

IN THE AUSTRALIAN COMPETITION TRIBUNAL

of 2013

**MURRAY GOULBURN CO-OPERATIVE CO LIMITED**

**RE: PROPOSED ACQUISITION OF WARRNAMBOOL CHEESE  
AND BUTTER FACTORY COMPANY HOLDINGS LIMITED**

### **Certificate identifying annexure**

This is the annexure marked RAP59 now produced and shown to Robert Arthur Poole at the time of signing his statement on 28 November 2013.

**Annexure RAP59**

**Dairy Australia background paper regarding  
Lower Murray-Darling Basin Inquiry**

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Filed on behalf of Murray Goulburn Co-Operative Co Limited

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# Report to Dairy Australia

## **BACKGROUND PAPER: REGIONAL SITUATION STATEMENT**

AUGUST 2009



Background paper for  
Lower Murray-Darling  
Basin Inquiry

Dairy Australia has commissioned a process of information collection, analysis, engagement and independent assessment with the community of the Lower Murray-darling Basin in order to provide more clarity around key drivers that are influencing, and will influence, the trajectory of the dairy industry in the region into the future.

The Inquiry will assist dairy farmers, manufacturers, service providers, government and future investors to identify opportunities and future risks, and incorporate this information and informed opinion into decision-making across the industry and more broadly.

This Inquiry is the dairy industry's response to significant and ongoing changes in the region and anticipated structural change both pre- and post-farmgate.


The Inquiry aims to consult widely with dairy farmers, other stakeholders and interested parties to ensure they are fully involved in contributing to this work.

The Inquiry will deliver **background papers** on a range of topics for consideration by key stakeholders and to inform the independent inquiry phase.

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**DISCLAIMER:**

*This report is published for information only. It is published with due care and attention to accuracy, but Dairy Australia accepts no liability if, for any reason, the information is inaccurate, incomplete or out of date. The information is a guide only and professional advice should be sought regarding the reader's specific circumstances.*



## 1. REGIONAL OVERVIEW - THE LOWER MURRAY–DARLING BASIN

The Lower Murray–Darling Basin covers the area north of the Great Dividing Range in Victoria and NSW to the Murrumbidgee River, and the Murray region of South Australia (see Figure 1).

It includes the Victorian, NSW and South Australian shares of the Murray River, and the following river systems and catchments: Goulburn–Broken, Ovens, Murrumbidgee, Campaspe, Loddon–Avoca & Eastern Mt Lofty Ranges.

The following Statistical Divisions can best encompass the Lower Murray–Darling Basin, for the purpose of this report:

- Goulburn VIC
- Loddon VIC
- Mallee VIC
- Ovens–Murray VIC
- Murray NSW
- Murrumbidgee NSW
- Murraylands SA

The Lower Murray–Darling Basin covers an area of 302,000 km<sup>2</sup> (30,200,000 hectares) of which:

- 21,558,012 hectares or 71% of the area are agricultural holdings;
- An estimated 386,000 hectares are dairy farm holdings, or about 1.8% of agricultural land;
- 11,000 farm businesses irrigated 564,970 hectares in 2007-08;
- 2589 dairy farm businesses irrigated 84,920 hectares, equivalent to 15% of irrigated land in the region.

**TABLE 1: Agricultural irrigation activity and area, by Statistical Division 2007–08**

Statistical Division	Agricultural businesses no.	Agricultural businesses irrigating no.	Area of agricultural holdings (ha)	Area irrigated (ha)	Volume applied (ML)
<b>Goulburn</b>	6,001	3,229	1,404,482	156,735	478,524
<b>Loddon</b>	2,256	659	1,083,311	28,427	66,847
<b>Mallee</b>	3,470	2,151	2,312,686	85,634	307,453
<b>Ovens-Murray</b>	2,540	573	563,996	13,058	40,452
<b>Murray</b>	3,569	1,099	7,141,700	75,848	239,756
<b>Murrumbidgee</b>	4,690	1,361	5,916,025	140,750	555,512
<b>Murraylands</b>	3,372	1,967	3,136,812	64,518	299,313
<b>TOTAL</b>	<b>25,898</b>	<b>11,039</b>	<b>21,559,012</b>	<b>564,970</b>	<b>1,987,857</b>

Source: ABS Water Use on Australian Farms 2007-08

Irrigation regions servicing a large proportion of dairy farms in the region are: Campaspe, Central Goulburn, Murray Valley (VIC), Pyramid–Boort, Rochester, Shepparton, Torrumbarry, NSW Murray, Murrumbidgee and SA River Murray irrigators.

Major groundwater management areas in the Lower Murray–Darling Basin region include Campaspe Deep Lead, Katunga, Mid & Upper Loddon, Mullindolingong, Murmungee, Nagambie, Shepparton Irrigation and Spring Hill.

Milk processing and manufacturing facilities are located at Bendigo, Cobram, Echuca, Jervois, Kiewa, Leitchville, Murray Bridge, Rochester, Stanhope, Strathmerton, Tatura, and Wagga Wagga.

The Lower Murray–Darling Basin is one of the few regions in Australia, along with south-west Western Australia, to have a genuinely Mediterranean climate. The region’s climate is due to a large subtropical high pressure cell in the Indian Ocean that moves towards Antarctica in summer and towards the equator in winter. As a consequence, the region has a hot summer and cool to mild winter, with rainfall almost entirely confined to winter and early spring (around 60–70 per cent falling from April to October).

Average annual rainfall in the region ranges from approximately 400–500 mm for the majority of the area up to 700–800 mm in the north-east region of Victoria. Deniliquin has an annual rainfall of 420 mm with 90 rain days per year, whilst Shepparton has 563 mm and 109 rain days, and Corryong, in the Alpine Valleys, has an annual rainfall of 774 mm and 113 rain days per year.

**FIGURE 1: Map of the Lower Murray–Darling Basin**



## 2. AGRICULTURAL PRODUCTION & PROCESSING IN THE LOWER MURRAY–DARLING BASIN

### 2.1 AGRICULTURAL PRODUCTION

Agriculture plays an important role in the region's economy and there are a large number of agricultural industries present in the Lower Murray–Darling Basin, including cropping, dairy, sheep, beef, vegetables and horticulture.

The total area of agricultural holdings in the Lower Murray–Darling Basin is estimated to be 22,558,012 hectares across approximately 26,000 agricultural enterprises. The area of irrigated agriculture in the region is estimated to be 564,970 hectares.

Main perennial horticultural commodities grown in the region are pears, apples, peaches, nectarines, apricots, plums, nashi, kiwi fruit and cherries. Citrus and wine grape production are also significant perennial horticultural industries.

The main annual horticultural crop in the Lower Murray–Darling Basin is tomatoes, although a range of other vegetables are cultivated.

Cropping enterprises focus on both fodder and grains production including winter cereals, pulse and oilseed crops.

Livestock industries include dairy, sheep, beef, poultry and pig production.

Forestry activity and timber production is largely centred in the north-east Victoria area of the Lower Murray–Darling Basin and covers both native hardwood forests and softwood plantation forestry.

The total gross value of agricultural production in the Lower Murray–Darling Basin is approximately \$8.9 billion (2006–07 data), of which the strongest contributors are crops, excluding hay (\$3,218 million), fruit (\$1,862 million), livestock slaughtering (\$1,708 million) and milk (\$803 million).

The value of milk production (\$803 million) represents nine per cent of the total gross value of agricultural commodities produced in the Lower Murray–Darling Basin.

The value of milk production as a proportion of the total gross value of agricultural commodities produced is greatest in the Goulburn Statistical Division (23 per cent).

**TABLE 2: Land ownership, by agricultural commodity, Lower Murray–Darling Basin 2006–07**

	GOULBURN	LODDON	MALLEE	OVENS-MURRAY	MURRAY	MURRUMBIDGEE	MURRAYLANDS	TOTAL
<b>Total crops<sup>1</sup></b>	236,693	189,645	1,236,228	27,316	864,077	1,339,852	991,134	<b>4,884,945</b>
<b>Cereal broadacre crops</b>	179,100	158,878	1,087,782	17,504	740,640	1,132,999	865,932	<b>4,182,835</b>
<b>Non-cereal broadacre crops</b>	34,868	23,804	97,729	3,396	102,654	165,057	77,030	<b>504,538</b>
<b>Nurseries, cut flowers and cultivated turf</b>	759	67	58	36	91	226	163	<b>1,400</b>
<b>Vegetables for seed</b>	226	107	70	5	80	20	220	<b>728</b>
<b>Vegetables for human consumption</b>	3,389	50	2,412	41	2,717	6,253	6,589	<b>21,451</b>
<b>Fruit and nuts - fruit (excluding grapes)</b>	14,930	4,778	14,371	1,885	5,091	18,089	14,833	<b>73,977</b>

Source: ABS 2006-07 Agricultural Commodities – Small Area Data, Australia

<sup>1</sup> Total crops, excluding pastures and grasses

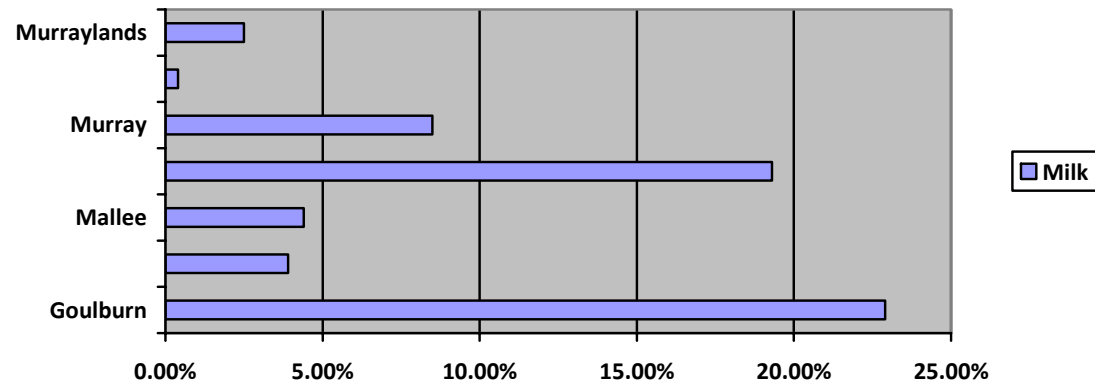


**TABLE 3: Total gross value of agricultural commodities produced, lower Murray–Darling–Basin, 2006–07**

	Goulburn	Loddon	Mallee	Ovens-Murray	Murray	Murrumbidgee	Murraylands	Total
<b>Agriculture – total value</b>	2,189,228,906	465,328,660	1,463,558,114	341,663,716	1,178,648,062	1,533,116,807	1,773,437,005	8,944,981,270
<b>Pasture &amp; crops cut for hay</b>	146,499,749	30,223,829	34,078,805	19,508,846	95,748,126	53,385,393	15,159,604	394,604,352
<b>Crops (excluding hay)</b>	564,973,051	92,474,457	706,154,182	46,482,415	373,854,823	625,325,902	808,808,001	3,218,072,831
<b>Nurseries, cut flowers &amp; cultivated turf</b>	51,660,936	9,486,415	11,023,054	3,423,514	5,437,411	15,969,786	7,964,375	104,965,491
<b>Vegetables</b>	92,375,880	1,171,816	38,774,843	1,826,203	30,475,719	106,002,619	173,712,104	444,339,184
<b>Fruit</b>	385,559,073	46,637,186	486,917,512	36,454,050	166,653,564	237,238,196	502,044,520	1,861,504,101
<b>Livestock slaughterings</b>	375,619,305	208,045,616	102,915,402	157,454,568	314,793,140	377,423,255	172,239,813	1,708,491,099
<b>Livestock products (excluding milk)</b>	70,282,070	59,251,146	18,692,743	10,497,534	91,352,060	111,675,562	48,528,681	410,279,796
<b>Milk</b>	502,258,842	18,038,195	65,001,573	66,016,586	100,333,219	6,096,094	44,979,907	802,724,416

Source: ABS 2006-07 Agricultural Commodities – Small Area Data, Australia

**FIGURE 2: Value of milk production as proportion of the total gross value of agricultural commodities**



## 2.2 MANUFACTURING, PROCESSING & VALUE ADDING

There is strong emphasis on food product manufacturing (and beverage and tobacco product manufacturing) in the Lower Murray–Darling Basin.

The sales of goods and services from these two manufacturing industry sectors were valued at \$10.6 billion in 2006-07 (food product manufacturing \$8.985 billion; beverage and tobacco product manufacturing \$1.629 billion).

The key food product manufacturing activities are the processing of dairy, fruit and vegetable products centred on irrigation regions within the lower Murray–Darling Basin.

Other processing and value-adding activities within the region include timber processing and winemaking.

**TABLE 4: Value of food product manufacturing sector, Murray–Darling Basin, 2006–07**

Statistical Division	Number of Locations	Employment at end of June no.	Wages and Salaries \$m	Sales of goods and services \$m
<b>Goulburn</b>	138	5,865	387	3,745
<b>Loddon</b>	119	3,191	162	819
<b>Mallee</b>	53	768	34	275
<b>Ovens-Murray</b>	72	2,496	191	1,496
<b>Murray</b>	70	913	47	299
<b>Murrumbidgee</b>	88	3,427	165	1,468
<b>Murraylands</b>	52	1,998	93	883
<b>TOTAL</b>	<b>592</b>	<b>18,658</b>	<b>1,079</b>	<b>8,985</b>

Source: ABS Manufacturing Industry, Australia 2006-07

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## DAIRY PROCESSING

The total farmgate value of milk production in the region is approximately \$803 million, or nine per cent of the total gross value of agricultural production from the region.

The quantity of dairy products manufactured in the region is in excess of 385,000 tonnes. Major product categories by volume include cheddar cheese (66,000 tonnes), whole milk powder (52,000 tonnes), cream cheese/Neufchatel (41,000 tonnes), pizza, mozzarella and shredded cheese (44,000 tonnes) and yogurt (26,000 tonnes).

Cheese production from the region accounts for 58 per cent of the Australian cheese production output, whilst the volume of milk powders produced in the Lower Murray–Darling Basin represents 36 per cent of national production.

The total wholesale value of manufactured products produced in the region is approximately \$1,857 million.

This represents 21 per cent of the value of the region's food product manufacturing and 24 per cent of the value of national production.

Major product categories by value include cheddar cheese (\$365 million), cream cheese/Neufchatel (\$230 million), whole milk powder (\$212 million), pizza, mozzarella and shredded cheese (\$232 million) and milk protein concentrate (\$188 million).

**TABLE 5: Value of dairy manufacturing, Lower Murray–Darling Basin 2008–09**

Product	Production volume (kg)*	Production value (\$) **
Butter	7,800,267	\$25,343,067
Ghee/butteroil	7,243,860	\$27,983,031
Cream	5,813,439	\$15,859,062
Cheddar cheese	65,513,000	\$364,776,384
Pizza/Mozzarella/Shred cheese	44,063,000	\$231,859,506
Cream cheese/Neufchatel	41,832,039	\$229,802,683
Processed cheese	25,127,216	\$169,055,909
Reduced fat cheddar	13,492,000	\$82,058,344
Gouda	6,062,000	\$34,820,128
Parmesan	5,269,000	\$37,225,485
Romano/Melborno	5,215,000	\$30,507,750

<b>Colby</b>	3,882,000	\$27,069,186
<b>Goshred</b>	718,000	\$3,791,758
<b>Pecorino</b>	316,000	\$1,738,316
<b>Gruyere</b>	17,000	\$146,132
<b>Whole milk powder</b>	52,431,942	\$211,825,046
<b>Milk protein concentrate</b>	21,293,000	\$187,995,897
<b>Lactose</b>	14,978,000	\$9,660,810
<b>Whey powder</b>	17,425,000	\$19,881,925
<b>Skim milk powder</b>	11,541,375	\$39,863,909
<b>WPC/WPI</b>	7,228,000	\$27,264,016
<b>Buttermilk powder</b>	838,150	\$2,055,982
<b>Creamed whey cheese powder</b>	605,000	\$3,596,120
<b>Yogurt</b>	25,525,351	\$71,368,881

<b>Stockfeed</b>	172,000	\$306,160
<b>Total</b>	<b>384, 508,639</b>	<b>\$1,856,792,273</b>

Source: Dairy manufacturers and Dairy Australia

\*Volumes based on actual data from 12 factories in the region and the following companies – Murray Goulburn, Fonterra, Bega Cheese, Tatura Milk, Parmalat and Nestle

\*\*Values calculated using average 2008/09 bulk Export FOB values

There are 13 major dairy facilities in the region including milk processing, dairy product manufacturing and milk collection plants:

Company	Location	Notes
<b>Bega Cheese</b>	Strathmerton Vic.	Processed cheese manufacturing plant;60,000–70,000 tonne capacity; 10-year agreement to pack and supply Kraft products
<b>Fonterra Milk (Australia)</b>	Echuca Vic.	Yogurt and dairy dessert manufacturing; former Nestle yogurt factory
	Stanhope Vic.	Cheese making, milk powder production (skim milk powder & full cream milk powder) and whey processing
	Wagga Wagga NSW	Milk processing and packaging plant ('Riverina Fresh' brands), cheese making and yogurt production
<b>Murray Goulburn Cooperative</b>	Cobram Vic.	Cheese making , whey processing (powder, protein concentrate & protein isolate) and retail cutting/wrapping operations (bulk & retail); employing 460 staff
	Kiewa Vic.	Cheese making, retail milk and cream

	Leitchville Vic.	Cheese making
	Rochester Vic.	Cheese making, milk powder production (skim milk powder & full cream milk powder) and whey processing (powder & protein concentrate)
<b>National Foods</b>	Jervois SA	Cheese making and milk powder production
	Murray Bridge SA	Cheese making
	Shepparton Vic.	Milk processing and packaging plant, 20 million litres capacity per annum; closing in July 2010
<b>Parmalat</b>	Bendigo Vic.	Milk processing and packaging plant
<b>Tatura Milk Industries</b>	Tatura Vic.	Cream cheese, milk powders, infant formula and neutraceuticals; 70,000 tonne capacity

There are also a number of smaller scale, specialised dairy manufacturing operations in the region including Gundowring Fine Foods (Kiewa Vic.) and Milawa Cheese Company (Milawa Vic.).

#### LIVESTOCK PROCESSING

Within the Lower Murray–Darling Basin, some abattoirs depend strongly on supply of dairy cattle for slaughter.

HW Greenham & Sons plant at Tongala mainly processes culled dairy cows for export to the United States for the Burger King organisation. It has been specialising in grinding meat for the US hamburger market for the past 15 years. It draws its stock from a supply catchment that extends from the Goulburn Valley and Campaspe region of northern Victoria into the New South Wales Riverina district.

This plant employs 200 staff and processes 38,000 tonnes of meat per annum. In 2008, the company had been considering a \$3 million expansion of its Tongala facilities to provide chilling facilities for cold boning of prime cattle. This decision was partly based on a lack of dairy cows, because of drought conditions. However, the expansion has now been put on hold due to an unexpected surge in activity at their Tasmanian plant.

There are a number of other predominantly beef abattoirs within the area, including:



- Auld’s Knackery – Stanhope Vic.
- Benalla Meat Packers – Benalla Vic.
- Cargill Beef Australia – Wagga Wagga (100,000 tonne annual output)
- Corryong Abattoir – Corryong Vic.
- HW Greenham & Sons – Tongala Vic.
- JBS Swift – Yarrawonga Vic.
- Numurkah Knackery – Numurkah Vic.
- Ryan’s Wholesale Meat – Nathalia Vic.
- T & R Pastoral – Murray Bridge SA (110,000 tonne annual output)
- Vodusek Meats – Cobram Vic.
- Wangaratta Abattoirs – Wangaratta Vic.

*Source: MLA, company websites*

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## CROP PROCESSING

Crop processing activities in the Lower Murray–Darling Basin include stockfeed manufacturing, oilseed crushing for resale to stockfeed manufacturers and other product manufacturers, and other processing.

Stockfeed manufacturers are highly dependent on dairy farmers as customers in the region.

At least ten stockfeed companies supply the northern Victoria and Southern Riverina dairy industry, with the typical annual volume of manufactured feed from mills going into that region of about 270,000 tonnes. The value of this stockfeed is conservatively estimated at \$94 million per annum.

Stockfeed companies with a strong dependence on the dairy industry in region include:

- CopRice Stockfeeds (division of Ricegrowers Pty Ltd) – Tongala Vic. & Leeton NSW
- D & M Stockfeeds – Kyabram Vic.

- Designer Stockfeeds – Moama NSW
- Five Star Feeds – Gunbower Vic.
- Freemantle Stockfeeds – Eddington Vic.
- Hunter Stockfeeds – Elmore Vic.
- Irwin Stockfeeds – North Melbourne Vic.
- James Stockfeed & Fertiliser P/L – Nathalia Vic.
- Reid Stockfeeds – Colbinabbin Vic.
- Ridley Agriproducts – regional manufacturing mills and distribution facilities at Bendigo Vic., Corowa NSW, Gunbower Vic., Mooroopna Vic., and Murray Bridge SA.

Despite dry conditions and a requirement for supplementary feed into the dairy industry, reduced confidence and profitability caused an estimated 35 per cent reduction in stockfeed purchases by dairy farmers in the first six months of 2009 compared to the previous year. During the same period there was a 25–30 per cent increase in the number of aged debtors held by these manufacturers (SFMAV pers. comm.)

Flow-on effects of reduced stockfeed purchases are significant for transport industries. Tonnes of feed less means tonnes of raw material not transported into mills, resulting in reduced fuel purchases and vehicle maintenance requirements.

Other crop processors in the region include Riverina Oilseeds, an oilseed crusher and vegetable oil refiner that employs 40 staff at its Numurkah plant. Their products include canola meal to the dairy, beef, poultry and pork sectors and they are currently evaluating the production of higher value canola meal products for use in dairy and aquaculture.

Supply of whole or processed grains as supplementary feed to the dairy industry in the region is significant and covered in the ‘Dairy Farm Economic Contribution’ section.

### 2.3 EMPLOYMENT

About 392,000 people aged 15 years and over are employed in the Lower Murray–Darling Basin. Based on the number of people employed, the dominant industry sectors in the region are:

- Agriculture, forestry and fishing – 49,578 (12.6% of total employment in the area);

- Retail trade – 49,205 (12.5%);
- Manufacturing – 44,836 (11.4%);
- Health care & social assistance – 42,530 (10.8%).

Agriculture is an important part of the economy of the Lower Murray–Darling Basin as it is the largest employer in the region, providing one in eight jobs. Employment in agriculture, forestry and fishing in the Lower Murray–Darling Basin (13 per cent) was significantly higher than the national figure of three per cent. Employment in other industries was broadly in line with the trend at the national level.

**TABLE 6: Employment by economic sector – Murray–Darling Basin, 2006**

	GOULBURN	MALLEE	LODDON	OVENS-MURRAY	MURRAY-MURRUMBIDGEE	MURRAYLANDS*
<b>Agriculture, forestry &amp; fishing</b>	10,665	7,306	3,716	3,347	16,851	7,693
<b>Mining</b>	180	126	596	76	685	37
<b>Manufacturing</b>	11,743	3,636	8,920	6,143	11,273	3,121
<b>Electricity, gas, water &amp; waste services</b>	1,088	482	697	330	3,215	264
<b>Construction</b>	6,901	2,441	6,204	3,304	15,280	960
<b>Wholesale trade</b>	3,053	1,378	2,171	1,231	3,663	1,717
<b>Retail trade</b>	10,142	4,702	9,227	5,159	16,389	3,586
<b>Accommodation &amp; food services</b>	5,284	2,198	4,083	3,262	11,117	1,134

<b>Transport, postal &amp; warehousing</b>	4,023	1,734	3,397	1,635	6,438	910
<b>Information, media &amp; telecommunications</b>	848	326	1,506	435	1,340	228
<b>Financial &amp; insurance services</b>	1,456	660	2,204	792	1,559	343
<b>Rental, hiring &amp; real estate services</b>	954	319	779	504	160	1,033
<b>Professional, scientific &amp; technical services</b>	2,704	1,067	2,981	1,568	3,366	744
<b>Administrative &amp; support services</b>	1,946	1,143	1,785	1,207	3,269	1,659
<b>Public administration &amp; safety</b>	4,655	1,877	4,624	3,636	5,701	2,229
<b>Education &amp; training</b>	5,961	2,813	6,244	3,140	7,741	349
<b>Health care &amp; social assistance</b>	8,982	3,723	8,940	5,105	14,942	838
<b>Arts &amp; recreation services</b>	921	307	1,007	394	939	73
<b>Other services</b>	3,025	1,188	2,560	1,554	4,917	105
<b>TOTAL</b>	<b>84,531</b>	<b>37,426</b>	<b>71,641</b>	<b>42,822</b>	<b>128,845</b>	<b>27,023</b>

Source: Census of Population & Housing 2001 & 2006

\* 2001 data for Murraylands area

Based on the number of people employed, the dominant farming or horticultural sectors in the Lower Murray–Darling Basin are:

- Grain, sheep & beef cattle farming – 22,127 (5.6% of total employment; 46.3% of employment in agriculture, forestry and fishing);
- Horticulture & fruit growing – 11,559 (2.9% of total employment; 24.2% of employment in agriculture, forestry and fishing);
- Dairy cattle farming – 5,972 (1.5% of total employment; 12.5% of employment in agriculture, forestry and fishing);

**TABLE 7: Employment by agriculture, forestry and fishing industry, Lower Murray–Darling Basin, 2006**

Industry	Goulburn	Loddon	Mallee	Ovens-Murray	Murray	Murrumbidgee	Murraylands	Total
Grain, sheep & beef cattle farming	3,573	2,141	2,490	1,572	4,449	5,698	2,204	22,127
Horticulture & fruit growing	1,826	400	3,259	448	963	1,563	3,100	11,559
Dairy cattle farming	3,455	213	789	563	527	84	341	5,972
Services to agriculture	549	217	380	145	407	443	247	2,388
Other livestock farming	461	368	121	220	481	160	262	2,073
Undefined	295	119	182	83	253	363	117	1,412
Forestry & logging	145	25	16	139	133	270	11	739
Other crop growing	205	65	90	176	49	72	33	690
Poultry farming	167	182	23	6	16	170	63	627
Commercial fishing & aquaculture	75	6	5	15	11	20	32	167
Hunting &	6	6	3	3	6	8	3	35

<b>trapping</b>								
<b>Total</b>	10,757	3,745	7,358	3,370	7,295	8,851	6,413	47,789

Dairy farming employment is most significant in the Goulburn Statistical Division, representing 32 per cent of all employment in agriculture, forestry and fishing, and four per cent of total employment across all industry sectors in this region. Employment in dairy farming in the Goulburn region (32%) was significantly higher than the figure of 12.5 per cent for the whole Lower Murray–Darling Basin.

**TABLE 8: Dairy employment information**

	Goulburn	Loddon	Mallee	Ovens-Murray	Murray	Murrumbidgee	Murraylands	Total
<b>Dairy cattle farming</b>	3,455	213	789	563	527	84	341	5,972
<b>Total employed - agriculture, forestry &amp; fishing</b>	10,757	3,745	7,358	3,370	7,295	8,851	6,413	47,789
<b>% dairy employment</b>	32.1%	5.7%	10.7%	16.7%	1.2%	0.9%	5.3%	12.5%
<b>Total employed – all industries</b>	84,531	37,426	71,641	42,822		128,845	27,023	392,288
<b>% dairy employment</b>	4.1%	0.6%	1.1%	1.3%		0.5%	1.3%	1.5%

*Source: ABS 2006 Census of Population & Housing*

## 2.4 INFRASTRUCTURE

The region is well serviced by infrastructure, particularly irrigation infrastructure. The replacement cost of irrigation infrastructure across three irrigation corporations in the region is estimated to be \$4.3 billion, not including replacement cost of on-farm infrastructure.

The Northern Victoria Irrigation Renewal Project (NVIRP) aims to modernise the irrigation systems within the Goulburn Murray Irrigation District. Stage 1 of the project is underway and involves automation of the ‘backbone’ of large channels across the region and upgrade of connections for a portion of the properties on the remaining spur channels. Stage 2 of this project will continue the modernisation of connections and facilitate on-farm efficiency works.

	Goulburn-Murray Water	Murray Irrigation Limited	Murrumbidgee Irrigation Limited	Total
<b>Area served by supply networks</b>	929,089 ha	748,000 ha	480,000 ha	2,157,089 ha
<b>Total supply network length – gravity irrigation</b>	7,896 km	2,950 km	2,674 km	13,520 km
<b>Total drainage network length</b>	3,208 km	1,465 km	2,374 km	7,047 km
<b>Current asset replacement cost</b>	\$3,021,588,260	\$780,201,000	\$470,000,000	\$4,271,789,260

Source: National Performance Report 2007-08: rural water service providers, March 2009

### 3. SOCIO-ECONOMIC PROFILE

The Lower Murray–Darling Basin has a strong reliance on agriculture as a contributor to the regional economy and as an employer. Communities in the Lower Murray–Darling Basin are under pressure as a consequence of the challenges facing agriculture and horticulture in the region. A number of social and economic issues confront the communities in this region.

#### 3.1 POPULATION

The Lower Murray–Darling Basin has an estimated population of 904,821 (according to the 2006 Census of Population and Housing). This represents around 4.4 per cent of Australia’s population. Between 2002 and 2006 the number of people living in the Lower Murray–Darling Basin rose by 2.6 per cent – this was lower than the national growth rate of 5.3 per cent during the same period.

**TABLE 9: Population information, Lower Murray–Darling Basin, 2006**

	Goulburn	Loddon	Mallee	Ovens-Murray	Murray	Murrumbidgee	Murraylands	Total
<b>Population – at 30 June 2006</b>	202,098	175,220	91,854	96,406	115,614	154,150	69,479	904,821
<b>Population change – 2002 to 2006</b>	3.7%	4.3%	1.4%	2.9%	1.7%	1.0%	1.2%	2.6%
<b>Population density – persons/km<sup>2</sup></b>	7.4	12.1	2.3	5.5	1.3	2.4	1.4	-
<b>Households</b>	71,186	63,045	33,128	34,752	41,963	53,237	25,736	323,047

Source: ABS National Regional Profile 2002-2006



Population density is highly varied within the region, with some areas such as Murraylands and Murray statistical divisions being very sparsely populated and well below the national average population density of 2.6 persons per square kilometre. The Goulburn and Loddon regions have high population densities partly reflecting the intensity of irrigated agriculture within these areas.

There are a number of large urban centres within the Lower Murray–Darling Basin with populations of 25,000 and over, including Bendigo, Albury–Wodonga, Wagga Wagga, Shepparton–Mooroopna and Mildura. These five large urban centres have a combined population of 265,000 or about 30 per cent of the population of the Lower Murray–Darling Basin.

**TABLE 10: Largest urban centres in the lower Murray–Darling Basin**

Major urban centres	Population (2006)
Bendigo VIC	76,050
Albury NSW – Wodonga VIC	73,500
Wagga Wagga NSW	46,740
Shepparton-Mooroopna VIC	38,770
Mildura VIC	30,020

*Source: ABS Regional Population Growth 2007-08*

These major urban centres in the region have experienced strong population growth over the past 10 years – for example, Bendigo’s population grew by 27 per cent between 1996 and 2006.

Principal towns and cities (populations over 1000) in the region which service the dairy industry are Benalla, Cobram, Cohuna, Echuca–Moama, Finley, Kerang, Kyabram, Nathalia, Numurkah, Rochester, Shepparton–Mooroopna, Swan Hill, Tatura and Albury–Wodonga.

Most of these towns have not experienced strong population growth in recent years, with Benalla experiencing one of the fastest declines in population between 2007 and 2008 (compared to other local government areas in Victoria).

**TABLE 11: Principal towns and cities servicing the dairy industry**

Dairy service centres	1986	1991	1996	2001	2006
Benalla Vic.	8,662	8,555	8,843	8,897	8,951
Cobram Vic.	3,732	3,946	4,145	4,639	4,980
Cohuna Vic.	2,103	2,071	1,979	1,956	1,816
Corryong Vic.	1,274	1,226	1,215	1,139	1,159
Echuca Vic.	8,742	9,802	10,441	11,372	12,392
Finley NSW					2,250
Kerang Vic.	4,031	4,024	3,883	3,719	3,671
Kyabram VIC	5,101	5,304	5,490	5,534	5,376
Murray Bridge SA					17,500
Nathalia Vic.	1,346	1,470	1,455	1,416	1,376
Numurkah Vic.	2,847	3,140	3,142	3,404	3,636
Rochester Vic.	2,489	2,618	2,648	2,727	2,690
Swan Hill Vic.	8,903	9,365	9,392	9,778	9,702
Tatura Vic.	3,042	3,147	3,146	3,249	3,408
Tongala Vic.	1,044	1,065	1,164	1,179	1,238

Source: Victorian Department of Planning & Community Development, *Towns in Time (2008)*

### 3.2 EDUCATION, EMPLOYMENT & INCOME

A key indicator of educational standard at a population level is the attainment of formal non-school qualifications of people aged 15 years and over.

In 2006, the proportion of people aged 15 years and over in the Lower Murray–Darling Basin with post-school qualifications ranged from 38.8 per cent to 49.9 per cent (depending on statistical division) compared to the national average of 52.5 per cent.

**TABLE 12: Unemployment & income information, Lower Murray–Darling Basin**

	Goulburn	Loddon	Mallee	Ovens-Murray	Murray	Murrumbidgee	Murraylands	Australia
<b>Unemployment rate (June quarter 2006)</b>	n.a.	6.7%	6.7%	5.3%	6.8%	6.2%	n.a.	5.1%
<b>Average total income wage &amp; salary earners (year ended 30 June 2005)</b>	\$35,647	\$37,403	\$32,996	\$36,570	\$36,963	\$37,022	\$32,393	\$42,634
<b>Average total income persons with own unincorporated business (year ended 30 June 2004)</b>	\$29,003	\$31,817	\$33,180	\$30,770	\$37,255	\$37,196	\$34,682	\$38,455
<b>% total population (15 years &amp; over) with post-school qualifications</b>	45.3%	49.9%	42.0%	49.6%	47.1%	46.3%	38.8%	52.5%

### 3.3 SOCIO-ECONOMIC DISADVANTAGE

The Australian Bureau of Statistics has developed indexes to allow ranking of regions and providing a method of determining the level of social and economic wellbeing in that region. One of the four indexes is the 'Index of Disadvantage' that shows where the disadvantaged (as opposed to just unemployed) live.

Regions with a high relative socio-economic disadvantage tend to have higher proportions of low-income families, unemployed people, people without educational qualifications, households renting from public housing, and people in unskilled or semi-skilled occupations.

Regions or areas in the highest quintile are considered less disadvantaged while regions in the lower quintiles are more disadvantaged. The Mallee region is in the lowest quintile for this index reflecting a higher relative socio-economic disadvantage compared to other regions or states (comparisons of the index are only valid for regions in the same state).

**TABLE 13: Index of Disadvantage, statistical divisions in Lower Murray–Darling Basin**

Statistical Division	Index of Disadvantage	Ranking (within State)
Goulburn	993.1415306	2 <sup>nd</sup> quintile – Q25
Loddon	1001.37662	3 <sup>rd</sup> quintile – Q50
Mallee	989.7733626	Lowest quintile – Q10
Ovens-Murray	1006.733752	3 <sup>rd</sup> quintile – Q50
Murrumbidgee	980.081831	3 <sup>rd</sup> quintile – Q50
Murray	994.8708055	4 <sup>th</sup> quintile – Q75
Murraylands	954.8668353	2 <sup>nd</sup> quintile – Q25

Source: ABS Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA)

## 4. DAIRY FARMING IN THE REGION

### 4.1 OVERVIEW

The dairy industry is a significant agricultural industry in the region. The gross farmgate value of milk production is approximately \$803 million, or 9 per cent of the total gross value of agricultural production from the region. There are 2589 dairy farms located throughout the Lower Murray–Darling Basin (2006–07 data). This represents 32 per cent of the total number of dairy farms in Australia.

**TABLE 14: Dairy farm data – Lower Murray–Darling Basin, 2006/07**

	Number of dairy farms	Proportion of dairy farms in lower Murray-Darling Basin	Proportion of dairy cattle in lower Murray-Darling Basin
<b>Goulburn</b>	1,663	64.2%	62.6%
<b>Loddon</b>	62	2.4%	2.1%
<b>Mallee</b>	252	9.7%	8.6%
<b>Ovens-Murray</b>	286	11.1%	8.8%
<b>Murray</b>	213	8.2%	11.7%
<b>Murrumbidgee</b>	35	1.4%	0.8%
<b>Murraylands</b>	78	3.0%	5.4%
<b>TOTAL</b>	2,589	100.0%	100.0%

Source: ABS Agricultural Commodities – Small Area Data 2006-07

Over 600,000 dairy cattle are located in the region, including 372,000 cows in milk or dry and 128,000 one- and two-year-old heifers. Dairy cattle in the Lower Murray–Darling Basin declined in number by 14 per cent between 1993/94 and 2007/08, which is equivalent to a loss of just under 100,000 head during that period.

**TABLE 15: 2008 dairy cattle data, Lower Murray–Darling Basin**

Statistical Division	Cows in milk and dry	Heifers 1-2 years old	Heifers greater than 2 years old	All other milk cattle	Total
<b>Goulburn</b>	199,263	63,445	20,735	29,370	312,813
<b>Loddon</b>	11,867	4,612	100	2,752	19,331
<b>Mallee</b>	49,270	16,576	4,695	6,564	77,556
<b>Ovens-Murray</b>	41,124	20,491	5,791	6,978	74,384
<b>Murray</b>	44,698	11,614	6,912	10,183	73,407
<b>Murrumbidgee</b>	4,716	3,124	447	1,658	9,944
<b>Murrayland</b>	21,266	7,734	1,436	3,903	34,339
<b>TOTAL</b>	372,204	127,596	40,116	61,408	601,774

Source: ABS Agricultural Commodities Australia 2007-08

**TABLE 16: Trends in dairy cattle numbers 1993/94 to 2007/08**

Statistical Division	Milk cattle – total number 1993/94	Milk cattle – total number 2006/07	Milk cattle – total number 2007/08	Change 1993/94 to 2007/08	Change 2006/07 to 2007/08
<b>Goulburn</b>	345,237	435,705	312,813	-9.4%	-28.2%
<b>Loddon</b>	150,951	14,319	19,331	-87.2%	35.0%
<b>Mallee</b>	43,685	59,614	77,556	77.5%	30.1%
<b>Ovens-Murray</b>	59,204	61,082	74,384	25.6%	21.8%
<b>Murray</b>	47,800	81,644	73,407	53.6%	-10.1%
<b>Murrumbidgee</b>	9,355	5,509	9,944	6.3%	80.5%
<b>Murraylands</b>	43,198	37,767	34,339	-20.5%	-9.1%
<b>TOTAL</b>	<b>699,430</b>	<b>695,640</b>	<b>601,774</b>	<b>-14.0%</b>	<b>-13.5%</b>

Source: ABS Agricultural Commodities Australia

Total milk production in the region is 2.1 billion litres (2008/09 data), which represents about 32 per cent of national milk production. Milk production in the Lower Murray–Darling Basin catchment declined by 774 million litres in the period 2005/06 to 2008/09 representing an average annual reduction of 10 per cent per annum.

**TABLE 17: Milk production, by statistical division, 2005/06 to 2008/09**

Statistical Division	2005/06	2006/07	2007/08	2008/09p	Average annual change (%)
<b>Goulburn</b>	1,721,730,616	1,429,892,669	1,334,287,934	1,262,536,634	-9.7%
<b>Loddon</b>	152,274,908	62,893,998	68,005,871	65,983,241	-17.8%
<b>Mallee</b>	397,769,956	369,519,170	305,794,339	292,194,057	-9.6%
<b>Ovens-Murray</b>	177,629,138	198,577,175	205,788,997	203,711,820	4.8%
<b>Murray</b>	355,949,696	255,071,535	236,171,805	232,546,424	-12.4%
<b>Murrumbidgee</b>	38,125,874	37,926,397	35,378,850	27,250,234	-10.1%
<b>Murraylands</b>	35,982,877	31,136,852	22,257,306	21,401,065	-15.3%
<b>Total</b>	<b>2,879,463,065</b>	<b>2,385,017,796</b>	<b>2,207,685,101</b>	<b>2,105,623,474</b>	<b>-9.7%</b>

Source: Dairy Australia data & analysis



**TABLE 18: Key farm facts**

	2004	2005	2006	2007	2008	2009
<b>Cow numbers (average per farm)</b>	204	246	253	251	260	249
<b>Milk production (kg milk solids)</b>	94,000	99,000	104,000	93,000	106,000	112,000
<b>Milk production (litres)</b>	1,250,000	1,333,000	1,480,000	1,260,000	1,420,000	1,500,000
<b>Farm area (ha)</b>	203	232	167	202	149*	144*
<b>Grain usage (t/cow)</b>	n.a.	1.2	1.3	1.4	1.9	1.9
<b>Proportion of dairy land irrigated</b>	n.a.	63%	72%	n.a.	31%	38%
<b>Drought affected (% farms)</b>	97%	95%	n.a.	97%	99%	n.a.

Source: Dairy Australia Situation & Outlook reports 2004-2009\* Dairy land only

## 4.2 DAIRY FEEDBASE

Because of ongoing dry conditions, many dairy farmers have changed their production systems in the region. These changes have been made in an effort to use water more efficiently and to maximise potential yields of crops and pastures. The most significant change has been an increase in irrigation area allocated to annual ryegrass pastures, and a decrease in the area allocated to perennial pasture.

Annual pastures are irrigated in the autumn and spring and rely on rainfall through the winter months. Irrigation water requirements for annual ryegrass and clover pastures are 4 to 6 megalitres per hectare, compared with perennial pasture that is watered through the spring, summer and early autumn and uses 8 to 12 megalitres per hectare. Anecdotal information indicates a change in the proportion of annual to perennial pastures from approximately 70 per cent to 30 per cent is very common throughout the region. However no recent survey information is available to confirm this.

In the shorter term, if allocations remain low, hybrid ryegrass varieties may play more of a role in the feedbase as they offer some flexibility in terms of their persistence (2–3 years) compared with annual ryegrass varieties, and can provide quality feed through the summer.

Should water allocations improve, it is likely that the average farm will return to a simple production system based on perennial ryegrass pastures. It is likely that annual pasture will continue to play an increased role compared to historical use, but the average farm would still have only 40 per cent under annual pasture with the remaining 60 per cent under perennial pasture.

A group of farmers moved to a more intensive production system through the drought which is less reliant on perennial pasture. They have invested in infrastructure and machinery to aid in this intensification, and are considered to have superior management skills and tend to be less risk averse than the average group.

With unreliable water allocations, there is risk associated with both home-grown feed and purchased feed. If farmers understand the risks of intensification, and have the management capability to secure purchased feed at reasonable prices in the long term, they can reduce their exposure to risk by spreading it between the two feed categories (home-grown and purchased).

The future feedbase scenario for this group (top 5 per cent based on dry matter yields) suggests that perennial pasture will be completely replaced by summer forage crops and maize for silage. This will provide the opportunity for increased yields per hectare with a corresponding increase in water use efficiency.

For many farmers in the Riverina region, this transition has taken place and they view these changes as permanent. Farms in the Riverina may be seen as further advanced through this process of transition with very low water allocations in 2006–07 and zero allocation in 2007–08. Many Goulburn irrigation system farmers have made significant long-term feedbase changes for similar reasons.

In the current irrigation environment many dairy farmers will continue to make feedbase decisions based on milk price, water allocation and market signals for purchased feed. Some have made permanent changes to their production system, while others view the changes as temporary and intend to return to historical production systems when water security improves.

#### 4.3 DAIRY FARM FINANCIAL PERFORMANCE

Dairy farms in the region have had average rates of return on assets, including capital appreciation, of 6.0 per cent per annum over the nine years from 1999–2000 to 2007–08 according to ABARE data.

Average rates of return, including capital appreciation, of 6.0 per cent per annum for the region are below the better performing dairy regions (e.g. Western Victoria 10.3 per cent, Western Australia 9.2 per cent and Tasmania 8.9 per cent) over the past nine years. They are however comparable or higher than average rates of return in Southern and Central NSW (6.5 per cent), and Queensland and North Coast NSW (4.7 per cent).

For the ten-year period 1999–2000 to 2008–09, average rates of return, excluding capital appreciation, for dairy farms in the region were 1.9 per cent per annum. These levels of return are comparable with other agricultural industries in the region, particularly wheat and other crops and mixed crops and livestock enterprises.

The Dairy Farm Monitor Project data indicates an average rate of return, excluding capital appreciation, of 3.0 per cent per annum for 2008–09. Farms in the top 25 per cent of performance (based on return on assets) achieved a 10 per cent rate of return.

In terms of dairy's financial performance in comparison to other agricultural industries in the region, ABARE data indicates average rates of return comparable with other industries in the region, whether including or excluding the contribution of capital appreciation. The average rate of return is comparable in both situations with wheat and other crops and mixed crops and livestock enterprises.

**TABLE 19: Rate of return (%) – including capital appreciation 1999–2000 to 2007–08, average per farm**

	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	9 year average
<b>Northern Victoria &amp; Riverina</b>	2.7	7.9	12.5	0.2	10.5	4.8	2.4	9.3	4.0	<b>6.0</b>
<b>Western Victoria</b>	0.0	5.5	14.6	12.4	12.7	11.3	5.3	14.8	16.0	<b>10.3</b>
<b>Gippsland</b>	0.4	8.0	12.8	3.8	12.5	7.9	6.7	9.5	14.3	<b>8.4</b>
<b>Southern &amp; Central NSW</b>	-1.6	4.1	10.4	9.9	7.3	10.9	2.9	10.9	3.1	<b>6.5</b>
<b>Tasmania</b>	5.5	7.2	11.8	11.9	6.8	17.9	10.1	-4.7	14.1	<b>8.9</b>
<b>South Australia</b>	3.1	4.8	10.3	11.7	13.2	6.7	4.4	7.0	5.2	<b>7.4</b>
<b>Queensland &amp; North Coast NSW</b>	-4.3	-1.6	3.8	8.4	6.3	9.5	5.3	6.7	8.1	<b>4.7</b>
<b>Western Australia</b>	-8.0	3.1	4.1	3.5	6.5	8.5	30.0	26.3	8.9	<b>9.2</b>

*Source: ABARE farm survey data*

**TABLE 20: Rate of return (%) – excluding capital appreciation 1999–2000 to 2008–09, average per farm**

	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	10 year average
<b>Northern Victoria &amp; Riverina</b>	2.8	5.9	8.0	-4.9	0.8	3.3	3.4	-1.7	2.1	-0.5	<b>1.9</b>
<b>Western Victoria</b>	0.9	4.4	8.1	1.7	2.3	3.5	2.7	1.1	3.7	0.9	<b>2.9</b>
<b>Gippsland</b>	1.4	3.5	7.8	-0.9	0.3	3.1	2.1	1.2	4.0	1.4	<b>2.4</b>
<b>Southern &amp; Central NSW</b>	3.2	1.1	1.3	-0.9	-0.2	0.3	0.8	0.7	2.3	2.4	<b>1.1</b>
<b>Tasmania</b>	3.4	4.4	7.2	2.2	1.8	3.3	3.1	2.4	4.3	2.5	<b>3.5</b>
<b>South Australia</b>	2.9	2.0	6.0	0.9	1.9	2.4	0.9	-0.4	4.1	1.7	<b>2.2</b>
<b>Queensland &amp; North Coast NSW</b>	1.5	-0.7	0.0	-1.7	0.9	0.8	1.2	-0.3	2.5	1.9	<b>0.6</b>
<b>Western Australia</b>	2.7	1.6	2.3	1.8	1.6	1.2	2.0	1.0	1.5	1.4	<b>1.7</b>

Source: ABARE farm survey data

**TABLE 21: Rate of return – excluding capital appreciation 1999–2000 to 2008–09, average per farm**

	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	10 year average
<b>Dairy</b>	2.8	5.9	8.0	-4.9	0.8	3.3	3.4	-1.7	2.1	-0.5	<b>1.9</b>
<b>Wheat and other crops</b>	2.1	8.1	8.9	0.0	2.1	0.8	3.5	-2.6	-1.6	0.6	<b>2.2</b>
<b>Mixed crops and livestock</b>	1.2	8.7	5.4	0.1	1.3	0.0	0.5	-2.1	-1.3	0.2	<b>1.4</b>
<b>Sheep-beef</b>	-3.5	3.2	1.7	-4.7	-0.8	-0.4	2.4	-4.2	-0.9	2.1	<b>-0.5</b>
<b>Sheep</b>	-1.4	1.9	0.4	-3.6	-2.9	-0.8	-1.9	-4.1	-0.8	0.0	<b>-1.3</b>
<b>Beef</b>	-2.4	-1.8	1.9	-6.2	-0.8	0.3	0.6	-2.7	-1.6	-0.8	<b>-1.4</b>
<b>All broadacre</b>	0.6	5.5	4.8	-1.5	0.7	0.2	1.2	-2.9	-1.3	0.3	<b>0.8</b>

*Source: ABARE farm survey data*

**TABLE 22: Rate of return – including capital appreciation 1999–2000 to 2007–08, average per farm**

	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	9 year average
<b>Dairy</b>	2.7	7.9	12.5	0.2	10.5	4.8	2.4	9.3	4.0	<b>6.0</b>
<b>Wheat and other crops</b>	2.6	14.5	10.7	7.4	12.5	3.8	4.5	5.1	2.2	<b>7.0</b>
<b>Mixed crops and livestock</b>	4.7	17.8	9.5	10.3	10.9	0.4	3.2	5.3	0.3	<b>6.9</b>
<b>Sheep-beef</b>	-3.6	10.1	3.0	1.0	8.9	1.5	12.9	-0.7	1.0	<b>3.8</b>
<b>Sheep</b>	0.1	7.9	4.4	1.2	-13.0	11.8	-3.8	1.8	2.4	<b>1.4</b>
<b>Beef</b>	-0.8	2.0	7.2	-3.5	15.6	9.9	5.1	1.8	1.1	<b>4.3</b>
<b>All broadacre</b>	2.5	12.2	8.3	6.1	8.4	4.3	4.1	3.5	1.2	<b>5.6</b>

*Source: ABARE farm survey data*

There is limited data for horticulture on average rates of return, but it appears horticulture generated higher returns than dairy in most irrigation regions in 2006/07.

**TABLE 23: Rate of return – excluding capital appreciation 2006-07**

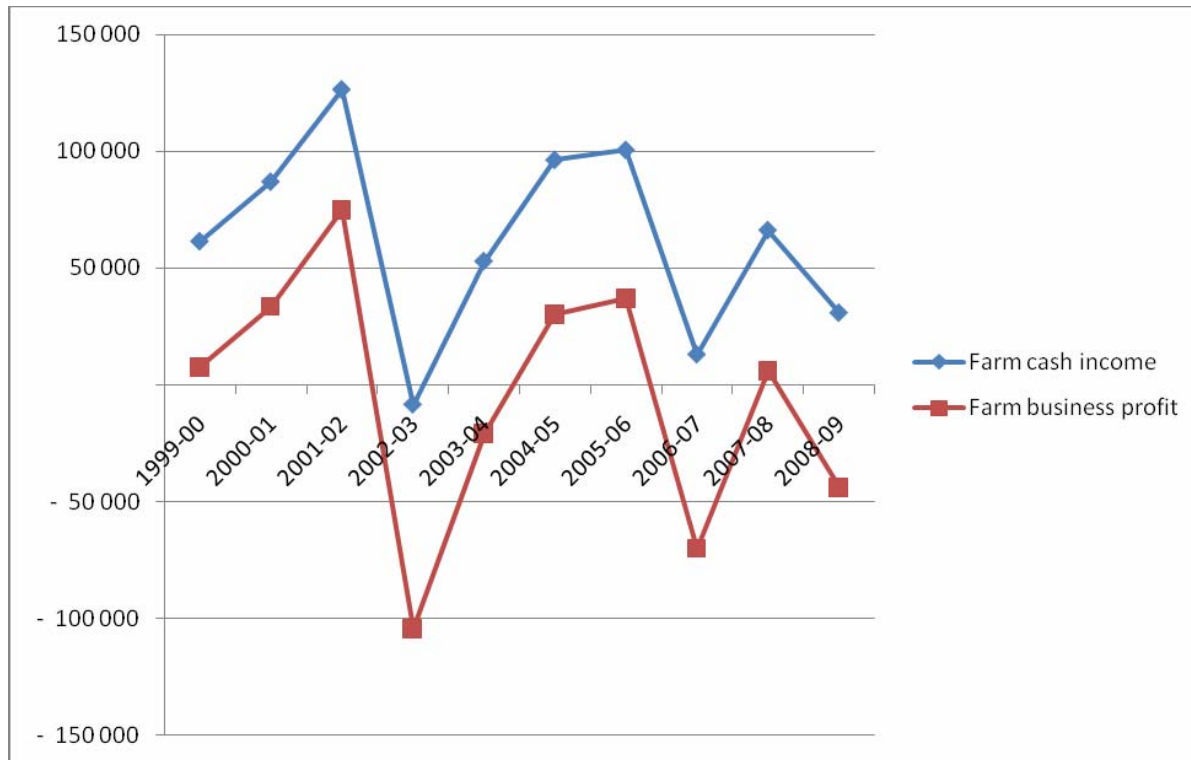
	Dairy	Horticulture	Broadacre
<b>Murrumbidgee</b>	0.3	0.9	0.7
<b>Murray</b>	0.7	2.3	-0.2
<b>Goulburn Broken</b>	-1.5	0.6	-0.9
<b>Loddon-Avoca</b>	0.0	-0.5	1.2
<b>Eastern Mount Lofty region</b>	0.8	2.1	-

*Source: An economic survey of irrigation farms in the Murray–Darling Basin, ABARE, November 2008*

Farm financial performance, measured in terms of farm cash income and farm business profit, has been highly variable between years in the region. High levels of volatility have been a result of seasonal conditions, input prices and milk price fluctuations during this period.



**FIGURE 3: Farm cash income & farm business profit 1999–2000 to 2008–09, Northern Victoria & Riverina, average per farm**



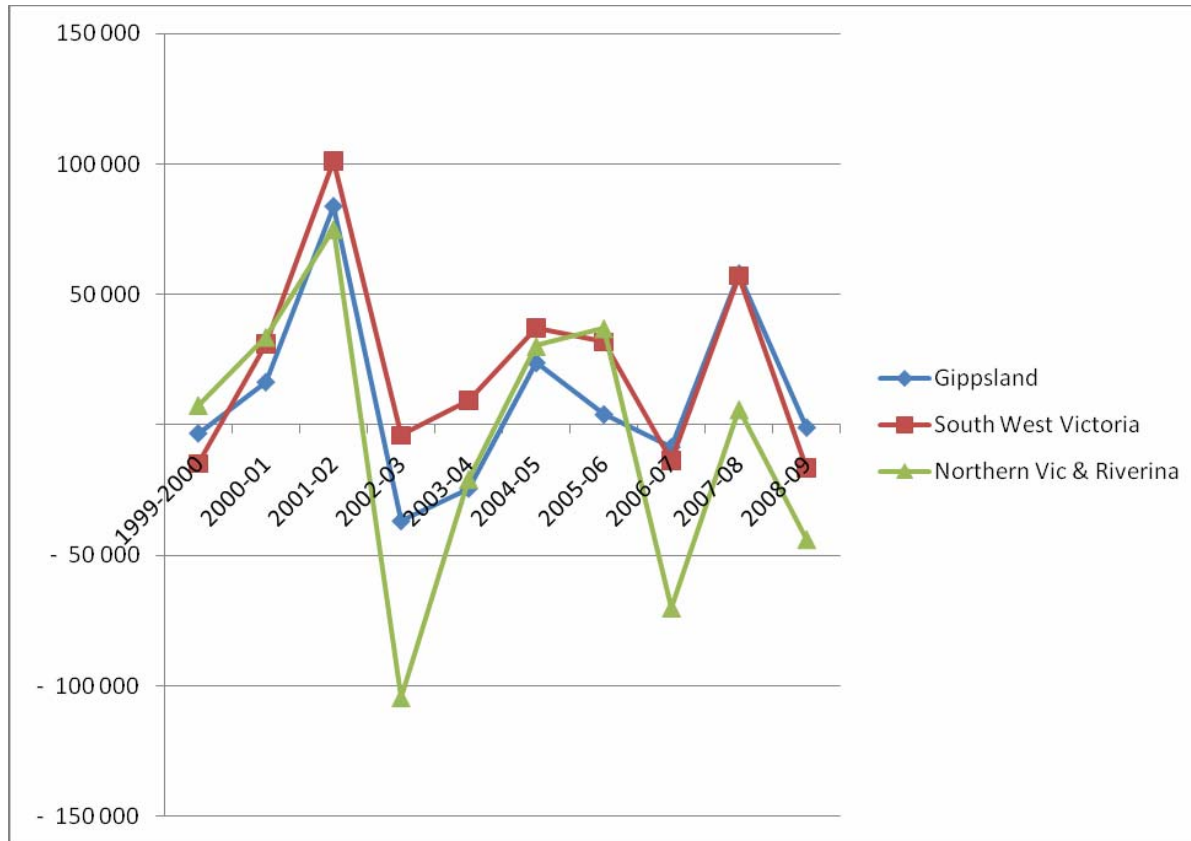
Source: ABARE

**Farm cash income:** The difference between total cash receipts and total cash costs

**Farm business profit:** Farm cash income plus buildup in trading stocks, less depreciation, less the imputed value of the owner manager, partner(s) and family labour

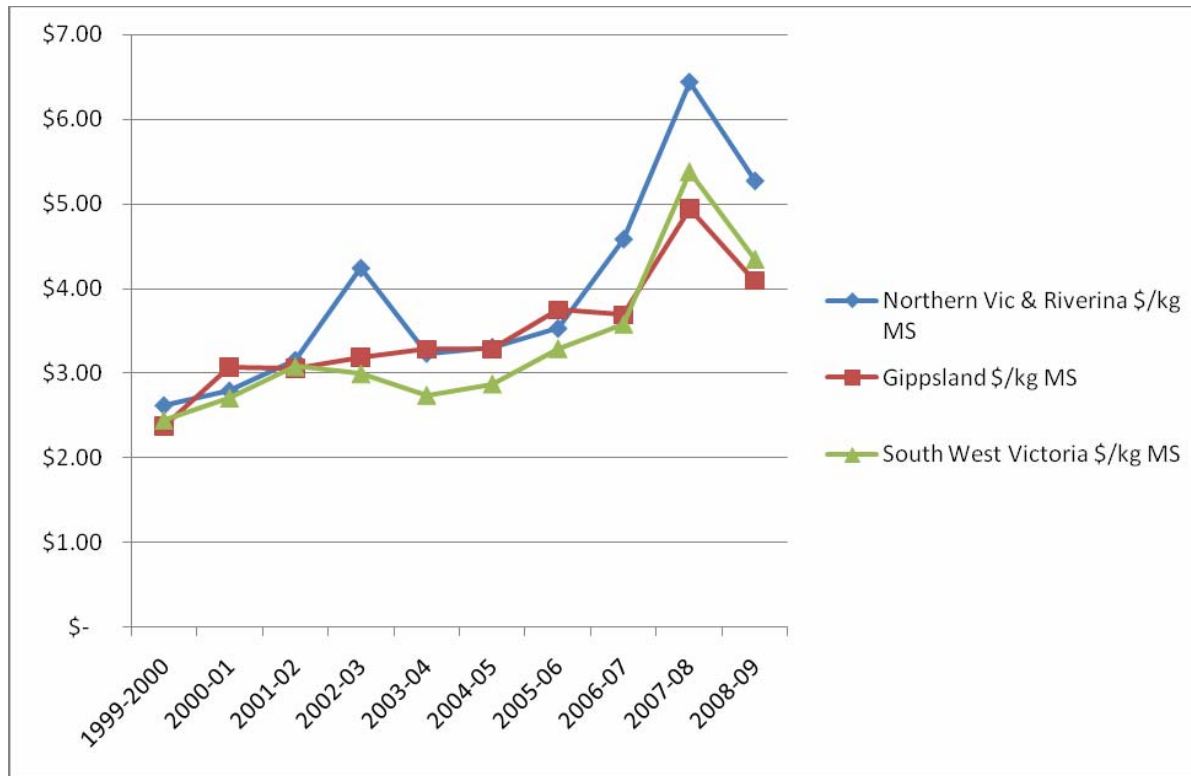
In comparison to other Victorian dairy regions, the volatility in farm cash income and farm business profit has been more severe in Northern Victoria & Riverina over the past 10 years, particularly for 2002-03, 2006-07 and 2008-09.

**FIGURE 4: Farm business profit 1999-00 to 2008-09, Victorian regions, average per farm**



Historically, costs of production in the region were comparable to other dairy regions, however this has changed since 2006–07 (and costs were also significantly higher in 2002–03).

**FIGURE 5: Costs of production, 1999–2000 to 2008–09, Victorian regions, average per farm (2008-09 \$ terms)**



Costs of production in the region have averaged \$3.92/kg MS over the ten-year period between 1999–2000 and 2008–09 (in 2008–09 dollar terms), compared to \$3.47/kg MS for Gippsland and \$3.34/kg MS for South West Victoria.

Over the past six years, the production cost base in the region has increased substantially, predominantly as a consequence of increased feed costs.

For example, in 2003/04, feed costs represented 63 per cent of production costs for Farmanco clients and 65 per cent for Red Sky participants. In 2007/08, feed costs represented 80 per cent of production costs for Farmanco clients and 77 per cent for Red Sky participants. This was equivalent to feed costs of \$4.75/kg MS for Farmanco clients and \$4.18/kg MS for Red Sky participants.

These figures are consistent with Dairy Industry Farm Monitor Project data which showed feed costs accounting for 78 per cent of production costs on the average Northern Victorian dairy farm (and 79 per cent on the top 25 per cent of dairy farms ranked by return on assets).

Dairy farmers have taken on more debt in recent years either to fund expansion of farm operations or to provide additional funds for working capital. In the past, rising capital values have kept equity levels at a “safe” level (e.g. above 60 per cent equity) and increasing equity has enabled increased borrowing ability for dairy farmers.

Total dairy farm debt in the region is estimated to be \$1.34 billion, or \$518,071 per farm (ABARE).

Balance sheets are now under pressure on many dairy farms as a result of increased liabilities and static or decreasing asset values (including land, cows and irrigation water). Assumptions around the market value for assets may be in question, especially if attempts are made to realise a large number of assets and a flooded market in particular areas eventuates.

Increased borrowing as a consequence of static or improving equity levels has not necessarily meant an improvement in debt servicing ability. Debt servicing costs have risen significantly on many dairy farms as dairy farmers have taken on more debt.

Average equity levels for the region were reported by ABARE as 80 per cent in 2006/07. However, the average equity percentage from the Farmanco dataset for 2006/07 was 67.1 per cent. Thirty-six per cent of dairy farms in the region have an equity level below 60 per cent, and could be considered at high risk under a situation of a milk price payout below break-even milk price levels.

Equity levels in the region are under increased pressure in the short term as a consequence of increased farm debt, particularly for working capital, and static or decreasing farm capital values.

**TABLE 24: Costs of production and break-even milk prices – Northern Victoria & Riverina**

		2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
<b>Rainfall as % of annual mean</b>	%	91%	103%	100%	63%	72%	<b>51%</b>
<b>Winter-spring rainfall as % of annual mean</b>	%	96%	80%	145%	45%	106%	<b>48%</b>
<b>Home grown feed as % of total feed</b>	%	65%	65%	67%	43%	23%	<b>20%</b>
<b>Irrigation allocation - Murray</b>	%	100%	100%	144%	95%	57%	<b>35%</b>
<b>Irrigation allocation - Goulburn</b>	%	100%	100%	100%	29%	43%	<b>31%</b>
<b>Irrigation allocation - MIL</b>	%	45%	42%	56%	0%	0%	<b>9%</b>
<b>Received milk price</b>	<b>\$/kgMS</b>	<b>\$3.60</b>	<b>\$4.31</b>	<b>\$4.42</b>	<b>\$4.20</b>	<b>\$6.53</b>	<b>\$4.64</b>
<b>Purchased grain / conc.</b>	<b>\$/t</b>	264	221	248	309	364	<b>350</b>
<b>Purchased fodder</b>	<b>\$/t</b>	163	137	138	208	283	<b>250</b>
<b>Purchased feed: milk price ratio</b>	<b>c/L ÷ c/kg</b>	0.93	1.25	1.25	0.99	1.25	<b>0.98</b>

<b>Herd costs</b>	\$/kgMS	\$0.23	\$0.25	\$0.24	\$0.24	\$0.26	<b>\$0.26</b>
<b>Shed costs</b>	\$/kgMS	\$0.14	\$0.15	\$0.15	\$0.15	\$0.14	<b>\$0.17</b>
<b>Feed costs</b>	\$/kgMS	\$1.89	\$1.98	\$2.04	\$3.18	\$4.47	<b>\$3.61</b>
<b>Overheads</b>	\$/kgMS	\$0.71	\$0.88	\$0.91	\$0.84	\$0.82	<b>\$0.83</b>
<b>Total costs of production</b>	\$/kgMS	\$2.97	\$3.26	\$3.34	\$4.41	\$5.69	<b>\$4.87</b>
<b>Costs of production as % milk income</b>	%	83%	76%	76%	105%	87%	<b>105%</b>
<b>Finance costs, drawings &amp; tax</b>	\$/kgMS	\$1.10	\$1.17	\$1.25	\$1.06	\$1.10	<b>\$1.18</b>
<b>Breakeven revenue (COP + financing costs, drawings &amp; tax)</b>	\$/kgMS	<b>\$4.07</b>	<b>\$4.43</b>	<b>\$4.59</b>	<b>\$5.47</b>	<b>\$6.79</b>	<b>\$6.05</b>
<b>Non-milk revenue</b>	\$/kgMS	\$0.44	\$0.49	\$0.45	\$0.68	\$0.59	<b>\$0.52</b>
<b>Breakeven milk price</b>	\$/kgMS	<b>\$3.63</b>	<b>\$3.94</b>	<b>\$4.14</b>	<b>\$4.79</b>	<b>\$6.20</b>	<b>\$5.53</b>

#### 4.4 DAIRY FARM ECONOMIC CONTRIBUTION

Dairy farms in the region have direct and indirect contributions to the region's economy through a number of channels. Dairy farms directly purchase inputs, such as supplementary feed, fertiliser and fuel, and services including veterinarians, farm management consultants, nutritionists and contractors.

Dairy farmers also contribute to underpinning a number of markets in the region, particularly land and water.

Dairy farms not only produce milk which is processed locally, but also livestock for slaughter or breeding.

On average, cows in the Lower Murray–Darling Basin are fed 1.9 tonnes of grain or concentrate per head (Situation & Outlook 2008). This equates to 706,800 tonnes of grain or concentrate purchased as supplementary feed. The trend to higher levels of supplementary feeding has been evident over recent years – in 2007, an average of 1.4 tonnes of grain and concentrate per head was fed.

Dairy farms in the region purchase 436,800 tonnes of whole grain or partially processed grain directly from grain growers or traders and grain merchants.

Using 2007/08 prices and crop yields (\$366/t average price received for wheat; 511 tonnes wheat produced per average grain farm<sup>2</sup>), the value of this grain is estimated at \$160 million, and consumes the output of 850 average broadacre cereal cropping farms.

Supply of whole or processed grains as supplementary feed to the dairy industry in the region is significant and a large number of companies service this requirement in the region including Brooks Grain, Echuca Bulk Grains & Fertilisers and Grainlink.

There are at least a further ten stockfeed companies supplying into the Northern Victoria and Southern Riverina dairy industry, with the typical annual volume of manufactured feed from mills going into that region of about 270,000 tonnes.

The value of this stockfeed is estimated at \$94 million per annum (and consumes the output of an additional 530 average broadacre cereal cropping farms).

The purchase of fodder, such as cereal hay, silage and straw, as a supplementary feed source into the region's dairy industry is significant. During 2008, 87 per cent of farms in the region purchased some hay or silage. This income is increasingly relied upon by cereal cropping enterprises, particularly during poor seasonal conditions, when cutting crops for hay or utilising failed crops (e.g. canola) is an attractive option to generate cash flow.

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<sup>2</sup> ABARE Australian Grains 09.1, May 2009

On average, each dairy farm in the region spends \$10,000 per annum on fertiliser requirements. Across all dairy farms in the region this equates to total fertiliser purchases of \$26 million. Other significant farm expenditure includes fuel and oil (\$39 million) and repairs and maintenance costs (\$60 million).

In the Lower Murray–Darling Basin, 5,972 people aged 15 years and over are directly employed on dairy farms. The service industry to the dairy industry is significant and encompasses a range of services including veterinarians, farm management consultants, nutritionists and other advisers.

The dairy farm sector has a large multiplier effect including indirect employment in trade, services, transport and other agriculture. The Australian Bureau of Statistics' estimate of dairy's regional economic multiplier is 2.5, generating \$2 billion in economic activity (based on a farmgate value of milk production of \$803 million) and underpinning the regional economies in those areas in the Lower Murray–Darling Basin where it operates.



## Dairy farm performance - Northern Victoria and Riverina

Average per farm

	1999-2000	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	
<b>Physical</b>											
Area of land operated 30 June	ha	216 (11)	211 (12)	230 (11)	263 (9)	233 (11)	233 (12)	243 (14)	231 (15)	218 (15)	232 (19)
Dairy herd at 30 June	no	275 (6)	280 (4)	328 (5)	299 (6)	265 (8)	325 (6)	331 (8)	290 (7)	285 (9)	302 (10)
Dairy cows	no	186 (5)	181 (3)	215 (5)	215 (7)	179 (6)	224 (5)	215 (7)	209 (6)	175 (10)	147 (14)
Total labour weeks worked	wks	129 (6)	130 (6)	135 (6)	137 (5)	138 (7)	136 (6)	137 (7)	125 (5)	121 (5)	na
Milk production	L	986 527 (8)	936 216 (4)	1 135 092 (4)	926 202 (8)	931 683 (12)	1 153 232 (7)	1 160 746 (8)	1 013 801 (8)	995 424 (9)	985 478 (13)
Milk yield	L	5 313 (4)	5 175 (3)	5 273 (4)	4 314 (7)	5 206 (5)	5 147 (4)	5 389 (5)	4 845 (4)	5 695 (6)	na
<b>Receipts</b>											
Milk – net of freight	\$	235 148 (9)	273 784 (5)	372 682 (8)	239 798 (11)	246 349 (7)	351 232 (8)	378 343 (8)	317 126 (8)	482 450 (9)	363 578 (12)
Dairy cattle sales	\$	20 337 (11)	20 083 (7)	28 853 (8)	30 903 (10)	28 595 (20)	26 975 (9)	38 017 (21)	34 819 (13)	24 295 (9)	41 055 (34)
Beef cattle sales	\$	9 286 (36)	3 041 (32)	6 063 (29)	6 969 (38)	5 391 (51)	1 562 (78)	3 306 (65)	7 731 (96)	1 288 (72)	3 573 (76)
Total cash receipts	\$	273 205 (8)	303 314 (5)	415 915 (8)	307 816 (10)	303 349 (6)	409 626 (7)	438 960 (8)	386 655 (8)	579 813 (10)	442 330 (10)
<b>Costs</b>											
Dairy cattle purchases	\$	4 321 (38)	6 831 (36)	5 294 (35)	3 596 (62)	3 240 (48)	2 854 (28)	4 466 (44)	5 614 (41)	9 620 (37)	6 311 (45)
Hired labour	\$	9 243 (33)	7 999 (26)	15 441 (38)	13 239 (29)	15 980 (24)	19 866 (19)	20 993 (17)	19 302 (17)	18 427 (15)	24 067 (33)
Fertilizer	\$	11 165 (17)	11 733 (13)	15 410 (17)	9 229 (15)	11 525 (15)	15 199 (17)	18 355 (12)	11 854 (14)	12 760 (24)	10 726 (20)
Fodder	\$	55 729 (15)	52 147 (11)	86 354 (14)	124 715 (14)	71 554 (13)	90 896 (12)	98 796 (8)	170 289 (10)	228 917 (10)	176 927 (15)
Fuel, oil and lubricants	\$	8 870 (8)	8 547 (9)	9 032 (9)	10 031 (11)	12 072 (17)	12 612 (9)	13 380 (11)	13 978 (13)	16 036 (17)	14 927 (19)
Electricity	\$	4 995 (7)	4 851 (8)	5 589 (8)	5 911 (11)	6 898 (14)	7 635 (10)	8 889 (7)	8 478 (9)	8 470 (12)	8 764 (13)
Repairs and maintenance	\$	18 217 (8)	17 874 (9)	23 441 (12)	19 467 (14)	18 533 (12)	23 106 (12)	24 872 (9)	18 277 (12)	31 475 (19)	23 168 (18)
Interest payments	\$	19 690 (13)	21 990 (13)	23 373 (13)	24 790 (15)	26 696 (15)	29 893 (14)	34 144 (25)	28 909 (22)	38 276 (13)	26 150 (18)
Rent	\$	2 480 (42)	3 564 (51)	2 834 (47)	3 204 (44)	1 850 (62)	3 060 (49)	6 166 (28)	3 222 (32)	5 153 (42)	5 906 (46)
Total cash costs	\$	211 724 (10)	216 267 (7)	289 288 (9)	316 296 (11)	250 398 (7)	313 204 (8)	338 278 (8)	373 651 (9)	513 532 (9)	411 479 (13)
<b>Farm cash income</b>											
	\$	61 481 (12)	87 047 (9)	126 627 (10)	- 8 479 (106)	52 951 (13)	96 422 (10)	100 682 (17)	13 005 (126)	66 281 (34)	30 851 (78)
plus Buildup in trading stocks	\$	12 125 (30)	17 662 (27)	16 888 (25)	- 24 411 (22)	- 2 413 (371)	8 641 (50)	16 124 (67)	- 11 959 (53)	15 439 (44)	8 540 (10)
less Depreciation	\$	20 516 (9)	23 550 (9)	22 734 (8)	23 849 (9)	22 262 (13)	26 656 (9)	28 031 (10)	20 337 (12)	24 263 (12)	27 242 (15)
less Operator / Manager and family labour	\$	45 560 (7)	47 511 (6)	45 721 (6)	47 885 (6)	49 135 (9)	48 223 (5)	51 812 (7)	50 837 (5)	51 565 (6)	56 043 (6)
Farm business profit	\$	7 530 (105)	33 649 (19)	75 060 (17)	- 104 624 (10)	- 20 859 (55)	30 184 (34)	36 962 (45)	- 70 129 (21)	5 892 (408)	- 43 894 (50)
<b>Rate of return</b>											
- excl capital appreciation	%	2.8 (22)	5.9 (13)	8.0 (12)	-4.9 (11)	0.8 (92)	3.3 (18)	3.4 (23)	-1.7 (43)	2.1 (49)	-0.5 (197)
- incl. capital appreciation	%	2.7 (30)	7.9 (13)	12.5 (11)	0.2 (1361)	10.5 (27)	4.8 (20)	2.4 (202)	9.3 (23)	4.0 (28)	na
Total capital value	\$	1 121 786 (8)	1 083 350 (6)	1 427 126 (6)	1 857 285 (6)	1 652 371 (8)	2 099 143 (6)	2 455 743 (9)	2 526 510 (9)	2 508 683 (12)	na
Farm debt at June 30 <b>a</b>	\$	272 165 (14)	257 249 (13)	304 579 (14)	333 934 (14)	337 148 (17)	341 929 (15)	448 373 (22)	307 274 (23)	472 661 (14)	na
Equity ratio at June 30 <b>a</b>	%	76 (5)	73 (5)	77 (3)	77 (5)	78 (4)	83 (3)	82 (5)	58 (18)	77 (5)	na
Net capital additions	\$	19 001 (41)	55 851 (29)	40 261 (46)	32 408 (43)	29 952 (61)	13 169 (40)	54 293 (84)	- 6 699 (290)	17 124 (52)	na
Liquid assets – incl. FMD's	\$	18 950 (35)	44 913 (24)	57 319 (24)	50 870 (24)	46 930 (33)	56 498 (18)	42 215 (20)	24 749 (32)	45 571 (42)	na
Farm Managed deposits at June 30	\$	na	783 (106)	3 137 (76)	5 729 (55)	11 683 (58)	5 833 (50)	6 055 (49)	11 263 (47)	13 962 (85)	na
Proportion of farms holding FMD's	%	na	4 (106)	8 (73)	16 (41)	19 (49)	12 (59)	6 (36)	19 (41)	16 (72)	na
Off-farm income	\$	8 021 (35)	11 385 (35)	10 631 (35)	17 846 (20)	24 674 (20)	29 555 (18)	21 836 (19)	27 773 (16)	21 476 (20)	na
Estimated population		3 369	3 260	2 817	2 925	2 789	2 700	2 568	2 460	2 220	
Sample population		45	44	49	46	31	48	53	47	47	

**a** Average for farms responding to debt questions in the survey. **na** Not available.

Note: Figures in parentheses are relative standard errors (RSE) and provide a guide to the reliability of survey estimates

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**Debt and investment - Northern Victoria and Riverina, dairy industry (2008–09 \$ terms)**

Average per farm

		1999-2000	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
<b>Distribution of farms by equity and farm cash income a</b>										
Farms with equity ratio above 70 per cent										
- positive income	%	58	61	60	39	64	80	69	39	65
- negative income	%				38	1	1	3	36	13
Farms with equity ratio below 70 per cent										
- positive income	%	34	36	36	15	33	19	26	8	18
- negative income	%	9	2	4	8	3		1	17	4
Farms acquiring land	%	6	22	17	6	9		5	1	
Additions of non-land capital	\$	25 814	34 995	53 659	22 547	17 505	20 916	22 555	863	23 764
Debt servicing ratio <b>ab</b>	%	24	21	15	165	35	24	25	60	39
<b>Composition of farm debt a</b>										
Land purchases	\$	154 939	166 948	165 206	186 859	221 557	195 895	216 688	260 790	179 583
Working capital	\$	84 326	68 663	150 740	175 056	131 372	155 087	195 616	89 087	254 790
Other	\$	73 680	57 250	23 488	32 956	27 978	30 700	61 002	67 617	77 413
Farm debt at 30 June	\$	366 844	338 201	378 380	431 979	418 681	409 706	496 625	437 417	518 071
Land value	\$/ha	5 315	4 529	5 064	5 171	6 137	7 709	8 740	9 430	9 543

**a** Average for farms responding to debt questions in the survey.

**b** The debt servicing ratio is defined as interest paid as a percentage of farm cash income plus interest paid.