9	1,870.5	1,883.4	1,933.4	1,870.2	1,844.8	1,844.6	1,968.8	1,932.8	1,948.8	1,919.9	1,914.6	1,927.8	1,793.5	1,906.7	1,775.1
<b>Livestock Numbers ('000)</b>																		
Dairy cattle	148	143	139	134	134	136	140	146	160	169	185	197	211	218	233	206	210	187
Beef cattle	405	426	395	408	426	433	444	447	445	507	507	521	515	510	491	411	427	432
Sheep and lambs	4,780	5,083	4,954	4,747	4,933	5,337	4,804	4,295	4,270	4,324	3,853	3,862	3,977	3,869	3,801	3,341	3,284	3,380
Pigs	47	45	46	48	45	42	38	40	44	46	38	27	24	24	22	18	22	18
Poultry - Layers	315	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	219	245	199	211	250	225	189	209	232
<b>Wool</b>																		
Total Wool (t)	18,680	20,427	20,449	19,318	18,738	21,408	20,393	17,579	17,590	17,613	n.a.	n.a.	16,706	16,085	14,722	15,431	13,133	13,794
<b>Cereals for Grain</b>																		
Barley for Grain																		
Area (ha)	12,351	12,209	8,486	8,024	7,820	7,983	9,766	11,344	12,300	15,204	13,969	14,020	14,502	13,155	11,167	9,098	9,668	7,429
Production (t)	29,701	27,722	20,682	21,549	22,023	19,320	25,979	31,793	35,285	40,755	27,073	38,463	35,237	30,917	30,044	22,181	25,992	26,438
Oats for grain																		
Area (ha)	9,850	10,264	7,765	9,560	10,233	7,567	9,256	9,146	9,224	6,651	8,316	10,069	8,111	7,975	7,961	5,805	6,615	South n.p
Production (t)	15,855	16,531	11,215	15,552	17,925	12,824	18,826	18,576	18,976	12,744	11,287	18,445	13,983	14,898	14,402	9,291	12,616	South n.p
Wheat for grain																		
Area (ha)	2,456	1,837	1,728	1,179	772	792	599	1,167	1,454	1,602	1,262	1,055	1,900	2,806	4,022	6,305	6,636	5,861
Production (t)	4,389	4,015	4,739	3,815	2,199	2,687	2,448	3,249	5,468	5,321	2,769	4,068	7,549	11,650	17,506	19,811	25,555	25,341
Triticale for Grain																		
Area (ha)	2,219	993	1,225	1,056	775	742	760	1,020	843	1,573	1,488	1,894	2,176	1,717	2,472	n.a	2,252	2,430
Production (t)	4,480	2,481	3,397	3,374	2,730	2,549	2,894	3,387	2,558	5,632	4,943	6,693	7,296	6,957	9,735	6,321	8,380	9,722
Total Cereals for Grain (2)																		
Area (ha)	26,878	25,312	19,205	19,859	19,727	17,231	20,461	22,916	24,011	25,345	25,034	27,037	26,785	25,862	25,710	23,909	25,290	21,551
Production (t)	54,425	50,748	40,033	44,478	45,094	37,592	50,213	57,669	62,573	65,193	46,071	67,668	64,247	64,614	71,983	57,604	72,542	73,526
<b>Cereals for Hay</b>																		
Area (ha)	2,550	2,219	1,358	2,627	2,908	1,367	1,365	2,217	1,962	1,976	1,659	2,521	1,460	2,407	2,221	2,294	1,591	948
<b>Vegetables</b>																		
Potatoes																		
Area (ha)	5,209	4,832	5,744	6,380	6,001	6,852	5,726	5,966	6,115	6,863	6,068	7,565	7,436	8,337	7,610	5,690	7,532	7,441
Production (t)	203,472	193,485	223,425	248,303	256,850	297,489	235,465	249,769	269,902	291,423	255,738	302,035	317,448	373,159	327,482	267,172	331,019	349,350
Peas (processing)																		
Area (ha)	7,005	6,603	6,708	6,205	6,319	6,527	5,628	5,344	5,956	7,254	7,422	6,011	6,213	5,983	5,050	4,515	4,608	4,707
Production (t)	31,293	27,862	22,676	28,542	29,558	30,454	26,638	28,759	27,715	35,054	37,904	29,734	32,356	31,872	28,129	28,536	23,979	25,793

(1) Before 1986-87 Estimated Value of Agricultural Operations (EVAO) \$2 500 and over  
 1986-87 to 1990-91 Estimated Value of Agricultural Operations (EVAO) \$20 000 and over  
 1991-92 to 1992-93 Estimated Value of Agricultural Operations (EVAO) \$22 500 and over  
 1993-94 to present Estimated Value of Agricultural Operations (EVAO) \$5,000 and over

(2) In several cases where there was no ABS total for Cereal Area or Production,  
 an estimate has been included as the sum of Barley, Oats, Wheat & Triticale.

**Agricultural Land Use & Production - Tasmania**

	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02
<b>Vegetables (Continued)</b>																		
Onions																		
Area (ha)	607	623	732	980	1,098	1,246	1,422	1,507	1,178	1,250	1,482	1,632	1,192	1,018	1,060	1,153	973	1,098
Production (t)	29,383	31,412	33,315	52,110	56,356	65,704	73,418	78,267	59,305	70,709	73,537	91,119	59,677	51,945	60,472	62,715	42,215	62,964
Carrots																		
Area (ha)	336	285	329	345	406	435	329	400	425	357	425	459	474	602	613	616	706	645
Production (t)	13,175	13,358	15,123	16,455	18,726	21,450	15,089	17,993	19,201	19,422	21,540	21,256	22,546	31,953	36,552	35,067	40,526	35,742
Beans (Processing)																		
Area (ha)	154	248	323	500	497	567	545	507	434	523	659	956	905	765	750	995	898	1,013
Production (t)	1,199	1,612	1,850	3,188	3,801	4,707	3,682	3,405	2,952	3,326	4,197	4,348	7,262	5,833	6,313	7,777	7,242	9,658
Broccoli																		
Area (ha)	1,323	1,107	1,168	885	973	1,137	872	947	957	1,102	964	1,295	1,264	1,249	1,179	1,287	1,366	1,388
Production (t)	8,602	8,935	5,662	7,554	8,775	9,467	6,836	7,131	7,585	6,515	6,997	8,772	11,042	10,010	10,228	12,024	12,079	11,235
Other Vegetables Area (ha)	1,296	1,515	1,676	1,628	1,704	1,581	1,649	1,626	1,821	1,844	7,624	1,876	1,650	1,210	1,087	993	1,194	1,165
Total Vegetables Area (ha)	15,930	15,212	16,680	16,921	16,997	18,344	16,171	16,296	16,884	19,192	24,644	19,793	19,133	19,164	17,349	15,248	17,278	17,457
<b>Poppies</b>																		
Area (ha)	4,748	3,748	3,109	3,317	3,976	4,140	6,509	7,584	5,298	5,853	7,764	7,435	8,364	10,542	12,414	15,140	15,882	16,145
<b>Oilseeds</b>																		
Area (ha)	52	35	11	44	6	86	23	59	93	150	n.a.	n.a.	80	168	873	881	303	North n.a.
Production (t)	32	19	11	62	10	42	17	55	129	194	n.a.	n.a.	66	157	1,192	1,521	439	North n.a.
<b>Pyrethrum</b>																		
Area (ha)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1,006	1,117	n.a.	n.a.	744	954	1,207	n.a.	n.p.	n.p.
<b>Hops</b>																		
Area (ha)	869	835	854	821	809	765	783	810	828	841	769	788	715	654	685	546	646	635
<b>Apples</b>																		
Area (ha)	2,588	2,661	2,615	2,578	2,654	2,672	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Trees ('000)	1,219	1,268	1,218	1,251	1,268	1,342	1,347	1,452	1,506	1,490	1,584	1,650	1,676	1,660	n.a.	1,511	1,598	1,546
Production (t)	61,624	56,984	48,088	52,858	52,637	57,279	45,288	50,440	56,213	54,953	57,050	52,398	55,649	46,693	n.a.	57,537	56,105	51,617
<b>Apricots</b>																		
Trees ('000)	25	27	21	18	19	24	16	18	32	39	44	41	46	26	45	38	85	n.a.
Production (t)	204	243	151	213	66	122	110	98	120	229	368	212	205	146	50	n.a.	296	n.a.
<b>Cherries</b>																		
Trees ('000)	12	21	20	11	12	15	22	27	80	87	92	100	125	99	121	218	245	355
Production (t)	35	29	19	33	25	57	100	70	106	54	169	192	185	185	252	318	653	542
<b>Total Orchard Fruit &amp; Nuts</b>																		
Area (ha)	2,847	2,935	2,847	2,787	2,849	2,878	2,749	2,773	3,085	2,978	3,082	3,208	3,133	4,117	3,471	4,301	3,836	5,372
<b>Grapes</b>																		
Area (ha)	74	112	96	80	104	184	200	217	289	n.a.	400	475	484	513	n.a.	761	924	1,167
<b>Berry Fruit</b>																		
Area (bearing and not) (ha)	319	327	n.a.	204	191	183	170	201	208	290	267	285	255	210	168	n.a.	n.a.	n.a.
<b>Total Area Irrigated</b>																		
Area (ha)	1983/84 39,904	n.a.	38,165	n.a.	n.a.	44,088	46,198	n.a.	55,456	61,093	n.a.	45,404	51,738	65,063	58,314	63,091	67,890	67,621

Source: Australian Bureau of Statistics, ABS data available on request, Agricultural Commodity Survey  
Agricultural Census data 1984-85 to 1996-97, and 2000-01. Survey data 1997-98, 1998-99, 1999-00 and 2001-02.

**8.5. APPENDIX 5, GROSS VALUE OF AGRICULTURAL PRODUCTION**

**Gross Value of Agricultural Production  
Tasmania**

(\$million)

	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	
Vegetables	57.9	57.0	62.3	85.2	111.9	120.0	100.6	104.2	106.7	115.0	109.8	136.1	141.8	166.5	155.4	135.5	146.9	168.0	
Fruit	29.8	36.5	30.9	40.2	34.4	34.8	27.2	40.8	45.8	38.7	52.2	55.4	61.8	46.4	62.5	60.0	65.4	65.8	
Pastures and Grasses	14.3	24.8	26.3	27.0	42.5	26.4	27.7	28.1	33.3	25.6	21.8	28.4	31.5	33.2	41.8	31.8	41.9	43.3	
Cereals for Grain	7.9	6.8	5.8	6.7	8.4	7.3	8.6	8.9	9.5	9.5	10.6	15.0	13.3	14.9	13.0	10.6	13.8	14.7	
Other Crops	22.4	23.0	20.3	30.3	36.2	33.4	45.0	45.4	50.1	62.7	61.0	66.5	49.6	56.9	72.4	82.5	82.2	101.5	
<b>Total Crops</b>	<b>132.3</b>	<b>148.1</b>	<b>145.6</b>	<b>189.4</b>	<b>233.4</b>	<b>221.9</b>	<b>209.1</b>	<b>227.4</b>	<b>245.4</b>	<b>251.6</b>	<b>255.4</b>	<b>301.4</b>	<b>297.9</b>	<b>317.9</b>	<b>345.0</b>	<b>320.4</b>	<b>350.1</b>	<b>393.3</b>	
<b>Livestock Slaughterings</b>	<b>115.3</b>	<b>95.1</b>	<b>111.5</b>	<b>120.0</b>	<b>122.1</b>	<b>140.8</b>	<b>125.2</b>	<b>125.7</b>	<b>127.4</b>	<b>148.5</b>	<b>139.5</b>	<b>105.3</b>	<b>117.1</b>	<b>120.9</b>	<b>123.3</b>	<b>153.6</b>	<b>160.4</b>	<b>193.0</b>	
Wool	73.3	83.7	108.7	162.4	154.7	161.9	116.7	78.7	62.7	74.2	106.8	67.9	82.1	92.9	68.3	78.1	86.0	87.4	
Milk	54.7	56.9	64.0	67.0	84.2	88.5	88.4	91.8	116.0	126.8	107.5	139.4	132.6	133.7	152.1	132.5	147.7	219.8	
Other Livestock Products	7.1	6.7	7.7	9.7	8.7	10.6	9.8	9.9	8.6	8.2	9.7	11.4	11.1	12.9	11.1	6.6	10.8	9.9	
<b>Total Livestock Products</b>	<b>135.1</b>	<b>147.3</b>	<b>180.4</b>	<b>239.1</b>	<b>247.6</b>	<b>261.0</b>	<b>214.9</b>	<b>180.4</b>	<b>187.3</b>	<b>209.3</b>	<b>224.0</b>	<b>218.8</b>	<b>225.8</b>	<b>239.5</b>	<b>231.5</b>	<b>217.2</b>	<b>244.4</b>	<b>317.1</b>	
<b>Total Gross Value</b>	<b>382.7</b>	<b>390.5</b>	<b>437.5</b>	<b>548.5</b>	<b>603.1</b>	<b>623.7</b>	<b>549.2</b>	<b>533.5</b>	<b>560.1</b>	<b>609.4</b>	<b>618.9</b>	<b>625.5</b>	<b>640.8</b>	<b>678.2</b>	<b>699.9</b>	<b>691.2</b>	<b>755.0</b>	<b>903.4</b>	
Compound Growth Rate	5.2% pa over 17 years																		
CPI	56.4	61.2	66.9	71.8	77.0	83.2	87.6	89.3	90.2	91.8	94.7	98.7	100.0	100.0	101.2	103.6	109.8	113.0	
Gross Value Adjusted by CPI	766.8	721.0	739.0	863.2	885.1	847.1	708.4	675.1	701.7	750.1	738.5	716.1	724.1	766.4	781.5	754.0	777.0	903.4	

**8.6. APPENDIX 6, AREA IRRIGATED**

## Area Irrigated

(hectares)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
					<b>Southern Natural Resource Management Region</b>													
<b>Pasture</b>			6,475			7,049		4,929		12,861			5,826	6,917		5,956	6,163	4,776
<b>Crops</b>																		
Cereals			450			561		830		819			351	648		324	931	632
Vegetables			154			411		323		550			829	1,152		858	825	783
Fruit			1,700			1,520		1,802		2,019			1,905	2,171		2,595	2,437	2,958
Other Crops			<u>1,121</u>			<u>1,293</u>		<u>2,018</u>		<u>2,471</u>			<u>1,851</u>	<u>2,258</u>		<u>2,658</u>	<u>3,484</u>	<u>3,294</u>
<b>Total Area Irrigated</b>	10,735	n.a	9,899	n.a	n.a	10,834	11,203	9,902	11,117	18,720	n.a	10,144	10,763	13,145	13,103	12,392	13,840	12,970
					<b>Northern Natural Resource Management Region</b>													
<b>Pasture</b>			6,200			9,683		8,711		12,453			11,195	14,708		10,064	14,392	14,545
<b>Crops</b>																		
Cereals			1,029			879		1,101		1,271			1,648	1,740		1,097	1,286	1,512
Vegetables			4,489			4,962		4,921		6,247			5,694	5,790		5,735	6,494	7,036
Fruit			284			319		307		414			310	484		342	941	681
Other Crops			<u>1,520</u>			<u>1,442</u>		<u>2,598</u>		<u>1,925</u>			<u>2,588</u>	<u>4,042</u>		<u>6,015</u>	<u>6,844</u>	<u>7,139</u>
<b>Total Area Irrigated</b>	13,634	n.a	13,522	n.a	n.a	17,284	17,733	17,638	24,460	22,309	n.a	17,441	21,434	26,764	24,940	23,253	29,958	30,913
					<b>North Western Natural Resource Management Region</b>													
<b>Pasture</b>			4,092			4,857		6,604		7,685			7,766	9,774		12,154	9,620	9,957
<b>Crops</b>																		
Cereals			357			257		265		181			218	501		268	307	105
Vegetables			8,956			9,355		8,523		9,702			8,803	11,019		10,563	10,068	9,350
Fruit			192			222		409		473			392	443		419	516	572
Other Crops			<u>1,147</u>			<u>1,278</u>		<u>2,493</u>		<u>2,024</u>			<u>2,363</u>	<u>6,015</u>		<u>3,205</u>	<u>3,582</u>	<u>3,755</u>
<b>Total Area Irrigated</b>	15,535	n.a	14,744	n.a	n.a	15,969	17,262	18,295	19,879	20,064	n.a	17,819	19,541	25,154	20,271	26,604	24,092	23,739
					<b>Tasmania</b>													
<b>Pasture</b>			16,767			21,589	0	20,244	0	32,999			24,786	31,399		28,174	30,174	29,278
<b>Crops</b>			0			0	0	0	0	0			0	0		0	0	0
Cereals			1,835			1,697	0	2,196	0	2,270			2,217	2,889		1,689	2,524	2,249
Vegetables			13,599			14,727	0	13,767	0	16,499			15,326	17,961		17,157	17,387	17,169
Fruit			2,176			2,061	0	2,519	0	2,906			2,607	3,098		3,356	3,894	4,211
Other Crops			<u>3,788</u>			<u>4,013</u>	<u>0</u>	<u>7,109</u>	<u>0</u>	<u>6,420</u>			<u>6,802</u>	<u>12,315</u>		<u>11,878</u>	<u>13,911</u>	<u>14,188</u>
<b>Total Area Irrigated</b>	39,904	n.a	38,165	n.a	n.a	44,087	46,198	45,834	55,456	61,093	n.a	45,404	51,738	65,063	58,314	62,249	67,890	67,621

Source: Australian Bureau of Statistics, ABS data available on request, Agricultural Commodity Survey

Agricultural Census data 1985 to 1997, and 2001. Survey data 1998, 1999, 2000 and 2002.



**8.7. APPENDIX 7, LAND CAPABILITY AND PLANTATIONS**

**AREA OF PLANTATIONS BY NRM & LAND CAPABILITY ON PRIVATE & PUBLIC LAND  
SOUTHERN NATURAL RESOURCE MANAGEMENT REGION  
As at December 2001**

Capability Mapsheet	Plantation Type	Land Class																			Total
		1	1+2	2	2+1	2+3	3	3+2	3+4	4	4+3	4+5	5	5+4	5+6	6	6+5	6+7	7	7+6	
Hectares																					
<b>Meander</b>	DPIWE Map Area	Nil in Whole Lcap Area																			0
	Hardwood	Nil in Whole Lcap Area																			0
	Softwood	Nil in Whole Lcap Area																			0
	<b>Total Plantation</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<b>% of Total LCap Area</b>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	<b>% of Plantation Area</b>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
<b>South Esk</b>	DPIWE Map Area																				1,829
	Hardwood																				419
	Softwood																				1,347
	<b>Total Plantation</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<b>% of Total LCap Area</b>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	<b>% of Plantation Area</b>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
<b>Derwent</b>	DPIWE Map Area																				45
	Hardwood																				32,053
	Softwood																				249
	<b>Total Plantation</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<b>% of Total LCap Area</b>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	<b>% of Plantation Area</b>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
<b>Nugent</b>	DPIWE Map Area																				209
	Hardwood																				13,933
	Softwood																				316
	<b>Total Plantation</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<b>% of Total LCap Area</b>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	<b>% of Plantation Area</b>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
<b>D'Entrecasteaux</b>	DPIWE Map Area																				2,438
	Hardwood																				240
	Softwood																				949
	<b>Total Plantation</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<b>% of Total LCap Area</b>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	<b>% of Plantation Area</b>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
<b>Unmapped</b>	DPIWE Map Area																				2,438
	Hardwood																				240
	Softwood																				949
	<b>Total Plantation</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<b>% of Total LCap Area</b>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	<b>% of Plantation Area</b>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
<b>Overall Total</b>	DPIWE Map Area	0	0	0	0	0	254	0	0	50,252	805	2,913	114,069	1,697	6,680	211,609	1,811	538	9,272	675	184,966
	Hardwood	0	0	0	0	0	0	0	0	26	0	1	1,403	0	49	1,906	48	0	50	0	9,812
	Softwood	0	0	0	0	0	0	0	0	26	0	0	1,390	0	17	1,393	0	0	55	0	20,583
	<b>Total Plantation</b>	0	0	0	0	0	0	0	0	52	0	1	2,792	0	66	3,299	48	0	105	0	30,395
	<b>% of Total LCap Area</b>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	2.4%	0.0%	1.0%	1.6%	2.6%	0.0%	1.1%	0.0%	16.4%
	<b>% of Plantation Area</b>	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.14%	0.00%	0.00%	7.60%	0.00%	0.18%	8.97%	0.13%	0.00%	0.29%	0.00%	82.69%

Land Capability Classes refer to private freehold land plus small areas of Crown land that is either unallocated or leased to private operators.

**AREA OF PLANTATIONS & LAND CAPABILITY ON PRIVATE & PUBLIC LAND  
NORTHERN NATURAL RESOURCE MANAGEMENT REGION  
As at December 2001**

Capability Mapsheet	Plantation Type	Land Class																			Total					
		1	1+2	2	2+1	2+3	2+5	3	3+2	3+4	3+5	4	4+3	4+5	4+6	5	5+4	5+6	5+7	6		6+5	6+7	7	Unmapped	
		Hectares																								
Forth	DPIWE Map Area																								489.1	3,494.6
	Hardwood																									214.5
	Softwood																									13.6
	<b>Total Plantation</b>																									<b>228.1</b>
	% of Total LCap Area																									6.5%
	% of Plantation Area																									100.0%
Tamar	DPIWE Map Area		104.6																						29,411.8	145,626.1
	Hardwood		5.3																						42.8	7,964.3
	Softwood																								260.7	1,022.1
	<b>Total Plantation</b>		<b>5.3</b>																						<b>303.5</b>	<b>8,986.4</b>
	% of Total LCap Area		<b>5.1%</b>																						<b>1.0%</b>	<b>6.2%</b>
	% of Plantation Area		<b>0.1%</b>																						<b>3.4%</b>	<b>100.0%</b>
Meander	DPIWE Map Area		127.0																						32,704.3	123,090.0
	Hardwood																								884.3	4,885.7
	Softwood																								111.4	165.2
	<b>Total Plantation</b>		<b>74.9</b>																						<b>995.7</b>	<b>5,050.9</b>
	% of Total LCap Area		<b>0.6%</b>																						<b>2.8</b>	<b>4.1%</b>
	% of Plantation Area		<b>1.5%</b>																						<b>0.1%</b>	<b>19.7%</b>
Pipers	DPIWE Map Area		897.6																						75,233.9	236,759.4
	Hardwood		59.1																						2,693.1	13,840.8
	Softwood		9.3																						5,193.9	6,273.0
	<b>Total Plantation</b>		<b>68.4</b>																						<b>7,887.0</b>	<b>20,113.8</b>
	% of Total LCap Area		<b>7.6%</b>																						<b>10.5%</b>	<b>8.5%</b>
	% of Plantation Area		<b>0.3%</b>																						<b>39.2%</b>	<b>100.0%</b>
Forester	DPIWE Map Area		1,539.5		4.4																				11,734.2	39,862.9
	Hardwood																								412.9	3,460.5
	Softwood		6.4		1.8																				1,574.0	1,871.9
	<b>Total Plantation</b>		<b>6.4</b>		<b>1.8</b>																				<b>1,986.9</b>	<b>5,332.4</b>
	% of Total LCap Area		<b>0.4%</b>		<b>40.9%</b>																				<b>16.9%</b>	<b>13.4%</b>
	% of Plantation Area		<b>0.1%</b>		<b>0.0%</b>																				<b>37.3%</b>	<b>100.0%</b>
South Esk	DPIWE Map Area																								6,091.0	218,384.6
	Hardwood																								115.1	115.1
	Softwood																								68.8	68.8
	<b>Total Plantation</b>																								<b>183.9</b>	<b>183.9</b>
	% of Total LCap Area																								<b>0.1%</b>	<b>0.1%</b>
	% of Plantation Area																								<b>100.0%</b>	<b>100.0%</b>
Unmapped	DPIWE Map Area																								12,560.0	12,560.0
	Hardwood																								21,394.0	21,394.0
	Softwood																									
	<b>Total Plantation</b>																									
	% of Total LCap Area																									
	% of Plantation Area																									
Overall Total	DPIWE Map Area		2,668.7		4.4																				155,664.3	767,217.6
	Hardwood		64.4																						4,304.9	43,040.9
	Softwood		15.7		1.8																				28,534.0	30,808.6
	<b>Total Plantation</b>		<b>80.1</b>		<b>1.8</b>																				<b>45,127.1</b>	<b>73,849.5</b>
	% of Total LCap Area		<b>3.0%</b>		<b>40.9%</b>																				<b>29.0%</b>	<b>9.6%</b>
	% Total Plantation Area		<b>0.11%</b>		<b>0.00%</b>																				<b>61.11%</b>	<b>100.0%</b>

Land Capability Classes refer to private freehold land plus small areas of Crown land that is either unallocated or leased to private operators.

**AREA OF PLANTATIONS & LAND CAPABILITY ON PRIVATE & PUBLIC LAND  
NORTH WESTERN NATURAL RESOURCE MANAGEMENT REGION  
As at December 2001**

Capability Mapsheet	Plantation Type	Land Class																			Total	
		1	1+2	2	2+1	2+3	3	3+2	3+4	4	4+3	4+5	5	5+4	5+6	6	6+5	6+7	7	7+6		Unmapped
		Hectares																				
<b>Hunter</b>	DPIWE Map Area			181		583	1,366	1,921	76	2,514		5,060	48,376	5,054	345	4,141	699	970	1,799		33,934	107,017
	Hardwood					486	1,921	198	36	46		2	475	1,838							889	3,970
	Softwood																					
	<b>Total Plantation</b>					<b>486</b>	<b>198</b>	<b>36</b>	<b>46</b>	<b>2</b>	<b>475</b>	<b>1,838</b>									<b>889</b>	<b>3,970</b>
	<b>% of Total LCap Area</b>					<b>35.6%</b>	<b>10.3%</b>	<b>47.6%</b>	<b>1.8%</b>	<b>0.0%</b>	<b>1.0%</b>	<b>36.4%</b>									<b>2.6%</b>	<b>3.7%</b>
	<b>% of Plantation Area</b>					<b>12.2%</b>	<b>5.0%</b>	<b>0.9%</b>	<b>1.2%</b>	<b>0.1%</b>	<b>12.0%</b>	<b>46.3%</b>									<b>22.4%</b>	<b>100.0%</b>
<b>Circular Head</b>	DPIWE Map Area	1,281		4,051	132	987	2,901	737	1,724	8,130	2,442	1,636	20,937	1,918	3,646	3,687	197	81	1,440		28,564	84,492
	Hardwood			152		104	389		356	272	0	110	319	126	81	70					146	2,125
	Softwood			1				3	4	2	1	10	0		3							23
	<b>Total Plantation</b>			<b>153</b>		<b>104</b>	<b>389</b>	<b>3</b>	<b>360</b>	<b>274</b>	<b>1</b>	<b>120</b>	<b>319</b>	<b>126</b>	<b>84</b>	<b>70</b>					<b>146</b>	<b>2,149</b>
	<b>% of Total LCap Area</b>			<b>3.8%</b>		<b>10.6%</b>	<b>13.4%</b>	<b>0.4%</b>	<b>20.9%</b>	<b>3.4%</b>	<b>0.1%</b>	<b>7.3%</b>	<b>1.5%</b>	<b>6.6%</b>	<b>2.3%</b>	<b>1.9%</b>					<b>0.5%</b>	<b>2.5%</b>
	<b>% of Plantation Area</b>			<b>7.1%</b>		<b>4.8%</b>	<b>18.1%</b>	<b>0.1%</b>	<b>16.8%</b>	<b>12.7%</b>	<b>0.1%</b>	<b>5.6%</b>	<b>14.9%</b>	<b>5.9%</b>	<b>3.9%</b>	<b>3.3%</b>					<b>6.8%</b>	<b>100.0%</b>
<b>Inglis</b>	DPIWE Map Area	704		3,153	108	293	16,245	1,178	622	27,308	191	4,638	65,973	1,104	5,201	18,344	10,618	10,387	18,999	2,812	97,142	285,020
	Hardwood	3		2			1,188	48	17	6,620	26	338	24,052	28	916	2,762	2,624	1,264	389	82	782	41,140
	Softwood			1	1		129	0		1,469		112	2,790	14	298	141	455	79	14	0	3,749	9,253
	<b>Total Plantation</b>	<b>3</b>		<b>4</b>	<b>1</b>		<b>1,317</b>	<b>48</b>	<b>17</b>	<b>8,089</b>	<b>26</b>	<b>450</b>	<b>26,842</b>	<b>41</b>	<b>1,214</b>	<b>2,903</b>	<b>3,080</b>	<b>1,343</b>	<b>403</b>	<b>82</b>	<b>4,530</b>	<b>50,393</b>
	<b>% of Total LCap Area</b>	<b>0.5%</b>		<b>0.1%</b>	<b>0.9%</b>		<b>8.1%</b>	<b>4.1%</b>	<b>2.7%</b>	<b>29.6%</b>	<b>13.7%</b>	<b>9.7%</b>	<b>40.7%</b>	<b>3.7%</b>	<b>23.3%</b>	<b>15.8%</b>	<b>29.0%</b>	<b>12.9%</b>	<b>2.1%</b>	<b>2.9%</b>	<b>4.7%</b>	<b>17.7%</b>
	<b>% of Plantation Area</b>	<b>0.0%</b>		<b>0.0%</b>	<b>0.0%</b>		<b>2.6%</b>	<b>0.1%</b>	<b>0.0%</b>	<b>16.1%</b>	<b>0.1%</b>	<b>0.9%</b>	<b>53.3%</b>	<b>0.1%</b>	<b>2.4%</b>	<b>5.8%</b>	<b>6.1%</b>	<b>2.7%</b>	<b>0.8%</b>	<b>0.2%</b>	<b>9.0%</b>	<b>100.0%</b>
<b>Forth</b>	DPIWE Map Area	733	178	6,502	98	382	14,049	710	1,204	39,686	2,059	7,143	27,876	1,162	2,143	4,794	441	367	480		50,028	160,033
	Hardwood			2			555	3	41	2,653	27	547	2,549	81	257	114	15				1,202	8,044
	Softwood			31			50	1		837	4	174	1,036	11	49	48	2				5,041	7,284
	<b>Total Plantation</b>			<b>34</b>			<b>604</b>	<b>4</b>	<b>41</b>	<b>3,489</b>	<b>31</b>	<b>721</b>	<b>3,585</b>	<b>92</b>	<b>305</b>	<b>162</b>	<b>17</b>				<b>6,242</b>	<b>15,328</b>
	<b>% of Total LCap Area</b>			<b>0.5%</b>			<b>4.3%</b>	<b>0.5%</b>	<b>3.4%</b>	<b>8.8%</b>	<b>1.5%</b>	<b>10.1%</b>	<b>12.9%</b>	<b>7.9%</b>	<b>14.3%</b>	<b>3.4%</b>	<b>4.0%</b>				<b>12.5%</b>	<b>9.6%</b>
	<b>% of Plantation Area</b>			<b>0.2%</b>			<b>3.9%</b>	<b>0.0%</b>	<b>0.3%</b>	<b>22.8%</b>	<b>0.2%</b>	<b>4.7%</b>	<b>23.4%</b>	<b>0.6%</b>	<b>2.0%</b>	<b>1.1%</b>	<b>0.1%</b>				<b>40.7%</b>	<b>100.0%</b>
<b>Tamar</b>	DPIWE Map Area	42		461	126		2,421		1,120	5,337		7,122		147	3,052			33			21,607	41,467
	Hardwood						1		9	128		371			191						146	846
	Softwood						0		109			513			130						4,076	4,829
	<b>Total Plantation</b>						<b>1</b>		<b>9</b>	<b>237</b>		<b>884</b>			<b>321</b>					<b>4,222</b>	<b>5,674</b>	
	<b>% of Total LCap Area</b>						<b>0.1%</b>		<b>0.8%</b>	<b>4.4%</b>		<b>12.4%</b>		<b>10.5%</b>						<b>19.5%</b>	<b>13.7%</b>	
	<b>% of Plantation Area</b>						<b>0.0%</b>		<b>0.2%</b>	<b>4.2%</b>		<b>15.6%</b>		<b>5.7%</b>						<b>74.4%</b>	<b>100.0%</b>	
<b>Unmapped</b>	DPIWE Map Area																				4,914	4,914
	Hardwood																				2,079	2,079
	Softwood																					
	<b>Total Plantation</b>																				<b>6,992</b>	<b>6,992</b>
	<b>% of Total LCap Area</b>																					
	<b>% of Plantation Area</b>																					
<b>Overall Total</b>	DPIWE Map Area	2,761	178	14,349	464	2,245	36,983	4,546	4,746	82,975	4,692	18,476	170,283	9,237	11,481	34,018	11,954	11,805	22,752	2,812	231,274	678,030
	Hardwood	3		156		104	2,619	248	459	9,718	54	998	27,765	2,072	1,254	3,137	2,640	1,264	389	82	8,078	61,039
	Softwood			34	1		179	5	4	2,417	5	296	4,340	25	349	318	457	79	14	0	14,944	23,467
	<b>Total Plantation</b>	<b>3</b>		<b>190</b>	<b>1</b>	<b>104</b>	<b>2,798</b>	<b>252</b>	<b>463</b>	<b>12,135</b>	<b>59</b>	<b>1,294</b>	<b>32,105</b>	<b>2,097</b>	<b>1,603</b>	<b>3,455</b>	<b>3,097</b>	<b>1,343</b>	<b>403</b>	<b>82</b>	<b>23,022</b>	<b>84,506</b>
	<b>% of Total LCap Area</b>	<b>0.1%</b>		<b>1.3%</b>	<b>0.2%</b>	<b>4.6%</b>	<b>7.6%</b>	<b>5.5%</b>	<b>9.8%</b>	<b>14.6%</b>	<b>1.3%</b>	<b>7.0%</b>	<b>18.9%</b>	<b>22.7%</b>	<b>14.0%</b>	<b>10.2%</b>	<b>25.9%</b>	<b>11.4%</b>	<b>1.8%</b>	<b>2.9%</b>	<b>10.0%</b>	<b>12.5%</b>
<b>% of Plantation Area</b>	<b>0.00%</b>		<b>0.22%</b>	<b>0.00%</b>	<b>0.12%</b>	<b>3.31%</b>	<b>0.30%</b>	<b>0.55%</b>	<b>14.36%</b>	<b>0.07%</b>	<b>1.53%</b>	<b>37.99%</b>	<b>2.48%</b>	<b>1.90%</b>	<b>4.09%</b>	<b>3.67%</b>	<b>1.59%</b>	<b>0.48%</b>	<b>0.10%</b>	<b>27.24%</b>	<b>100.0%</b>	

Land Capability Classes refer to private freehold land plus small areas of Crown land that is either unallocated or leased to private operators.