



Dairy Review

District Council of Grant
and Wattle Range Council

August 2018

Report statement

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Contents

Glossary of Terms.....	iv
------------------------	----

Key issues.....	v
-----------------	---

1. Objectives of this report.....	1
-----------------------------------	---

2. Industry Background	1
------------------------------	---

2.1 Domestic Processing.....	2
2.2 Global Markets.....	2
2.3 Domestic Milk Production.....	4
2.4 On-farm Production.....	7
2.5 Milk Pricing and the Cost/Price 'squeeze'.....	8

3. Industry Sentiment.....	10
----------------------------	----

3.1 Global factors.....	10
3.2 Domestic factors.....	10

4. Dairy in the Lower South-East	13
--	----

4.1 Location, soils and climate.....	13
4.2 Irrigation and pasture production.....	13
4.3 Nutrition and feed systems.....	14
4.4 Milk Supply - Price setting, variance and contracting.....	15
4.5 Processors.....	16

5. Consultations.....	19
-----------------------	----

6. Survey Results.....	21
------------------------	----

6.1 Survey Profile.....	21
6.2 Current milk contracts.....	22
6.3 Recent investments in business and production intentions.....	22
6.4 Age and experience	23
6.5 Future direction of the industry.....	24
6.6 Profitability	26

7. Industry Analysis.....	28
---------------------------	----

7.1 Industry observations.....	28
7.2 Competitive assessment.....	30
7.3 Potential future scenarios.....	30
7.4 Likely capital costs.....	34

8. Recommendations.....	35
-------------------------	----

8.1 Examine industry projections in association with leading agencies and provide a vision plan for dairying in the two Council areas.....	35
8.2 Examine opportunities for large scale value adding within Council areas	39
8.3 Review dairies to determine opportunities for sale, amalgamation, growth or value adding on farm.....	41
8.4 Opportunities for niche production and farm tourism.....	42
8.5 Addressing Skills Shortages.....	42
8.6 Alternate strategies to assist dairy production within the region.....	43

9. Conclusions.....	45
---------------------	----

10. References.....	46
---------------------	----

APPENDIX A – SOUTH AUSTRALIAN DAIRY INDUSTRY SURVEY.....	47
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List of Tables

Table 1 – Comparison of largest dairy exporting countries ('000t. Milk equivalents)	3
Table 2 – 2016/17 Australian State production breakdown	5
Table 3 – 2016/17 Australian regional production breakdown	6
Table 4 – SA on-farm regional farm assets	7
Table 5 – SA regional milk production	7
Table 6 – Dairy farm input costs—proportion of total 2016	9
Table 7 – Farm size and herd statistics	13
Table 8 – Five categorised feed systems	14
Table 9 – Potential lost Milk Production from exists	26
Table 10 – Competitive analysis	30
Table 11 – Growth factors and impact	32
Table 12 – Estimation of land area required to produce 1 billion litres of milk	35
Table 13 – 5-year milk production figures for the SE	39
Table 14 – Indicative milk movements from the South-East	40
Table 15 – Indicative milk imports into the South-East	40

List of Figures

Figure 1 – Australian Dairy Industry	1
Figure 2 – Australian milk utilisation in 2016-17	2
Figure 3 – Exporters' share of world dairy trade in 2016 (milk equivalents)	2
Figure 4 – Proportion of national dairy production exported	3
Figure 5 – Australian milk production vs indices of farms and cows milked	4
Figure 6 – Australian milk production regions	5
Figure 7 – South Australian Dairy Regions	6
Figure 8 – Use of Australian milk by state – 2016/17	6

Figure 9 – Relative seasonality of milk production	7
Figure 10 – Farming production systems	8
Figure 11 – Milk Price per State (c/litre)	8
Figure 12 – Milk Price per State (\$kg MS)	8
Figure 13 – Sample Profile	21
Figure 14 – Processor Contracts	22
Figure 15 – Investment in business past 5 years	22
Figure 16 – Recent investments into Business	23
Figure 17 – Investment combinations	23
Figure 18 – Potential production increases	23
Figure 19 – Age of Principal Manager	24
Figure 20 – Experience of Principal Manager	24
Figure 21 – Future intentions	24
Figure 22 – Average herd size and intention	25
Figure 23 – Cows milked and farm area	26
Figure 24 – Farm size and profitability	27
Figure 25 – Herd size and profitability	27
Figure 26 – Potential Scenarios	31
Figure 27 – Dairy Industry Growth Trajectory	33
Figure 28 – Indicative dairy industry activity	36
Figure 29 – Map indicating SE soil types	37
Figure 30 – Map showing average annual temperature	37
Figure 31 – Water management areas at or near full allocation	38
Figure 32 – Map indicating areas of The South-East susceptible to flooding	39
Figure 33 – Construction and completion of cattle underpasses	43

Glossary of Terms

ACCC	Australian Competition & Consumer Commission
AMF	Anhydrous Milk Fat
BGFC	Beston Global Food Company
BLD	Blue Lake Dairy
BPD	Beston Pure Dairies
EU	European Union
GGTFAP	Greater Green Triangle Freight Action Plan
kWh	Kilowatt Hour
LDD	Lion Dairy & Drinks
LGA	Local Government Area
M	Million
Meg	Megalitre
MG	Murray Goulburn
MS	Milk Solids
PMR	Partial Mixed Ration
PWA	Prescribed Well Areas
TMR	Total Mixed Ration
SA	South Australia
SE	South-East South Australia

SMP	Skim Milk Powder
UDC	The Union Dairy Company
UGMA	Unconfined Groundwater Management Area
WCB	Warrnambool Cheese & Butter
WMP	Whole Milk Powder

Key issues

- Milk production in Australia has fallen by around 20% over the last ten years in response to the cost/price pressures placed on dairy farmers. The total quantity of milk produced in Australia is likely to be at or below 9 billion litres for the 2016-17 year, for the first time in 21 years
- Over the same period, the share of exported product has also declined assisted by population growth over the corresponding period from just over 19 million in 2000 to 25 million in August 2018.
- While SA has a relatively small production footprint nationally (5.4%), it outperforms all other states in milk yield per cow; 7,589 litres compared to a national average of 5,819 and annual production per farm; 2.2Mlts compared to 1.52Mlts nationally.
- Apart from the South-East's temperate climate, the extraordinary milk yields are largely a result of the quality and quantity of water available for irrigation from the unconfined aquifer in association with the free draining soils of the area.
- Of the major dairy exporters, Australia is the second largest as a percentage of total domestic production (34%) behind New Zealand (95%) and greater than the EU and USA (10%).
- Nearly 30% of Australia's dairy production is drinking milk that is largely consumed domestically. The balance is manufactured product, of which half is exported, influencing domestic pricing. This means that over 70% of national milk production is exposed to global market forces. As such, Australia is the second most trade exposed market globally.
- Tasmania, Victoria and South Australia are the largest manufacturing states. As such, their market fundamentals and pricing mechanisms are significantly different to other states.
- The more trade exposed a country is, the greater the influence global trade will have on domestic pricing mechanisms and, as a result, likely be reflected in the relative efficiencies of their production systems, with those exposed to global conditions likely to be the most efficient producers.
- As an example, comparison of the local market to New Zealand, milk prices in Australia have been relatively higher in 11 of the previous 15 years and have never been as volatile (reached the highs or lows) as those experienced by New Zealand farmers as a result.
- While South Australia has a significant drinking milk component, this is largely supplied from the Northern and Central regions. Much of the South-East production is either processed locally, or flows across the border into Victoria and is more closely aligned with the manufacturing sector and therefore has a high correlation to global trade trends that is reflected in the price farmers receive.
- Analysis of local milk flow estimates indicate that South-East production may be 80% trade exposed.
- The sale of Murray Goulburn, has led to a significant reduction in grower cooperative processing capacity to less than 40% of production.
- As global dairy companies such as Fonterra and Saputo become more entrenched within the domestic market with their associated networks, access to global milk pools and the ability to arbitrage global markets, will likely increase two-way trade, both exports and imports, as they further identify market opportunities for their own internal production
- While there has been a modest increase in the milk price for the coming season, this is unlikely to compensate for increased fodder costs due to the current East-Coast drought.

- Farmers have been forced to deal with high level of volatility in both the price they receive for their milk and the costs associated with producing it, over which they have little influence. Fodder, that comprises around a third of all costs in a 'normal' year, can be subject large seasonal variations in both price and availability.
- As a result of recent industry turmoil, prices set below the cost of production, attempted payment clawbacks and the demise of Murray Goulburn, there is undoubtedly adverse sentiment within the industry.
- These events have significantly affected both the perceived risk profile of the industry and the viability of many, particularly smaller, producers.
- Farmers generally accept that seasonal factors and commodity cycles will influence domestic price and production, however, the severity of recent events and the general perception that it was largely created through poor management from within the local industry, is particularly galling to many.
- Recent surveys have indicated that up to 1 in 5 farmers have expressed an intention to leave the industry.
- A recent ACCC enquiry into the dairy industry initiated as a result of these events, identified a number of issues around transparency of pricing and market failures stemming from power imbalances between processors and farmers leading to recommendations around farm-gate pricing, contracting practices and a mandatory code of practice.
- The South-East is relatively well serviced by processors with Saputo, Fonterra, Union Dairy Co. Lion, Bega, Parmalat and Beston, active buyers.
- Analysis of estimated local milk pool deliveries and movements would indicate that there is already sufficient processing capacity in the system.
- While niche dairy production provides the opportunity to build a region's food profile and tourism prospects, it is unlikely to generate the demand volumes of the scale required to materially impact the status quo.
- The South-East has a broad cross-section of industry participants from large corporate and family farms with herds over a thousand cows and annual production in excess of 20 million litres, through to smaller, mainly family, producers of varying herd sizes and capacity.
- The establishment and maintenance of perennial ryegrass pasture appears to be an essential indicator of prime dairy country.
- Larger producers appear to be concentrated within certain areas, with other smaller producers more widely spread to the West and North.
- In areas where dairying is concentrated, land is said to be tightly held and water availability for expansion is limited.
- Future industry trends appear to be directed towards maximising the efficient use of the asset base (land and water) as a production platform, primarily for milk production, through various means; either agisting, or, sending young stock to pasture off-farm and increasing inputs, mainly fertiliser, fodder and/or grain.
- As could be expected, recent market events have impacted smaller producers to a greater degree than larger producers. The reasons for this may be varied, they may include; scale of production, land capability and/or, timing of previous investment decisions in a volatile industry climate.

- While we remain circumspect around forecast potential of the South-East to increase capacity (a further billion litres) through conversion of land currently used for alternate purposes, we believe that dairying will remain an economic cornerstone of the local economy and that there remains great potential to increase production from the existing asset base.
- Present output/capacity is more a reflection of current industry and market incentive, not the productive capability of the asset base.

1. Objectives of this report

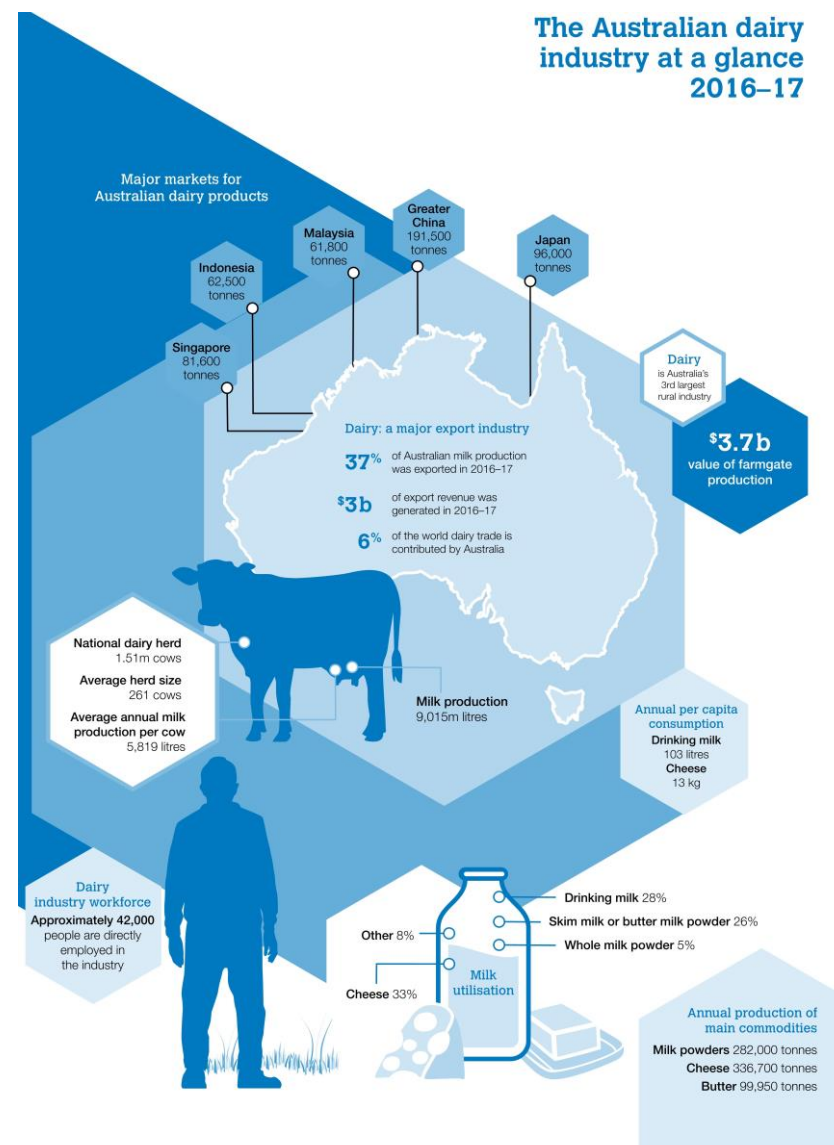
This report reviews the current Dairy Industry across the Council areas of Wattle Range and Grant. The report considers the potential future of the industry, opportunities for growth as well as potential constraints to the industry's growth.

2. Industry Background

Nationally, dairy ranks third behind beef and wheat based on a national farmgate value of production and employs an estimated 42,100 people.

As the outputs from dairy production are freely traded global commodities, it is important to understand the structure of the industry in order to provide the necessary context prior to reviewing the local production environment. Dairy Australia identify 6 major economic drivers that impact production within Australia;

- Relative cost and availability of inputs
- The global economy
- Global demand
- Global supply
- The Australian market
- Exchange rates.



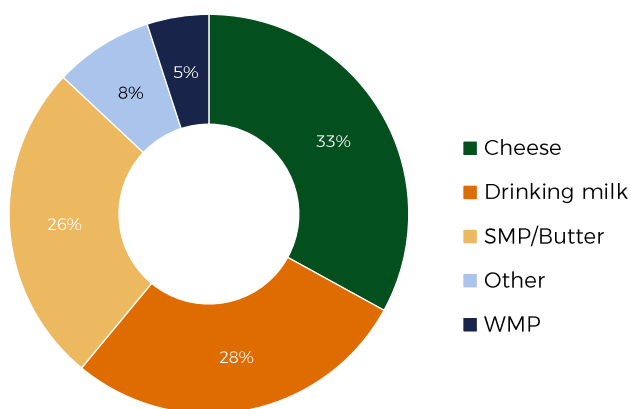
Source: Dairy Australia

Figure 1 – Australian Dairy Industry

2.1 Domestic Processing

Raw milk can be processed using different techniques to provide different end-products. Processors can, and often do, change the production mix according to market price signals.

A recent breakdown of Australian dairy production is provided in Figure 2;



Source: Dairy Australia

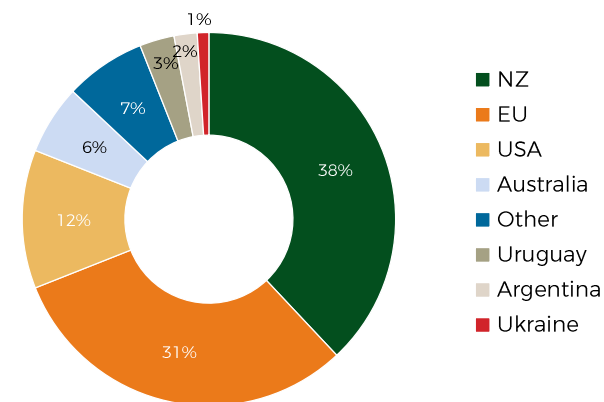
Figure 2 – Australian milk utilisation in 2016-17

Private label milk ('\$1/lt.') production accounts for around 66 million litres, or around 66% of the drinking milk market, compared to 44 billion litres of branded product sales. Similarly, private label sales in the chilled cheese segment sell at an average price around \$9.30, a considerable discount when compared with an average of \$12.90 of the category.

2.2 Global Markets

2.2.1 Exports

The main global dairy exporters are detailed in Figure 3;



Source: Dairy Australia

Figure 3 – Exporters' share of world dairy trade in 2016 (milk equivalents)

The relevance of the global dairy industry to the world economy is summarised below;

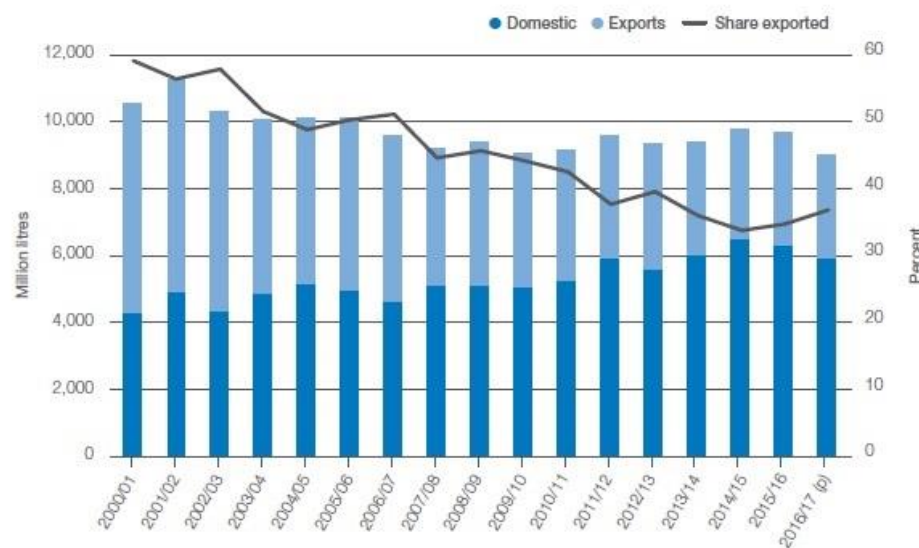
It is estimated that around 626 billion litres of milk is produced globally per annum by around 260 million cows. This represents a gross value of production of around USD\$292 billion, or approximately 9% of the entire gross value of global agricultural production.

Global cross-border trade, as estimated by the FAO, of milk products sits around the 58 million tonnes of milk equivalents, or around 9% of total production. This highlights the fact that the majority of milk production is consumed domestically, with the exception of key markets focused on export – including Australia and New Zealand.¹

¹ Dairy Australia, 2017: *A guide for investment and the Australian dairy industry*.

The graph below (Figure 4) would indicate that there has been a general declining trend in the relative proportion of exports in recent times to a low of 34% in 2015/16. Since then, there has been an increase over the last couple of years despite production levels being the lowest since deregulation in 2000.

The declining share of exported product is related to corresponding population growth over the same period from just over 19 million in 2000 to 25 million in August 2018.



Source: Dairy manufacturers and ABS

Figure 4 – Proportion of national dairy production exported

Country	Production					Exports				
	2012-14 (Actual)	2015 (Est.)	2016 (Forecast)	5-year Average	% World Prod.	2012-14 (Actual)	2015 (Est.)	2016 (Forecast)	5-year Average	% Country Prod.
NZ	20,174	21,909	21,520	20,790	3%	18,187	19,307	19,384	18,650	87%
EU	155,233	163,500	165,700	158,980	20%	16,314	18,401	19,160	17,301	10%
USA	91,866	94,480	96,354	93,286	12%	9,825	9,349	9,307	9,626	10%
Australia	10,002	10,382	10,265	10,131	1%	3,620	3,644	3,717	3,644	36%
World	771,262	802,754	815,965	790,311	36%					

Table 1 – Comparison of largest dairy exporting countries ('000t. Milk equivalents)

Note: The above table has been derived from information provided from a FAO publication². There would appear to be a discrepancy between the FAO and the respective countries industry export figures with Australian (34%) and NZ (95%) according to industry figures.

From a local industry perspective, it is particularly relevant to understand the relative exposure of domestic producers to the global market, as this will determine the impact that global conditions will have on the price the local industry will receive for their product, given only 8% of production is traded globally.

The table above indicates that while Australia only provides 1% (2% according to industry) of world production, as the 13th global-ranked producer behind the EU, USA, India, China, Pakistan, Brazil, Russia, New Zealand, Turkey, Mexico, Argentina and The Ukraine, we export 36% (34%) of our production, that makes us the 4th ranked exporter accounting for 6% of global trade.

New Zealand, while only producing 3% of world production, is the 8th global-ranked producer, however, it is the largest global exporter accounting for 38% of international trade. Of the top four exporters,

² FAO, May 2015, *Food Outlook*

Australia is not as trade exposed as our New Zealand counterparts who export 87% (95% according to industry) of their production compared to our 34%, however, we are significantly more exposed than the EU and US who only export 10%.

Similarly, trade exposure will, to a degree, dictate a country's production mix as product is generally required to be exported in a stabilised form, as opposed to fresh product with relatively short shelf-life, that is usually largely consumed on the domestic market. As an example, 30 - 35% of Australia's manufactured product is exported and the other 30 - 40% is priced based on international pricing, meaning around 75% of national milk production is exposed to global prices.

The more trade exposed a country is, the greater the influence global trade markets will have on domestic pricing mechanisms and, as a result, likely be reflected in the relative efficiencies of their production systems, with those exposed to global conditions likely to be the most efficient producers.

A practical example of this is a comparison of the local market to New Zealand. Milk prices in Australia have been relatively higher in 11 of the previous 15 years and have never been as volatile (reached the highs or lows) as those experienced by New Zealand farmers as a result.

2.2.2 Imports

As increased trade exposure facilitates product flows between markets, local production is also influenced by the level of imported product which can be substituted for locally produced milk.

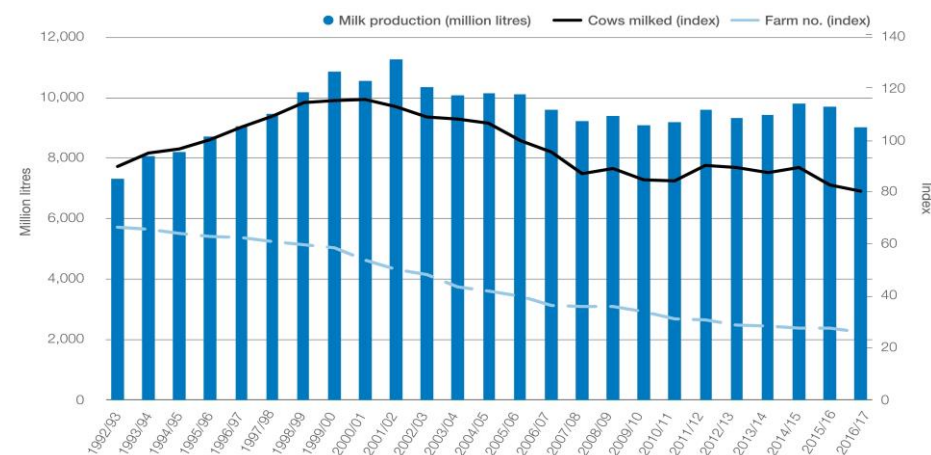
Cheese imports grew by 26% to 112,00 tonnes in 2016/17 and have risen to 34% of domestic market consumption, or, the equivalent of 4.6 kilograms per head of population. Much of the imported product is lower value product that is used in the price-sensitive food service sector. Interestingly,

while New Zealand and Australia are both major exporters, Australia is New Zealand's 5th largest export market.

Replacing local production in the domestic market with a lower value product enables domestic production to be sold overseas for a premium to what may otherwise have been possible if sold locally. As an example, the New Zealand imported price of cheddar is \$250 per tonne less than the price received for the Australian equivalent on the export market.

As global dairy companies such as Fonterra and Saputo become more entrenched within the domestic market, their associated networks, access to global milk pools and the ability to arbitrage global markets, will likely increase two-way trade, both exports and imports, as they further identify market opportunities for their own internal production.

2.3 Domestic Milk Production



Source: Dairy manufacturers, ABS, state authorities and Dairy Australia

Figure 5 – Australian milk production vs indices of farms and cows milked

Total milk supply peaked around 2002/03 where subsequent drought conditions led to a consolidation within the industry. Since then, milk

production in Australia has fallen by around 20% over the last ten years in response to the cost/price pressures placed on dairy farmers. The total quantity of milk produced in Australia is likely to be at or below 9 billion litres for the 2016-17 year, the first time in 21 years.

A further noticeable trend within the industry is that current production levels are being achieved with both fewer cows and fewer farmers. Industry productivity increased annually at a national level by 1.5% from 1978/79 and in South Australia by 1.6% over the same time frame.

	SA	QLD	NSW	VIC	WA	TAS	AUST
No. Dairy farms*	241	410	661	3,889	148	440	5,789
Cows - in milk & dry ('000's)**	65	87	165	995	55	145	1,512
People employed on farm (full & part-time)	400	1,400	1,600	19,200	900	1,000	24,500
People employed manufacturing (full & part-time)	900	1,700	3,000	10,100	1,000	900	17,600
Volume of milk produced (ML)***	487	418	1,121	5,773	380	835	9,015
Share of national milk production	5.4%	4.6%	12.4%	64.0%	4.2%	9.3%	100%
Farm-gate value of milk (\$M)	181	251	549	2,194	192	326	3,685
Value of dairy exports (\$M)*	63	56	218	2,055	78	546	3,017
Share of dairy exports by value (%)	2%	2%	7%	68%	3%	18%	100%
Volume of dairy exports ('000t.)	12	13	60	610	60	41	797
Share of dairy exports by volume (%)	2%	2%	8%	76%	7%	5%	100%

Source: * State milk authorities

Source: ** ABS and Dairy Australia

Source: *** Dairy manufacturers

Employment estimates based on state level averages from ABS Labour Force Statistics, August 2016- May 2017

Quarters: split on the basis of milk production within states

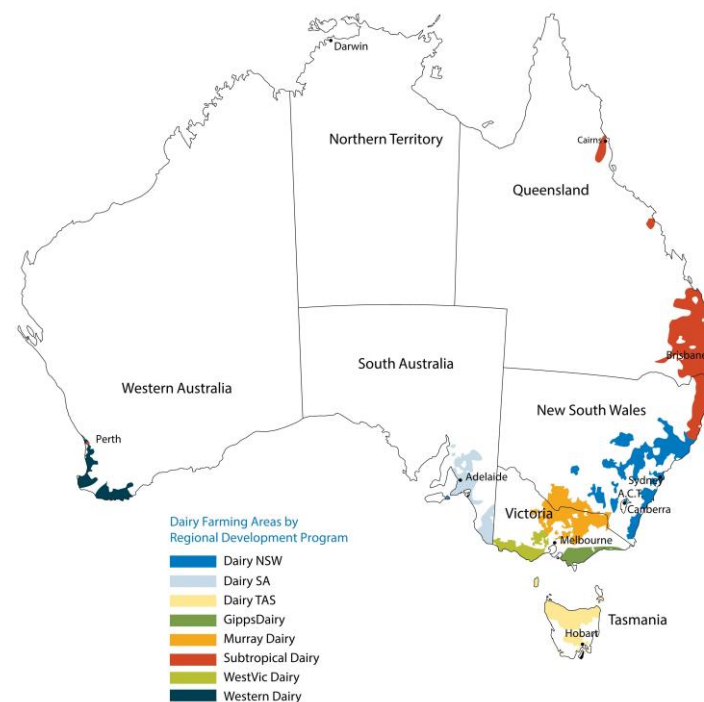
Table 2 – 2016/17 Australian State production breakdown

As indicated in the production figures in Table 2, dairy farming is more efficient in Southern regions than further North. Manufacturing is therefore based more in the South, where it is located closer to production, reducing

transport costs. Manufacturing also better utilises seasonal production peaks experienced as a result of predominantly pasture-based production systems.

Production in the North is more oriented to the supply of fresh dairy products, particularly drinking milk, requiring farmers to manage annual production (calving and nutrition) to manage a flatter, or more even milk supply. There are different costs associated with each production system.

Australia's dairy industry has also further been categorised into several distinct production areas. These regions tend to have their own production characteristics and associated processing capabilities (Figure 6) and Table 3).



Source: Dairy Australia

Figure 6 – Australian milk production regions

	SA	WestVic	Murra y	Gippslan d	Tas	Australi a
No. Dairy farms*	241	1,272	1,381	1,328	440	5,789
Cows - in milk & dry ('000's)**	65	353	328	341	145	1,512
People employed on farm (full & part-time)	400	6,800	6,100	6,600	1,000	24,500
Manufacturing (full & part-time)	900	3,500	3,600	3,500	900	17,600
Volume of milk produced (ML)***	487	2,050	1,929	1,977	835	9,015
Share of national milk production	5.4 %	22.7%	21.4%	21.9%	9.3%	100%
Farm-gate value of milk (\$M)	181	779	946	751	326	3,685
Value of dairy exports (\$M)*	63	730	657	704	546	3,017
Share of dairy exports by value	2%	24%	22%	23%	18%	100%
Volume of dairy exports ('000t.)	12	217	194	209	41	797
Share of dairy exports by volume (%)	2%	27%	24%	26%	5%	100%

Sources: As per Table 2

Table 3 – 2016/17 Australian regional production breakdown

While, on face value, SA may appear to have a relatively small production footprint when compared with Western Victoria, industry doesn't necessarily recognise arbitrary or statistical boundaries, such as State borders, across which milk is sourced. Analysis of likely milk movements in and out of the SE are shown in Table 14 and Table 15. The purposes for which the milk is used confirm that the SE is a major supplier to processors of manufactured product that have a high correlation to movements in global markets.

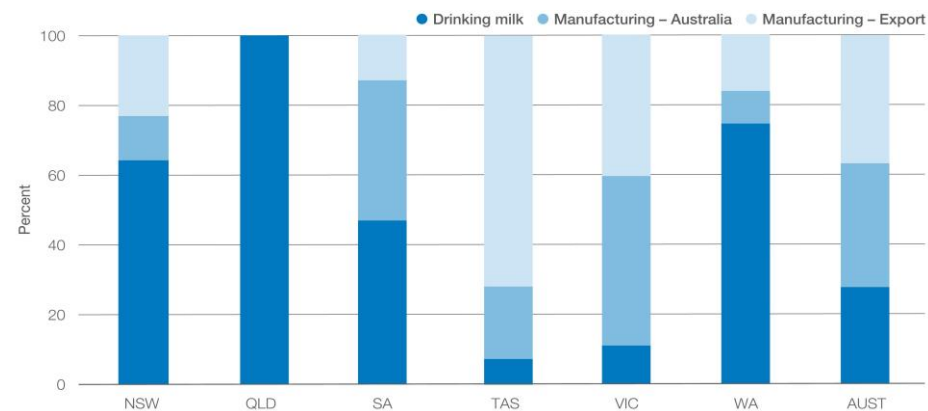
Furthermore, while SA is regarded as a single dairy region, in some respects it is bipolar in nature. While there is significant manufacturing capacity in the North and Central regions of SA, they are primarily fresh milk markets, compared to the South-East, where the great majority of milk flows are used for manufacturing.



Source: Dairy SA

Figure 7 - South Australian Dairy Regions

Figure 8 highlights these relative production trends which shows nearly 50% of SA produced milk going to drinking and the balance to manufacturing, while around 90% of the Victoria's milk, (of which around 50% is produced in the South West) is produced for manufacture.



Source: Dairy Australia

Figure 8 – Use of Australian milk by state – 2016/17

2.4 On-farm Production

Table 4 and Table 5 details SA on farm regional assets and milk production.

Region	No. Farms				No. Cows				No. Cows / Farm
	2016	2017	Diff. (%)	State %	2016	2017	Diff. (%)	State %	
Adelaide Hills	20	18	-10.0%	7.5%	2,834	2,767	-2.4%	3.7%	154
Fleurieu Peninsula	57	58	1.8%	24.2%	13,654	12,853	-5.9%	17.0%	222
Upper South East	11	11	0.0%	4.6%	4,795	4,140	-13.7%	5.5%	376
Lower South East	89	88	-1.1%	36.7%	38,996	37,163	-4.7%	49.1%	422
River Flats	31	32	3.2%	13.3%	7,873	7,842	-0.4%	10.4%	245
Meningie Lakes	16	15	-6.3%	6.3%	7,458	6,415	-14.0%	8.5%	428
Barossa Mid North	20	18	-10.0%	7.5%	4,524	4,434	-2.0%	5.9%	246
SA TOTAL	244	240	-1.6%	100.0%	80,134	75,614	-5.6%	100.0%	315

Source: Dairy Safe

Table 4 – SA on-farm regional farm assets

For the purposes of the report we regard the Lower South East to be South of the latitude of Cape Jaffa, including both the Grant and Wattle Range Local Government Areas, home to nearly half of the SA dairy herd, with farms averaging 422 cows per farm, 33% above the state average.

	Mid North		Central		South-East		State Total	
	('000lt.)	State %	('000lt.)	State %	('000lt.)	State %	('000lt.)	State%
Milk production	16,000	3%	189,067	38%	295,739	59%	500,805	100%

Source: Dairy Safe

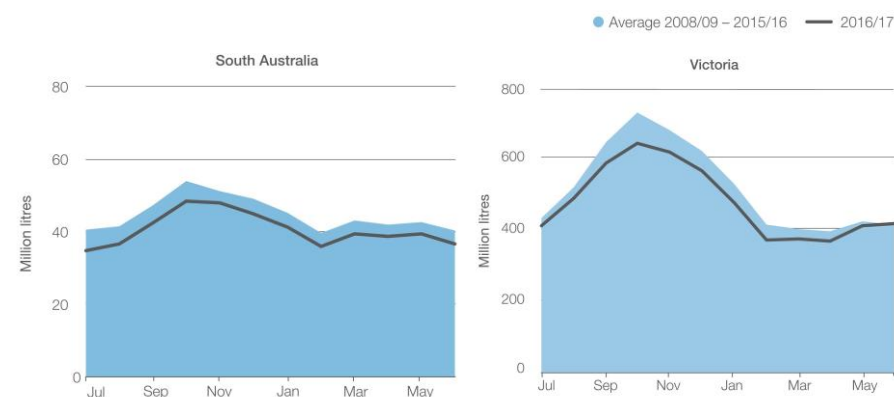
Table 5 – SA regional milk production

The productivity from different SA regions is again highlighted with nearly 60% of milk production occurring in the South-East. As indicated by the relative numbers of cows shown in Table 4, it highlights that most of the

milk is being sourced from the District Council of Grant and Wattle Range Council LGA's.

Source: Dairy Australia

Figure 9 highlights the seasonal difference between the different region's production profile.



Source: Dairy Australia

Figure 9 – Relative seasonality of milk production

A flatter production curve (SA) is associated with all-year-round demand from fresh milk processors, whereas the scale and seasonality of the Victorian supply is consistent with the manufacturing capacity in place to utilise production peaks. From other dairy work we have undertaken recently in South-West Victoria, we are aware that the milk flows during Spring flush are roughly double those collected around Anzac Day.

The difference in seasonal milk flows is explained by the relative dependence on pasture-based production systems predominantly used by the Victorian industry, as opposed to the higher input feed-based systems required for out-of-season production, predominantly required to support fresh milk production in other regions. The different approaches to farming systems are outlined in Figure 10, where; multiple calving periods are

required to support year-round production, split calving periods, usually in Spring and Autumn and seasonal production based around a single calving period.

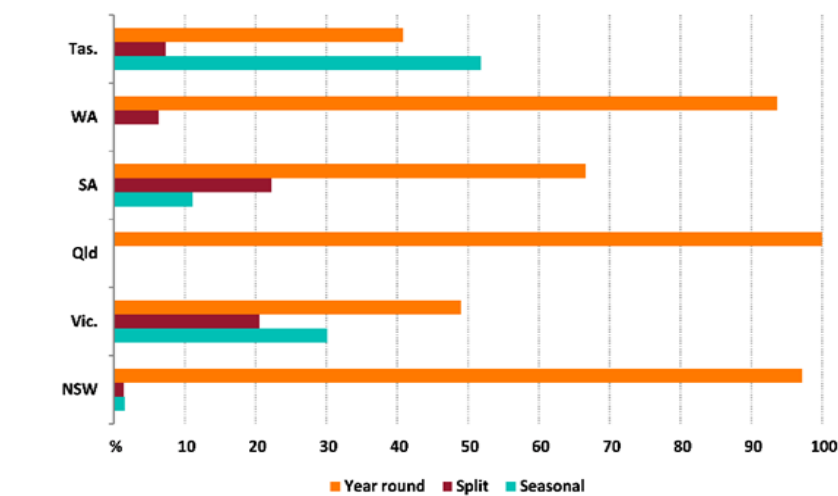


Figure 10 – Farming production systems

SA uses a combination of systems from seasonal (12%), split (22%) and year-round approaches (66%). In this respect, SA exhibits a significant seasonal production component similar, but not to the extent of, the other main manufacturing states of Victoria and Tasmania.

2.5 Milk Pricing and the Cost/Price ‘squeeze’

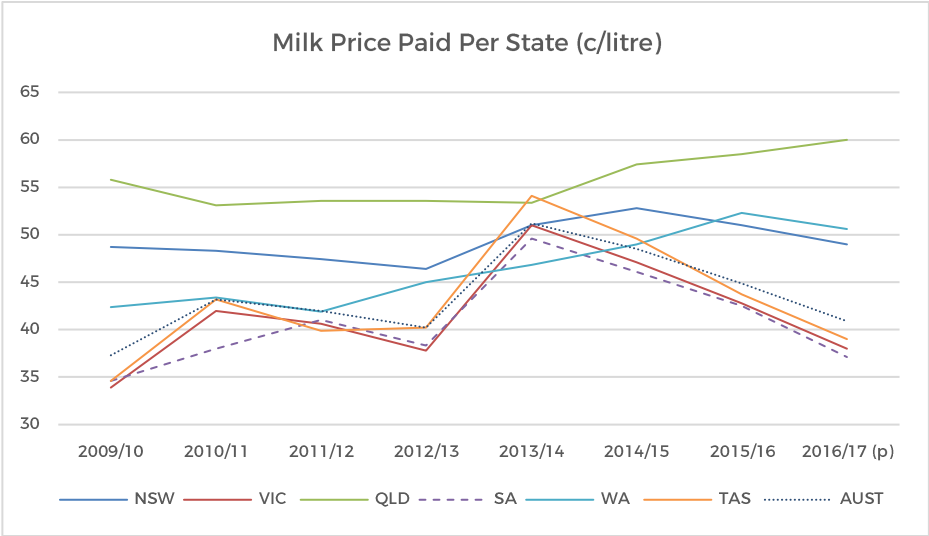
Manufacturers

Figure 11 and
Manufacturers

Figure 12 show milk prices received between 2009/10 and 2016/17 by State;

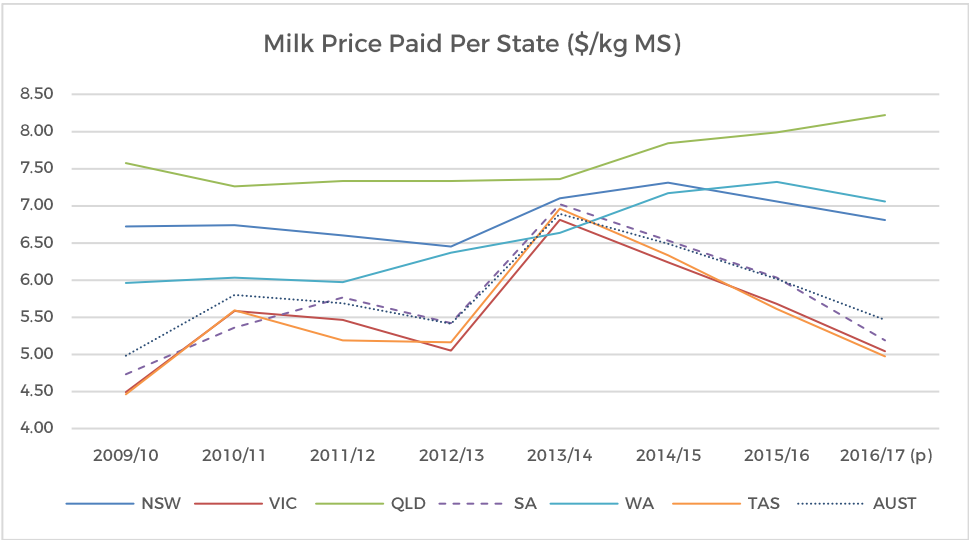
Source: Dairy

Source: Dairy



Source: Dairy Manufacturers

Figure 11 – Milk Price per State (c/litre)



Source: Dairy Manufacturers

Figure 12 - Milk Price per State (\$/kg MS)

The difference in prices received by farmers in Source: Dairy Australia

Figure 9, largely reflects the type of market supplied (fresh/drinking or manufacturing) and the relative associated costs of production. It isn't surprising that the SA price, along with Victoria and Tasmania, tracks very closely to the Australian average for both c/litre and \$kg Milk Solids, as between these states they account for nearly 80% of national milk production.

It is worth noting, the higher prices generally paid to farmers in NSW, Queensland and Western Australia, where the predominant supply is to the domestic drinking milk market. These markets are able to support higher prices that reflect the relative transport and production costs required to service them. Another point of consideration is the general increasing price trend experienced in these markets by comparison to the Southern trade exposed states and the sharp decline in pricing they have experienced over recent years.

Price volatility isn't the only factor affecting dairy farmers' margins, costs are also a major determinant of profitability as highlighted in the table below comparing dairy farmers' cost structures on a state basis;

Cost Item	Australia	NSW	Vic	Qld	SA	WA	Tas
Fodder	32%	33%	31%	39%	33%	33%	28%
Repairs and maintenance	8%	7%	8%	7%	7%	9%	7%
Interest paid	8%	7%	8%	7%	8%	7%	10%
Wages for hired labour	7%	9%	5%	7%	11%	11%	9%
Fertiliser	6%	7%	5%	5%	5%	9%	9%
Sharefarmer payments	4%	0%	6%	0%	1%	0%	2%

Cost Item	Australia	NSW	Vic	Qld	SA	WA	Tas
Electricity	3%	3%	3%	4%	5%	3%	5%
Handling and marketing	3%	2%	4%	2%	3%	2%	3%
Fuel oil and grease	3%	3%	3%	4%	4%	3%	3%
Contracts—cropping	3%	3%	3%	2%	3%	2%	3%
Land rent	2%	1%	3%	2%	2%	4%	2%
Livestock materials	2%	2%	2%	3%	2%	1%	3%
Water charges	2%	2%	3%	0%	1%	1%	1%
Other costs	18%	20%	18%	18%	17%	17%	16%

Key: >10% 10% > 5% 5% > 2% <2% Source: ACCC

Table 6 – Dairy farm input costs—proportion of total 2016

Points worth noting from Table 6 are;

- The impact of fodder costs as a percentage of total farm input costs. They are roughly a third of all input costs, 4 times greater than any other single cost. Fodder prices are also highly volatile and subject to seasonal variation, events that are generally outside of the control of farmers.
- The significantly higher labour costs when compared to other states, 4 percentage points higher than the national average.
- Higher electricity costs, 2 percentage points above the national average. The cost and, in some cases, the reliability of power was a point of contention with most of the farmers interviewed. Their anecdotal evidence would indicate that power prices have continued to rise past the 2016 figures used in the table above.

3. Industry Sentiment

Having attended dairy industry functions, held consultations with farmers and industry and from our research, indications are that the local dairy industry has in recent times experienced a crisis of confidence. This has been caused, as is often the case, by multiple factors, as outlined below, that often feed from each other and conspire to make risk mitigation for those most affected, more difficult. This said, the local industry is not alone in expressing these sentiments.

3.1 Global factors

There were three main issues that had developed by the second-half of 2015 that were affecting world markets that continue, albeit to varying degrees, to do so today:

1. A slow-down in the Chinese economy that had been growing strongly to that point. Subsequent changes to import regulations, particularly concerning milk powder infant formula, have also had an impact.
2. The abolition of EU quotas led to an increased production and exports from EU countries, particularly Germany, the Netherlands and Ireland.
3. Russia's retaliatory ban on the importation of dairy products from the EU, USA and Australia as result of sanctions imposed following the missile strike on MH17 in 2014. This has meant that Russia, a major buyer and the largest importer of cheese and butter globally, has sourced their product from alternative markets.

3.2 Domestic factors

3.2.1 Recent History

Prior to 2015, the industry had attracted international interest and investment and was buoyed by the record purchase price paid for

Warrnambool Cheese & Butter (WCB) as well as a number of prospective stock market listings.

After prices peaked into the 2015/16 season, step-downs were announced in April 2016, shortly before what has since been described as the 'Murray Goulburn (MG) debacle', when the CEO resigned after a number of stock management issues came to light following a previous complicated company restructure. This led not only to a major price step-down, but also an attempt to claw back payments already made to suppliers that put many, particularly the smaller ones, in financial peril. To make matters worse Fonterra followed suit at the time, although they later reversed their decision. However, the damage was done and the effect on the industry was demoralising.

Since deregulation, most farmers have accepted, as a trade exposed global supplier, that there will be market cycles the industry will need to navigate. Perhaps the most galling aspect for farmers, is that they consider this time 'the enemy was from within', a betrayal of trust from within their own industry between producer and processor.

The fact that the subsequent demise of the largest cooperative in the industry went largely unmarked, only makes many suppliers more disillusioned. Cooperatives now account for less than 40% of the national milk supply, with international corporate entities the largest processors.

While the anger of the time has largely dissipated, the significant financial hardship is not forgotten, mistrust remains, the fractures run deep, and they will take time to heal.

To date there doesn't appear to have been any significant industry event to change current sentiment, with a continuing general malaise in the industry, as exhibited by:

- The number of farmers looking to exit the industry

- The number of 'opportunistic buyers' looking to benefit from the industry downturn
- The recent failure of several dairy companies to list on the stock exchange
- The recent collapse of Gerry Harvey's Coomboona dairy investment in Northern Victoria.
- The lack of investment and ongoing management issues associated with the \$280M purchase of the Van Diemen's Land Company in Tasmania

It is generally considered that several consecutive seasons of improved prices will be required in order for the industry to regain confidence.

3.2.2 ACCC Inquiry

Following on from the events described above, the Australian Competition and Consumer Commission (ACCC) held an inquiry³ into the industry. Some of the issues they identified were:

- The dominant picture that has emerged is one of significant imbalances in bargaining power at each level of the dairy supply chain. This begins with the relationships between retailers and dairy processors and progresses down to the relationship between processors and farmers.
- The ACCC has identified a range of market failures resulting from the strong bargaining power imbalance and information asymmetry in farmer-processor relationships. These features of the industry result in practices which ultimately cause inefficiencies in dairy production.

- Neither the existing provisions of the *Competition and Consumer Act 2010* (CCA), nor a voluntary code of conduct, sufficiently address these market failures.
- In the domestic market, the major Australian supermarkets have exercised their bargaining power to elicit lower wholesale prices from processors. The most notable illustration of this is the pricing of private label milk.
- The ability of the supermarkets to leverage their bargaining power has reduced the profit margins of processors. Ultimately this has enabled the supermarkets to maintain low retail prices. While supermarkets have retained some of these savings for themselves, they have mostly transferred them to consumers.
- Processors that are able to supply both export and domestic markets can mitigate their exposure to supermarkets' bargaining power to some extent by adjusting the focus of their businesses on different markets as needed. Some negotiating power can also be derived from supplying differentiated and premium products.
- Unlike others in the supply chain, most dairy farmers have little bargaining power and limited scope to reposition their businesses or switch to a different farm enterprise to mitigate this effect.
- Larger-scale farms can sometimes receive more favourable prices and trading terms, and there are clear productivity benefits from scale as would be expected, but this is not the typical farmer experience.
- The generic and perishable nature of raw milk, and large number of farmers relative to processors, means that effective contract negotiations between most individual farmers and processors are unlikely to occur.

³ ACCC, April 2018, Dairy Inquiry – Final Report

- That the imbalance in bargaining power and information asymmetry result in practices that transfer disproportionate levels of risk to farmers and soften competition between processors.
- These include complex and poorly timed pricing information, and contract terms which deter switching. These features add to uncertainty of farm income and make it difficult for farmers to identify and act when it is in their interests to switch to a competitive offer from another processor.
- While the ACCC did find issues with the transparency the pricing mechanism within the industry, they accepted that the price was generally set according to the global conditions at the time.
- An example of this risk transfer was the retrospective price step-downs in 2016, which demonstrated that contractual arrangements between

processors and farmers are structured in a way that allows processors to lessen the impact of their poor commercial decisions by retrospectively reducing the price they pay for farmers' milk, long after the milk has left the farm.

- Two main concerns arise from the ACCC's key findings. First, bargaining power imbalances deter productivity-enhancing investments by farmers if they are unable to capture enough share of the returns to make their investment worthwhile. Second, restrictions on switching soften competition between processors and reinforce farmers' poor bargaining position.

The Inquiry made 8 recommendations; 6 of which relate to contracting practices, one to farm-gate pricing and the final recommendation was for a mandatory code of practice between processors and farmers.

4. Dairy in the Lower South-East

4.1 Location, soils and climate

Indications are that most of the dairying in the Lower South-East is concentrated from just North of Mount Gambier South along the Victorian border to the coast and West to Kongorong and the Nene Valley. Generally, in this area, soils are free-draining loams over limestone. Similarly, there appear to be suitable soil types available further North, with concentrations of dairy activity around Glencoe and Kalangadoo towards Penola.

The South-East is considered a temperate climate, well-suited to dairy farming, with higher temperature gradients to the North, coastal influences reduce the number and severity of frost activity, while temperatures are generally mild.

Cows are susceptible to heat stress and prolonged periods of hot weather can affect not only milk production, but also feed intake and herd health. The ability for a cow to maintain a suitable core temperature is determined by;

- Air temperature and relative humidity
- Amount of solar radiation
- Degree of night cooling that occurs
- Ventilation and air movement
- Length and severity of hot condition

The Lower South-East is generally considered ideal for these reasons.

4.2 Irrigation and pasture production

Dairy in the Lower South-East exhibits production characteristics that are either better than, or comparable to, any other dairy region in Australia.

	SA	WestVic	Murray	Gippsland	Tas.
Average herd size (No. head)	295	289	296	286	337
Average cow production (Litres / year)	7,589	5,551	5,594	5,116	6,008
Average annual farm production ('000lts)	2,239	1,604	1,656	1,463	2,025

Source: Dairy Australia

Table 7 – Farm size and herd statistics

As indicated in Table 7, average annual milk yields per cow in SA are demonstrably higher than in other production regions. From consultations undertaken with local farmers, both the average herd size and production yields appear low and, in fact may be, diluted by the inclusion of the other two dairy regions within SA.

Standing herds of over 2,000 cows in milk and an annual production of between 9,300 and 10,000 litres per cow have been reported among the larger farmers interviewed. The ability to increase production is primarily due to the availability of significant irrigation resources, that allow the season to be extended beyond what is generally achievable elsewhere. This helps explain why SA exhibits leading indicators of on-farm production capabilities (milk yield per cow) when benchmarked with other production systems from other dairy regions.

The availability of water (irrigation) enables high rates of pasture growth to occur over an extended period. This not only enhances productive capacity, but also increases security of production and flattens the milk production curve by extending the growing season. Optimal pasture species mix for the best production results is commonly regarded to be a ryegrass and white clover mix.

In the last 15-years, water allocations have been converted from area-based to volumetric measurement, caps have been imposed and bores have been subsequently metered. Currently, much of the prime dairying country has restricted access to further expansion water. There is a cross-border

agreement between the respective state governments that restricts any further allocations 20 kilometres either side of the border and many of the Unconfined Groundwater Management Areas (UGMA) are either at, or close to, full allocation of their water entitlements.

Similarly, access to the confined aquifer is problematic due to similar regulatory restriction and cost. One farmer recently spent around \$1M to bore 700 metres for the equivalent of a 150-hectare pivot. While there are at least two dairy enterprises that have access, advice from the NRM is that future accessibility to the unconfined aquifer will be restricted. The water from the confined may have trace element issues as well as a rising temperature of around 26 degrees Celsius.

Irrigation for agricultural purposes is primarily derived from the unconfined aquifer that is managed by Natural Resources South East according to different management areas as indicated in

Figure 31.

4.3 Nutrition and feed systems

Dairy Australia characterise five different feed systems as described in Table 8. The reason why these different types of feed systems are important is because they represent the spectrum from low to high input production systems. While there are relative strengths and weaknesses of each, an understanding of their costs and production capabilities provides context when considering the advantages of dairying in the SE.

While maintaining high quality pastures is a cost, it is usually less than employing a system where a high percentage of stockfeed is sourced off-farm. Matching stocking rates to pasture growth and minimising supplementary feeding is generally considered the ‘low cost’ production option and is sometimes referred to as ‘the kiwi system’ as it is favoured by most New Zealand dairy farmers, a number of which manage properties in

the SE, particularly South of Mount Gambier. In most cases, this is associated with a seasonal milk curve, although in the SE this is modified through the availability of irrigation.

High pasture	Moderate-high bale system	Partial mixed ration (PMR) system	Hybrid system	Total mixed ration (TMR) system
← LOW INPUT		HIGH INPUT →		
Grazed pasture & other forages & feed less than one tonne of grain or concentrates fed per cow per year in the bale.	Grazed pasture and other forages and feed more than one tonne grain or concentrates per cow per year in the bale.	Pasture for most or all of year and a partial mixed ration on a feed pad.	Pasture for less than nine months of year + partial fixed ration on feed pad.	Cows housed and fed total mixed ration.
23% of farms 13% of production 186 cow ave herd	60% of farms 61% of production 210 cow ave herd	12% of farms 16% of production 267 cow ave herd	3% of farms 5% of production 340 cow ave herd	1% of farms 5% of production 404 cow ave herd

Table 8 – Five categorised feed systems.

There are a number of high-bale systems and at least a couple of Partial Mixed Ration (PMR) systems we are aware of. High-bale systems increase the amount of fodder brought in, usually in the form of grain, hay or silage and fed in the dairy (in the bale) during milking, or, in the case of PMR systems, accessed on a feed pad to supplement grazed pasture. PMR is sometimes referred to as the ‘cut and carry model’ as crops such as maize or lucerne are harvested, either on-farm or elsewhere, and carried to pad usually located close to the dairy. These systems are usually associated with a flatter milk supply curve.

A Total Mixed Ration (TMR) system was proposed by Camperdown Dairy International for a property the purchased at Neuarpurr (over the border

from Frances), however the company failed to list and the property has since been sold.

The trade-off between systems relates to the value of any increased milk produced as a result and the average annual weighted price received. While higher input systems are used primarily to increase both volume and price, there is also have inherent risk associated with the cost and volatility of sourcing additional feed.

4.4 Milk Supply - Price setting, variance and contracting

Milk pricing remains a highly controversial subject, as is the way the market price is determined and the contractual terms under which it is supplied.

While the ACCC noted the power imbalance between supermarkets and processors, they saw no need to intervene, unlike the power imbalance that they have identified between the processors and farmers. The asymmetrical imbalance in market knowledge between the processor and farmer is a key reason for their intervention. Much of their focus related to setting of the opening price, variations to pricing over contracted periods and whether such variations reduced competition by making it more difficult for farmers to change processors.

They have identified not only a lack of transparency as to how a processor arrives at an opening season price, but also a lack of transparency as to what price a farmer will receive for their milk under a processor supply agreement.

This is primarily due to the complexity associated with the agreements. While there may be a declared price, say \$5.80 / kilogram of milk solids (Kg,MS), this is a nominated base price used to calculate a final price often adjusted for various quality measurements, volume of supply (sometime referred to as tiers), out-of-season supply incentives, loyalty bonuses and

even the transport fee that can vary according to the standard of farm access.

There are also provisions for price step-ups and step-downs over a contract period providing further uncertainty to the value of expected receipts. Prices are usually announced at the start of the season in July and step-ups are normal following the Spring peak to encourage a flatter supply curve.

Payment terms may also vary. Standard payment terms are usually 10 plus days into the month for the previous month's supply, however there are some that are on 10-day terms. One of the larger farmers estimated an annual interest saving of around \$800K using the shorter payment terms.

These agreements are said to favour larger farmers and make it difficult to estimate, predict or compare average prices paid over any given contract period. It was interesting to note that a large corporate supplier has negotiated a blanket supply agreement with Murray Goulburn covering all of their farms, the terms of which, including price, are confidential.

During the consultations, some smaller farmers indicated that the issue with seasonal pricing is that they were paid the lowest price over Spring (the difference in pricing could swing by as much as 46%) at a time as when their on-farm costs peaked for the year creating cash flow issues and one suggested that a weighted average price would be beneficial, if it were offered. Most farmers indicated that they budgeted to have cash on hand to cover the shortfall, however it appears not all farmers may have that option.

Following their recent report, the ACCC further intervened with WCB modifying their supply contracts for the coming season to counter their concerns that the original terms allowed WCB to unilaterally vary price and other terms, while the farmer was unable to terminate the contract early without incurring financial penalties. The contracts were also said to require farmers to indemnify WCB for losses that may be avoided or mitigated by WCB and placed restrictions on farmers selling their properties.

4.5 Processors

The ACCC inquiry defines a major processor as one that processes more than 500M litres annually. On that basis there were six nationally, now five: Saputo (MG & WCB), Fonterra, Lion, Parmalat and Bega.

As previously indicated, while the SE is generally categorised as a part of the SA region, the associated milk flows are in contrast to the rest of the State. While milk production in the North and Central regions is primarily used in the fresh milk market, in the SE it predominantly flows North to the Union Dairy Company, East across the border to the manufacturing market, or, to Adelaide for the fresh milk market.

From consultations we are aware that the following processing companies are buying (contracting) in the region:

- Saputo: either as WCB or MG
- Union Dairy Company (UDC)
- Fonterra
- Lion Dairy & Drinks (LDD)
- Bestons Global Food Company (BGFC)
- Bega
- Parmalat

In order to understand milk flows within a region, it is necessary to understand that geographic milk swaps are generally undertaken between different processors to reduce transport costs.

The ACCC determined that, given raw milk needs to be processed ideally within 24 - 48 hours, milk swaps were being used for the purposes of reducing freight costs⁴:

The average distance raw milk is transported varies from company to company and by state. Data analysis showed that the average distance is about 150 to 200 km, with the maximum distance being 600 km. The ACCC understands that it is technically possible to transport raw milk significantly further, but it is not financially viable to do so, and it is generally for the purposes of meeting a short term need or gap in local production. Where milk is being transported very long distances, it is more likely to be pasteurised and bottled, such as milk transported from SA to NT.

Swaps also play a role in allowing processors to secure the necessary supply for their plants by swapping their contracted supply to other processors in other regions ('swapping in'), in return for the other processors contracted supply in their region ('swapping out').

Saputo - WCB Mil Lel;

From a raw milk perspective, is purely used as a transfer depot. Milk is collected from SE farmers and transferred to Mil Lel by WCB tankers and held in storage for line-haul, predominantly to Adelaide under supply arrangements with LDD and Parmalat, although they also supply Bega. It has a throughput of around 120 - 140klt per day. WCB also supply Mondelez at Suttontown.

Mil Lel is also used by WCB as a 'cut and wrap' facility for bulk cheese (20kg blocks) to be cut, waxed or shredded into retail packaging. Cheese receivals and deliveries are made by refrigerated vans from Allansford.

Saputo - WCB Allansford

Are the largest processor in Western Victoria/SA. and take an estimated 2.2Mlts per day during low season, then double that to around 4.4Mlts in high season for an annual throughput of around 1.2 billion litres.

⁴ ACCC, April 2018, Dairy Inquiry – Final Report, p.9., Box 1.1

We understand that WCB also carry out similar operations at Allansford as they do at Mil Lel following the purchase of the LDD facility and associated brands in 2015. In 2017 they undertook a \$40M expansion of their cheese plant there utilising an extra 250M litres of milk. While throughput has reduced at Mil Lel it is still their primary cut and wrap site for waxed cheese.

Bega – Koroit

Under the terms of the ACCC's approval of the Saputo acquisition of MG, the Koroit facility was to be sold to a third-party and Saputo (WCB) is required to supply sufficient milk to the facility for a period of time, to allow the new owner time to put their own supply arrangements in place. One of its primary functions was as a transport depot for supplying 350 – 400klts of milk a day (140Mlts per annum) to the \$80M MG drinking milk facility completed at Laverton in 2014.

Bega has recently been announced as the buyer of the Koroit facility for \$250M. As part of the agreement, Saputo (WCB) have agreed to supply the facility with 300Mlts of milk per year until June 2020, 12 months longer than they were required to by the ACCC. The deal will increase Bega's national production footprint by 25 - 30%.

From our consultations we are aware of many MG suppliers that supplied milk to Koroit from the SE. It could be expected, given Bega held its price, as did Saputo, during the earlier crisis, that, if only because of farmers' previous association, many will likely become Bega suppliers.

Lion Dairy and Drinks (LDD)

LDD processes around 1 billion litres of milk from around 550 dairy farmers nationwide, for the drinking milk market, cheese, yoghurt, cream and custard manufacture. Milk brands include; Pura, Dairy Farmers, Dare, Farmers Union, Classic, Big M and Masters.

Its Salisbury plant in Adelaide is a fresh milk production facility.

Fonterra

Have no processing plants in the SE. They have 2 plants in Victoria, one at Dennington just West of Warrnambool, the other at Cobden. We understand they have a combined throughput of around 1.0Mlts per day in slack season to 2.0Mlts. in peak season and process around 550Mlts annually.

UDC

Is a relatively new player in the industry and is a joint-venture between The Midfield Group and Louis Dreyfus. It began operations in mid-2017 after installation and commissioning of an \$80M new milk plant and spray drier at the previous McCains site 10 kilometres South of Penola.

They have contracted the 240Mlts they require to run the plant to capacity receiving roughly half of their supply from the SE. Products manufactured are; WMP, SMP, Cream and AMF. UDC are open to the prospect of increasing production, however having only relatively recently commissioned their new facility, it is too early to make any form of commitment.

Mondelez (formerly Kraft);

Purchase their milk through a 12-month tender process; currently supplied by WCB and Fonterra. They currently consume around 1Mlts per week of milk and cream, hence only have an 'arms-length' relationship with farmers. The plant is located at Suttontown, near Mount Gambier, because of its relative location to a reliable milk supply.

They export 30% of their production, have full traceability and Halal and Kosher certification.

Parmalat;

Collects more than 650m litres of raw milk across the Eastern seaboard annually. Approximately 320M litres is collected in Victoria and 80M litres is

moved from the state it's produced in to a processing facility in the state that it's consumed in. It operates 10 production facilities in Eastern Australia which process 750M litres.

As owner of the Pauls, Oak and Icebreak brands, they are a major supplier of drinking milk to the SA market. They recently invested \$12M in their Adelaide plant at Clarence Gardens on top of \$18M since 2011.

Beston Global Food Group (BGFG) / Beston Pure Dairies (BPD)

BPD, part of the Beston Global Food Company (BGFC), purchased 2 cheese factories from the receivers of United Dairy Power late in 2014. One facility was at Murray Bridge and the other at Jervios that previously had a capacity of around 300Mlts annually. They have since spent over \$25M upgrading their facilities and are currently processing around 90Mlts annually. They say they are looking to increase supply by 40Mlts over the next season and a further 50Mlts the following year.

They are looking to be in a position where they supply 20% of their own requirement. They have also purchased properties in the SE; "Kurleah" (\$7.23M) and "Pedra Branca" (\$19.2M from the receivers) both at Allendale East. They are actively pursuing both increased milk supply and purchases of more dairy properties in the SE.

Blue Lake Dairy (BLD);

Currently purchase milk powder from Victoria which they use to manufacture into retail packaging a range of products, principally: WMP, SMP and infant formula for the Chinese market.

The Chinese Government has recently implemented new regulations requiring registration, certification and approvals of all powder formulations for both domestic and imported product leading to delays in their export strategy.

The second stage development of their business model is the installation of a spray-drier for them to convert raw milk into powder for their own use. This has been put on hold as to such time as their product approvals and certification have been received. Stage 2, that was initially planned prior to the end of 2018, is potentially still a couple of years away.

Should they proceed they estimate that they will manufacture around 10,000 tonnes of powder from around 55Mlts of milk. Their preference would be to source their raw milk supply locally.

5. Consultations

A summary of the consultations undertaken with farmers within the Grant and Wattle Range LGA's will be provided separately to this report.

The general mood was one of disenchantment, however there was also a recognition of the cyclical nature of the industry and, for some, there may be opportunity.

While there was concern generally across the industry, our sense was, as could be expected, that the larger farmers are handling the situation better than the smaller ones, for who recent times have financially been particularly onerous.

The ACCC report summed up many farmers concerns;

'The typical Australian dairy farm is a family owned and operated enterprise which involves high fixed costs and requires year-round intensive work amid uncertain and sometimes damaging climate conditions. For most dairy farmers, profitability is uncertain and subject to many variables beyond their control.'

Similar to most agricultural production, dairying is an industry where the mechanism for determining price is unrelated to the cost of production. While most farmers understand these conditions, the severity of the previous price step-downs, ongoing cost pressure and length of recovery has meant, for some, that their resources have been depleted limiting their financial and management options, that will likely lead to them exiting the industry, not necessarily by choice.

There are also others, given recent industry history, their age and a lack of interest from their children, who, while not forced, have had enough, so will also leave the industry, principally through either property sale, or, a change of production enterprise. The level of farmers exiting the industry is confirmed both in the report survey and industry surveys (below).

Concomitantly, there are also successful farming families with holdings in prime dairy country that have built significant asset bases over time, that have third generations coming through and are looking to expand in order to provide an opportunity for succession.

Apart from price, other contributing challenges raised during consultations include;

- Some farmers expressed reservations around the mechanism used for setting the milk price.
- Some are also sceptical of the role milk swaps have in the industry.
- At the same time costs, particularly feed inputs, farmers' most volatile cost, have increased significantly. The recent fires in prime dairy country in Western Victoria and the severe drought in New South Wales and Queensland have further impacted grain and fodder prices since the consultations. It has been estimated that there was a 2-year hay supply prior to the fires that has been exhausted in a 3-month period since.

Furthermore, the current drought is likely to significantly affect this year's harvest leading to further price increases into 2019.

- The cost of electricity has skyrocketed, further pressuring margins. Concerns over power are universal, mostly around cost, however, there are many that suffer reliability issues requiring back-up gensets, or, are unable to connect due to poor power infrastructure.

'There are 11 wind turbines on the property, the power is contracted to Sydney. We have to use generators to run both dairies. There is a single-phase line that provides lights and hopefully I can boil a kettle.'

- Water policy and its administration is generally viewed as over-regulated, bureaucratic and captive to untested academic theory.
- A sense that dairy farming is no longer valued by the wider community; misinformation around animal welfare and environmental

concerns etc., meaning that dairying is not viewed as a viable career path.

- Poor industry perception means that good labour is also difficult to source, leaving an overreliance on backpackers, migrants or refugees to 'fill the gaps'. There is a high appreciation of migrant labour, the transient nature of backpacker labour provided mixed reviews;

'They stay for 88 days, it takes 90 days to train them.'

- A general sense that, as farmers, they are 'taken for granted,' by the industry and wider community;

'We employ 20 plus people with a wages bill in excess of \$1M. We have to guarantee our workers are paid to the cent, yet we have no such comfort.'

'I have to invest everything I own and work long hours without knowing if I'll make a quid. The tanker driver picking up my milk gets a \$120k.'

- Their inability to control costs forced/imposed on them by others; government taxes and regulatory charges, including government authorities, council rates, service provider network fees and charges, and industry compliance charges.
- They understand they need to contribute, however believe there is little consideration around how these fees and charges are levied, that they often result from poor policy and management decisions by people rarely held to account and that their position 'at the bottom of the heap' leaves them with no recourse other to accept an unfair share of the burden.
- Poor returns make it hard to compete with other enterprises or buy land for expansion.
- There appears to be continual pressure from processors for farmers to be more innovative and efficient, however how innovative and efficient are the processors?

- The majority believe that \$1 per litre milk sold by supermarkets is either financially and/or perceptively, in that it sells for less than the price of bottled water, detrimental to the industry and the worth of those that work within it.

6. Survey Results

As part of the brief, we have undertaken a survey of local dairy farmers to understand the scope of their operations, local milk flows and future intentions.

The survey was sent to 40 dairy farmers. Dairy SA figures indicate that there were 88 farms in the Lower South-East in 2017, although it is unclear whether multiple farms are owned by the same entity. Of these, we had around 11 respondents. Additional information relating to a further 11 farmers consulted, who were also identified as not having returned their survey, was added later, or just over a 50% response representing 25% of the reported number of SE farms.

While the sample size may cast doubt over the validity of the results and should be interpreted accordingly, there are consistencies between the results of the local survey and a wider industry survey conducted by Dairy Australia with over 800 dairy farmers nationwide, that indicates it is relevant and worthy of consideration.

6.1 Survey Profile

Based on the information provided in the surveys the following profiles of the survey participants can be established:

- Average area 666 Ha
- Average herd size 986
- Account for 59 FTEs, those consulted for a further 114 FTE, average 9.6 FTE per farm
- Total 14,950 ha
- Total herd – 20,430 cattle

Based on the herd size of the Lower South East (37,163 in Table 7), the survey sample (20,430 cattle) represents around 54% of the regions production, with an average herd size of 986, compared to regional average of 422. This indicates as the survey sample (22) represents considerably less than 54% of the farmers in the region, the sample contains a bias towards larger farms which should be borne in mind when reviewing the results.

The milk produced by the sample is estimated to be 146 million litres or 29% of the State's annual total. The profile of the survey respondent in terms of number of cows milked and cows / ha is shown in Figure 13

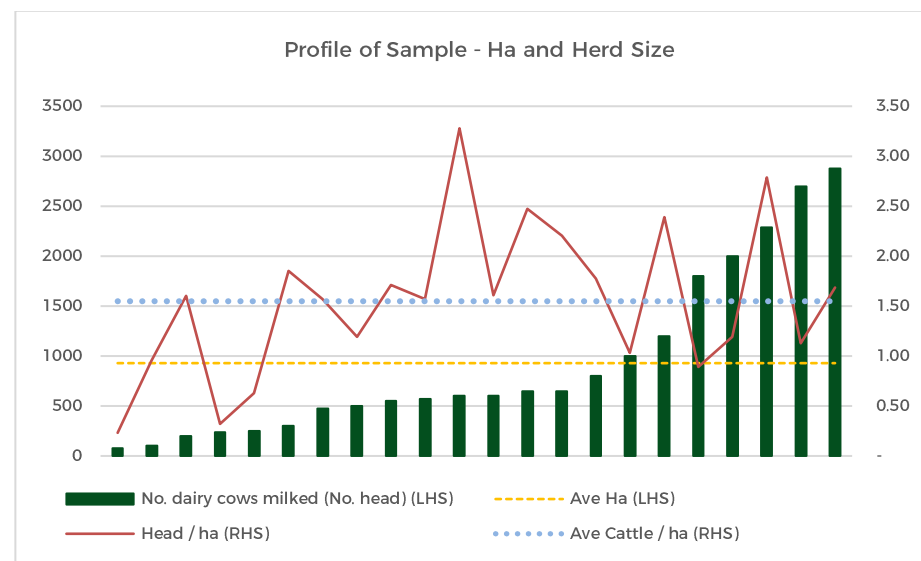


Figure 13 – Sample Profile

Where possible, in the analysis comparisons have been made to Dairy Australia's Industry Survey results for South Australia. This information is included at Appendix A to this report.

We would note when considering the survey results, there may be variation in how respondents interpreted the data they provided, as is detailed below:

Size of property

- While most have irrigation, some farmers pay for their young stock to be agisted off-farm, while others keep them on-farm or on a different block to their dairy herd.
- It isn't always clear whether the size of property is owned, or, includes leased land.

Quoted break-even prices

- On what basis these are determined, before or after interest taxes and whether the owner's labour is imputed (charged against the business as a cost), or not.
- Comparison to quoted prices received is difficult given the complexities and variations of supply contracts (see comments later).

6.2 Current milk contracts

100% of respondents have contracts with major processors

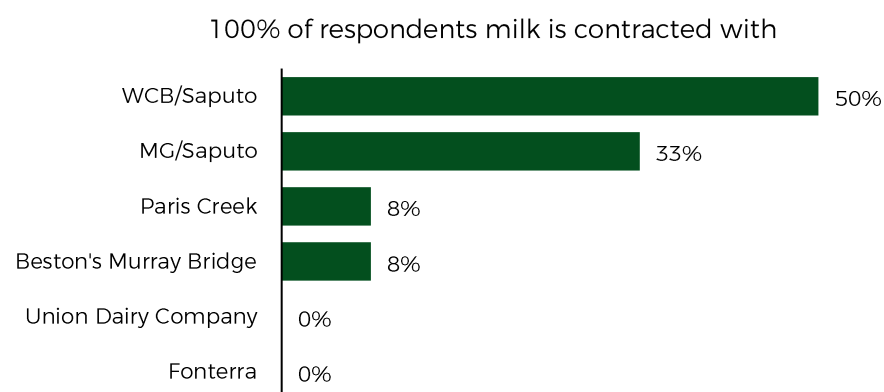


Figure 14 – Processor Contracts

6.3 Recent investments in business and production intentions

Making recent investments in the business indicates confidence in the business and a desire to continue to run the operations. It also may indicate that the assets of the business are in good condition and will not require further investment in the short term to generate cashflows.

Have you made investments in your business in the past 5 years ?

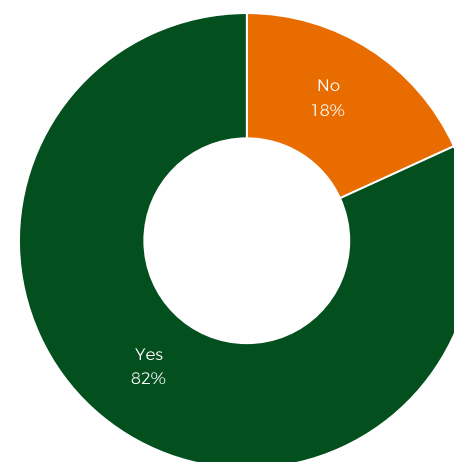


Figure 15 – Investment in business past 5 years

In the past 5 years, 82% of those surveyed have invested in the business, which compares to 80% of the South Australian farmer population.

In terms of the types of investments made, 82% had invested in plant and equipment, compared to 64% for the State.

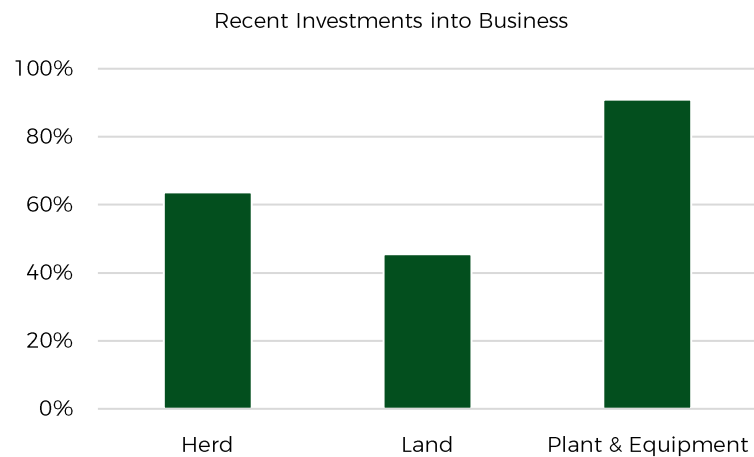


Figure 16 – Recent investments into Business

The investment profile of the region suggests a blend of expansion (land, herd) and productivity (plant and equipment)

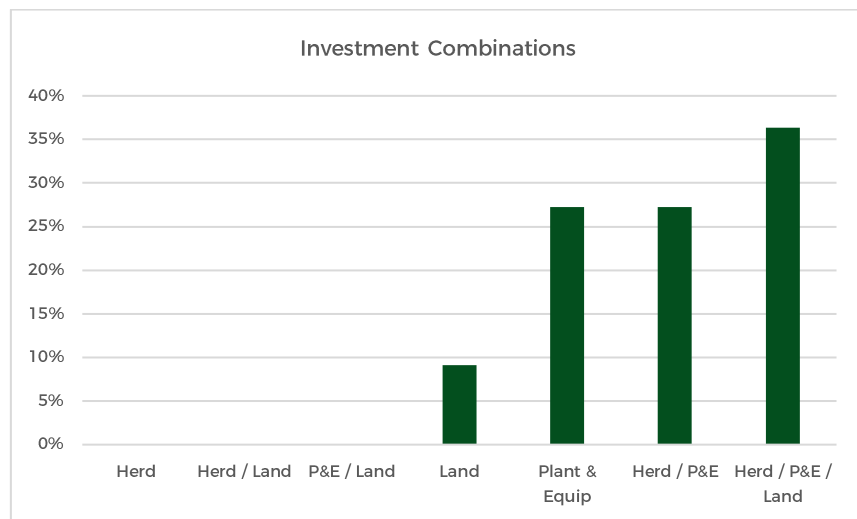


Figure 17 – Investment combinations

Further analysis shows that of those investing, around 63% are investing in combinations of asset types. This would indicate that there are investment strategies underpinning the investment choices being made with decisions being made as to which asset combinations should be invested in.

Would you increase your production if there were processing contracts to do so

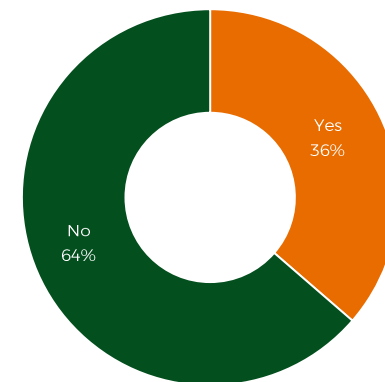


Figure 18 – Potential production increases

Of the producers sampled, 36% indicated that they would increase production if there was processing contracts to do so. That only 36% indicated this, yet 82% have made recent investments in their businesses suggests that some of the investments made has been to remain viable, rather than expand. Some of the recent investment in plant and equipment (91% of those who have invested have made some form of investment in plant and equipment) is likely to be of this nature.

6.4 Age and experience

Over 90% of the principal managers of those producers surveyed were over 50 years of age, with 18% over the age of 60. The average age of dairy farmers in South Australia is 55 years.

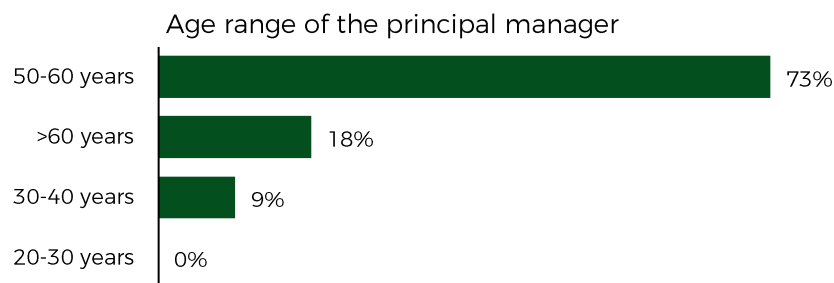


Figure 19 – Age of Principal Manager

This does raise questions as to the sustainability of the farms and the need to transition investments.

The industry in the region has an enormous level of knowledge and experience with the over 73% of the sample having been in the industry for over 30 years.

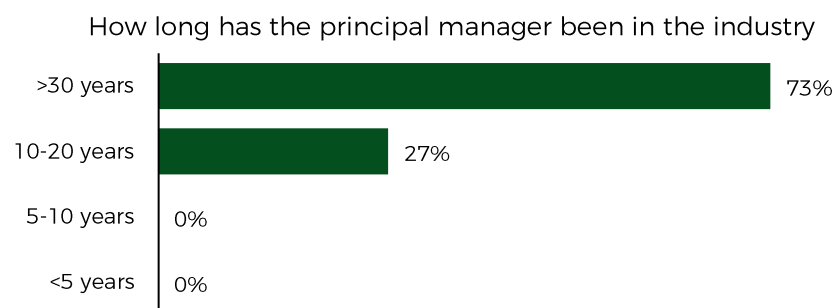


Figure 20- Experience of Principal Manager

Worryingly, no respondents to the survey had managers to the industry that are newcomers or new entrants. This would indicate a shortage of management skills in the local industry. This insight combined with the average age of the principal managers should be cause for concern to the industries short to medium term viability. To overcome this, consideration

should be given to establishing appropriate skills and experienced based training so that production can continue.

6.5 Future direction of the industry

Respondents were asked to identify their future intentions. The information has been analysed based on number of respondents, herd size and land.

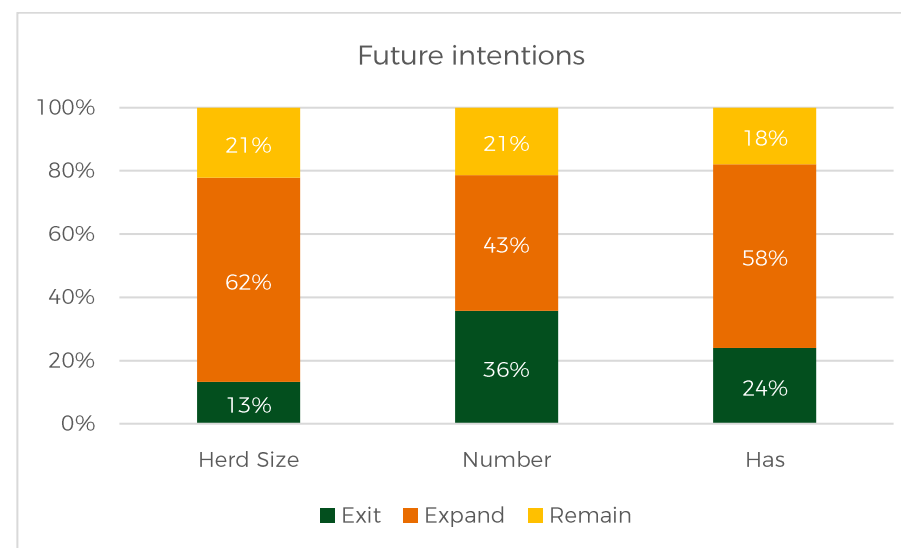


Figure 21 - Future intentions

Figure 21 shows that around 36% by number wish to exit the industry. These farmers account for 13% of the herd in the study area, and without being able to link herd to production outcomes, we will assume, 13% of the milk production and around 24% of the current land used for dairy production.

In terms of efficiency, this group is using 24% of the industry land supply to produce 13% of the milk. This represents an inefficient use of resources, and with 13% of the herd requiring 36% of the farming enterprises, this is also economically inefficient.

Of those wishing to remain farming at the same level, 21% by number, account for 21% of the herd, 18% of the land.

43% of the farmers expressed an interest in expansion accounted for 62% of the herd size and 58% of land. This analysis indicates a relationship between herd size / scale and future intentions, although the issues of causality remains an open question, that is, does herd size dictate intention (small herd size means exit is only viable option)⁵, or does intention dictate herd size (to stay, herd scale is needed). This issue is discussed further in 6.6 below. Figure 22 highlights the disparity between the size of the herd of those wishing to exit, expand or remain farming at the same level

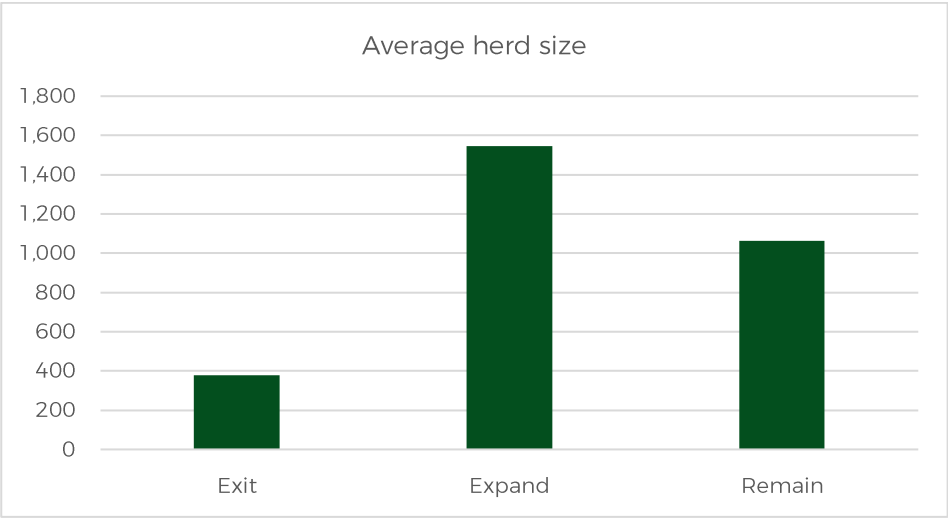


Figure 22 - Average herd size and intention

Those wishing to exit have herd sizes of less than 400 animals, remain at the same level just over 1,060 and the average herd size of those wishing to

⁵ Although Figure 25 indicates a relationship between herd size and profitability, which would indicate that one of the factors driving choice of intention is ability to make acceptable returns, which is, at least partly related to size of herd.

expand is around 1,550. The average herd size of the farmers surveyed was 986.

Of those wishing to exit:

- 40% identified an exit through property sale;
- 60% responded that they wished to change production models, presumably to alternative farming / production to beef, sheep
- 33% had a succession plan in place

Of those wishing to expand:

- 100% required additional land
- 58% needed additional capital
- One respondent detailed an extensive plan including:
 - increase farm production using a barn housing system and include robotic milking
 - convert pasture irrigation to maize and winter cropping for greater output and water use efficiency
 - access to additional water

In terms of herd numbers associated with industry existing farmers, the survey results when extrapolated across the industry show that if the land available for sale remains a dairy production asset, that around 20,176 or 7.6% of the region's milk production could be lost as the land will be used for alternative purposes.

Exit option	Milk production (M/L)
Property sale	13,451
Alternative production	20,176
Total	33,627

Table 9 – Potential lost Milk Production from exists

6.6 Profitability

Whilst not specifically requested, it is possible to make some insights into relative farm profitability through data analysis techniques. Figure 23 shows the percentage difference between the milk price identified by respondents as being received and the breakeven level of the farm in \$kg/Ms. We would note that this should be taken as indicative since as described above, some breakeven figures provided were not uniform in the way that they had been calculated.

Nonetheless, the analysis shows that the sample receives, on average 13% above breakeven levels for their milk, with 7 of the 10 respondents, that provided relevant data, being profitable.

One of the drivers of industry profitability is the scale of farms in terms of land area farmed and herd size. The relationship between land under production and herd size is shown in Figure 23

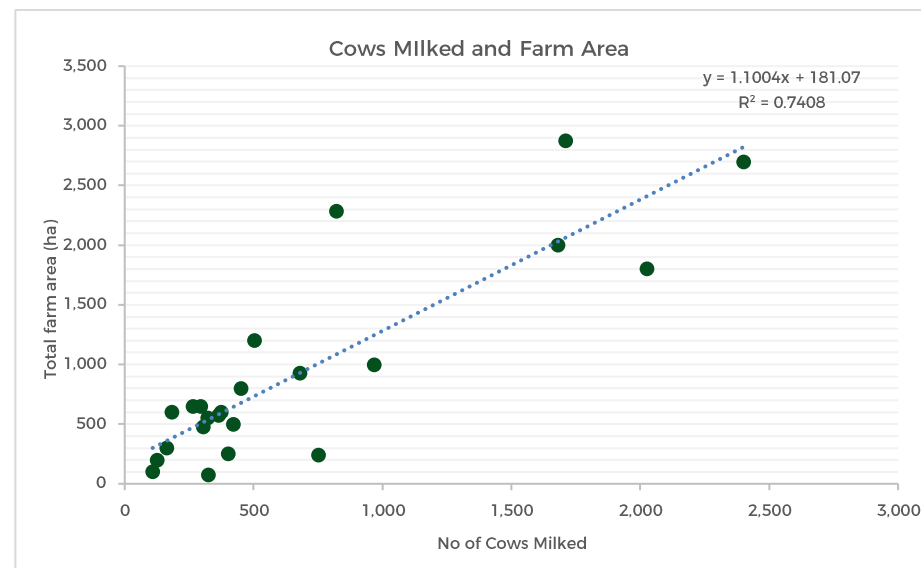


Figure 23 – Cows milked and farm area

This analysis shows that there is a relationship between these two variables, with the land area accounting for 74% of the herd size. This is expected.

In terms of drivers of profitability, there are numerous including scale, production efficiency, knowledge, and milk price. The following analysis should be seen as indicative as the sample is not large, and some of the responses were inconsistent, however there are some useful insights that can be made.

The relationship between farm size and profitability is shown in Figure 24

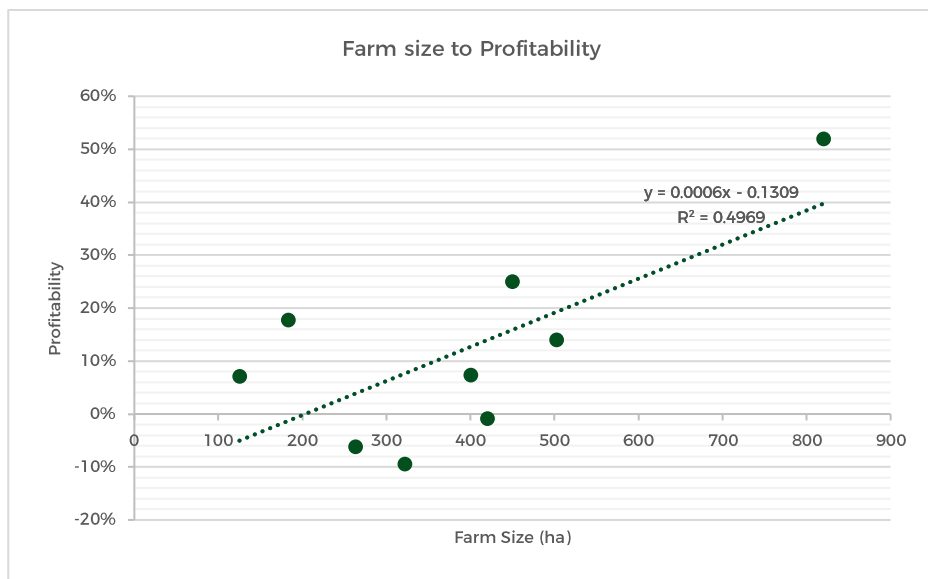


Figure 24 - Farm size and profitability

This analysis also indicates a relationship, but it is not as strong, with only 50% of the profitability of the farm being driven by farm size.

The profitability of farms to herd size is shown in Figure 25

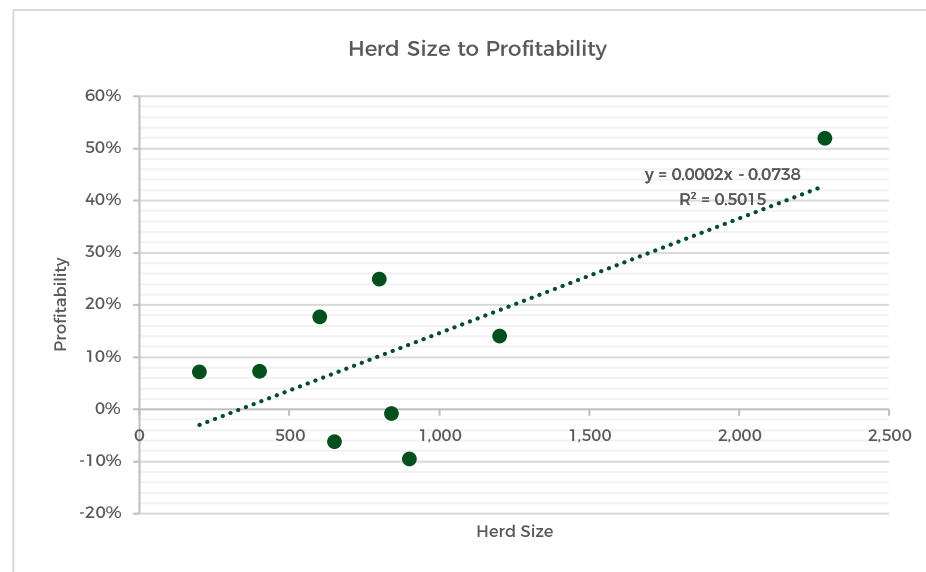


Figure 25 - Herd size and profitability

This analysis also indicates a positive relationship between herd size and profitability, with herd size accounting for around 50% of the profitability result.

7. Industry Analysis

Using the survey, consultation and industry research a high-level industry assessment has been completed.

7.1 Industry observations

While predicting the future is problematic at best, as is often interpreting current sentiment and how it will impact ongoing industry decision making, we have listed some observations that may be future influences on the industry:

- Aggregation is a common theme being experienced across most agricultural industries and recent industry turmoil would appear to be accelerating the process in the dairy sector with one 1 in 5 respondents to the industry survey indicating their intention to exit.

Another factor possibly contributing to aggregation, distinctive to dairy, is the tiered payment structure. The tiered pricing system used by the industry based on a producer's production volume, effectively means that some farmer's milk is worth more than others, further driving increased scales of production. This is uncommon in other agricultural industries, where the same price is paid per weight (tonne), or unit (bale/head) of production according to various quality parameters without consideration as to the producer or source.

- While aggregation may lead to a loss of industry knowledge in the short-term, while some may exit, the cost barriers to ownership remain substantial for those looking to enter the industry.

There are however, smart capable younger dairy practitioners, attracted to the SE because of its production potential, that are looking to take on management responsibilities with a view to establishing their own enterprises.

Due to the nature of the industry and the level of management required to be successful, land aggregators will require their services, if they are to maximise returns on their investments. There are a number of local examples where, over time, such candidates have been sponsored into owning their own properties under financial arrangements that have been of mutual benefit, in effect creating career pathways, through building an asset base through investment in herd and/or capital, with the eventual goal of owning their own property.

- In previous times, when there were more farmers, land and/or capital were generally the major determinants of the size of operation. Should current industry intentions be realised, the availability of professional management and skilled labour, that is, the most efficient management structure, may become as important when determining the size and efficiency of operation.
- Not all land is equal. While various land may become available should farmers' intentions be realised, all farms may not necessarily have the same potential, or, be in a suitable convenient location to allow integration into other existing operations. If this is the case, is the intention to leave the industry also related to the productive capacity of the property?
- There appears to be a recognition that higher industry production levels may be obtained through preserving the most productive land as a 'production platform' where cows are fed, milked and managed in a comparatively intensive manner. However, while production may increase, so does the cost base and associated risk.
- While the production levels, both nationally and locally, are on the decline, this is unlikely a reflection of productive capability, rather, given recent events, a move by farmers to manage both risk and exposure to the industry.

While most farmers will maintain their milk base, their skills at pasture management allow them to readily move into other enterprises and shift marginal or excess capacity to other red meat production that have been enjoying relatively good prices over recent years assisting them to diversify their risk profile and correspondingly reduce the volatility of their income. It is not that they are incapable of increasing production, they are just unwilling to do so.

'There is a case to convert land [to dairy], however, it is not compelling. There needs to be a catalyst for change.'

'I could crank up another dairy if necessary. There may be more dollars in dairy, however there is less risk in sheep.'

Similarly, during times of uncertainty, there remains scope for farmers to lower their risk by scaling back the intensity of their production through reducing inputs; specifically fodder and fertiliser, retaining young stock instead of agisting them at \$15 per week per head, as well as extending the average age of their herd by selling heifers to the lucrative export market.

- However, such management strategies may not be available to all farmers, dependant on their financial situation. It can be difficult to make a case for lowering production in the face of maintain debt repayments. There is also a significant investment required to diversify production prior to a return and, should the land be the principal asset, the value is likely to be greater if it is dedicated solely as a dairy property.

There are also a number of global factors that may impact locally;

- Despite significant industry differences in the level of trade exposure, cost of land, land ownership restrictions and no capital gains on rural property sales, given their production intensity, reliance on dairy as a major export and economic driver of their economy, New Zealand are often regarded as industry innovators.

There is a current debate, around dairying and its impact on the environment. Cattle are ruminants and therefore produce methane. Methane is rated as 25 times more detrimental to global warming than CO₂, however only remains in the atmosphere for around 9 – 12 years, whereas CO₂ may last for over 100.

As a significant contributor to national greenhouse gas emissions, the NZ Government has placed restrictions on the number of cattle and the level of inputs, specifically fertilisers, leading to an assessment that the industry may reached 'peak cow' numbers.

While this may be the case, as has been shown over recent history, the number of cows, while a factor, isn't necessarily the only determinant of the level of milk production as milk yields continue to increase, so it doesn't necessarily follow that they have reached 'peak milk' production and seasonal factors will continue to be a major factor.

- NZ also recently announced that it will adopt an eradication policy for *Mycoplasma bovis*. The program will entail culling around 126,000 head in the next 1-2 years. Anecdotally, the effect on production has been likened to the effect of a severe drought.

Mycoplasma bovis is generally considered manageable in healthy herds and usually manifests itself when animals are stressed. It is also endemic in Australia, however the government here, similar to most other comparable jurisdictions, has opted for management rather than eradication.

- While future Australian exports may be influenced by the rate of continued domestic population growth and diminishing global rangelands may be in decline, it would appear that, at least in the short-term, there is excess capacity, particularly in the EU, to increase production.

As an example, Ireland that has a current population of less than 5 million and produces around 6.5 billion litres of milk, compared to Australia's 25 million population and 9 billion litres, intends to increase their production; 11 to 12 billion litres is the plan.

7.2 Competitive assessment

The competitiveness of the Dairy Industry in the study area has been assessed along five areas that underpin agricultural industry advantage. The relative measure for the industry must be at a national level as the industry operates at this scale. There is a strong argument that any relative measure should be international, however the scope of this report does not provide for this level of analysis

Score	Basis of Assessment	Consideration
+	Access to resources	- Natural resource advantages, including water - Skills and age of workforce are major issues and a potential impediment to growth - Clear segments of the industry that are economically inefficient
+	Infrastructure and regulatory systems	- National systems in areas of regulation and infrastructure are efficient and effective - Local infrastructure will act to curtail, but not prevent growth in medium term - Processor manufacturing is of international standard
+	Scale	- High herd numbers and milk yields - Links to global processors - Some regional fragmentation and many small-scale farms with limited capital - Some evidence of farms scaling up through land and herd

Score	Basis of Assessment	Consideration
=	Market Position	- Close links to processors which opens export to international markets - Farmers subject to processor contracts and high levels of competition - Only limited exposure to drinking milk markets - Little brand differentiation
=	Innovation	- Little diversity of product - Innovation occurring in production systems, but minimal technological innovation - Processor pricing (linked to international pricing acts to improve production systems through competition). - Access to leading tertiary and R&D systems at national level
Key: ++ Significant strength + Advantaged = On Par - Disadvantaged -- Significant barrier or risk		

Table 10 – Competitive analysis

The competitive assessment highlights that the industry has a solid platform from which to grow. Being able to access critical industry resources is essential for the industry to achieve scale and invest in innovation for further propulsive growth analogous to the high growth curve detailed in Figure 26.

7.3 Potential future scenarios

Given the survey and consultation responses and the competitive analysis assessment detailed in Table 10 some potential future scenarios for the industry can be mapped and used as the basis for future industry planning. Figure 26 outlines a model for three scenarios based on the rate at which the local industry can adopt as a vision and implement strategies to drive growth.

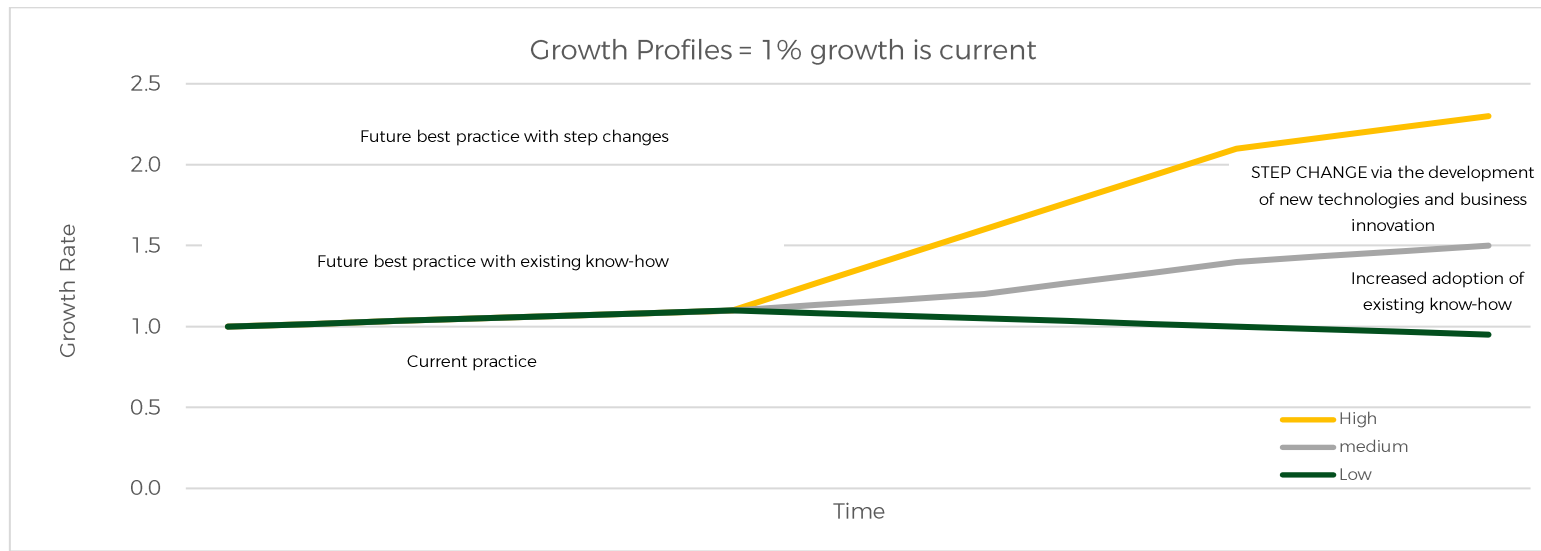


Figure 26 - Potential Scenarios

Under this model:

- If the industry can access capital and technologies growth over the longer-term increases over 2 times (high growth scenario).
- Current practice, or the low growth scenario increases production slightly in the short term, but as competitive factors impact, production levels decline.
- The middle (medium scenario) ground represents increasing adoption of existing practices across the industry.

7.3.1 Which scenario for District Council of Grant and Wattle Range Council?

The key factors driving the scenarios for District Council of Grant and Wattle Range Council include the current state of the industry detailed in Table 10, as well as the factors detailed in this report which are likely to be particularly pertinent to the ability of the industry to grow over the medium term. These factors and the impact (+++) / = / (---) are detailed below;

Factor	Impact
The level of producers nominating industry exit	--
Opportunity to improve efficiency of industry through exit of inefficient operators	++
Availability of skills to operate industry and age profile of management	---
The availability of suitable land for future development without major infrastructure	+
Plans of regional processors to expand production to meet excess capacity	++
Evidence of larger firms buying up properties and investment in processing assets	+
Level of past investment, and future investment intentions	+
Climatic outlook	=
Difficulties accessing capital	--
Processors requiring additional volumes and forcing change	++
Improvements in production systems such as pastures, cow performance, genetics, increased supplements use	++

Table 11 – Growth factors and impact

Given the outcomes observed, there is very little take up of new technologies that would be of the type that would support a high level of industry growth. The industry is too fragmented and the skills shortages present significant risks to the industry, limiting growth potential.

The industry is globally competitive, and the influence of the processors is significant. One of the longer-term effects of the global processors power and influence is that unproductive producers tend to be replaced by more efficient ones. The results of the survey and consultations indicate that this process may be expediated given the age and exit intentions of the industry and the intentions of some segments of the industry to expand. This may result in short term loss of some production, but over the longer term the higher levels of efficiency will result in increased production.

Processors are also under capacity, and we understand seeking to utilise this capacity to service international markets. The demand for additional milk,

may also act to increase investment in the industry and support local growth.

An unknown consideration is the level of future infrastructure investment that may provide a platform for significant growth over the longer term. Water and transportation investment will increase the quality and amount of land that is suitable for production.

While the skills and age profile of the industry is likely to be a major hand brake on the industries development, if larger corporate firms move into the market, these issues can be overcome

Therefore, while skills shortages and industry exits may reduce short term growth, we would be of the view that growth profiles around the middle scenario are achievable through natural market forces demanding such change to remain competitive.

The survey analysis has highlighted that those exiting the industry are more likely to be inefficient producers in terms of land use and human capital resources. A significant industry opportunity is to convert this current inefficient use of resources to more efficient use, increasing industry productivity. Should this occur, there is significant opportunity to increase milk production from within the region.

Based on the current production volumes and on-farm assets as detailed in Table 4 and Table 5:

- If 13% of farmers (Figure 21 and Figure 22) from the region exit the industry, then around 33 million litres of production are in jeopardy, or around 6.7% of the State average
- Assume those identifying as wishing to sell their property and businesses (40% of total wishing to exit) remain producing milk (12.9 million litres per annum)

- As some of those wishing to exit plan to do so through switching to alternative farming systems (60% of those exiting), then lost dairy production assets is likely to be around 20.1 million litres per annum or 7.6% of current production),
- To maintain production at existing level will require either further expansion by those farmers seeking to expand, or new dairy assets to be established to maintain existing production levels.
- To maintain the same levels of production, based on the analysis of the average size of the herd of farmers wishing to expand, each of these farmers will need to increase herd size by around 13%

7.3.2 Conclusion - Scenarios

Given expected increased processor demand, facilitating the transition of the properties of those wishing to exit (likely to be inefficient producers), to those wishing to expand (likely to be efficient producers) would support industry growth, higher industry returns and the creation of economic value.

Given the challenges these farmers face to expand, including capital, skills and demographic profile, expanding production across the industry by 13% to cover the lost production assets may be challenging, however if it were achieved then the industry would be considerably more efficient than is currently the case.

If this level of growth (13%) cannot be achieved from existing farmers wishing to expand, then to maintain existing production levels, farmers wishing to exit will need to sell production assets to new industry entrants which will require additional land to be opened up to dairying. New entrants are also more likely to bring new technologies to the industry, creating further productivity gains and or value adding opportunities.

Based on this analysis, we would be of the view that:

- In the short term (< 5 years), there is likely to be a decline in production as exits occur and skills related issues impact
- Over the medium term (5 – 10 years), there is a movement of production assets to more efficient producers, whether they are existing or new entrants, resulting in higher levels of growth
- In the longer term (> 10 years), there is an increasing rate of new technology adoption, supporting higher than average industry growth

Using the model detailed above, the growth trajectory for the industry is shown in Figure 27

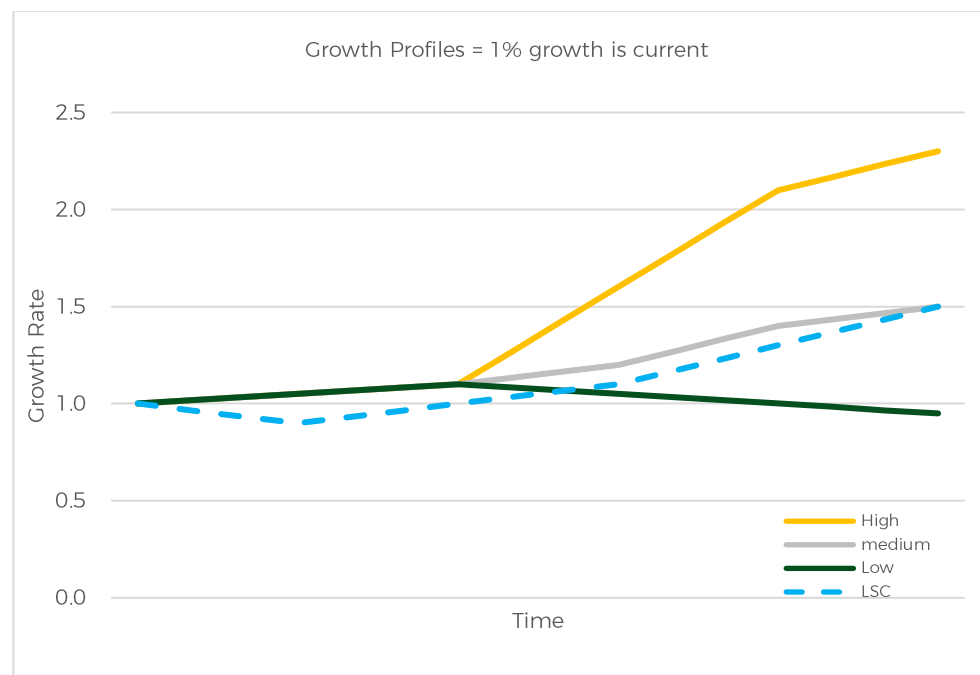


Figure 27 – Dairy Industry Growth Trajectory

7.4 Likely capital costs

To ascertain a likely capital cost to achieve the industry growth trajectory can at best be an indicative calculation. Industry benchmarks suggest that a 1,000-herd dairy, producing 7.5 million litres per annum will cost an investor around \$13 million, or \$1.7 / litre of milk produced.

Extrapolating this metric over previous analysis suggests that to **maintain the existing level of production**, given expected industry exits will require investment in the order \$57.2 million.

To achieve an increase from the existing 295 million litres to around 442 million litres detailed in Figure 27, assuming the land is available to use for dairying purposes and can achieve production levels of 16,667 litres / hectare (the current average production rate based on 1,000 cow herd) will require an additional 8,870 hectares. The capital cost of **achieving this uplift** is estimated to be in the order of \$250 million.

8. Recommendations

8.1 Examine industry projections in association with leading agencies and provide a vision plan for dairying in the two Council areas

There appears to have been an expectation among government and some in industry, not necessarily farmers, that dairying will provide the economic base for increased regional manufacturing capability with the attendant increased employment and export outcomes associated with such development.

It would appear this is predicated primarily around the extraordinary production figures attained by relatively large dairy herds in the SE, SA's clean green image, a burgeoning Asian middle-class and an abundance of land and water assets available for conversion to higher value dairy production. This has been articulated in the brief;

"State Government agency projections indicate that the Limestone Coast dairy region has the capacity to increase production by up to 1 billion litres from the base of 350 million litres via the conversion of prime farm land to dairy."

In our view such projections are problematic. Firstly, whether or not the SE has the necessary natural resource base, a relevant question is whether such a proposition is economically sustainable and whether there is sufficient financial motivation for industry to want to expand its production base in the SE?

It is important to note, according to Dairy SA, the SE hasn't reached a production level of 350 million litres for a number of years; 348,205,498 litres in 2011/12. Most recent production figures available for 2016/17 indicates 295,739 litres, more than 15% less than quoted base figure, indicating that the appetite for expansion under current industry conditions is unlikely.

Secondly, is such a proposition physically achievable? What constitutes an extra billion litres of production? To understand the task at hand it is first necessary to relate what a billion litres relates to in land area.

Estimate 1:

PIRSA have provided modelling (also contained in the project brief) of a dairy enterprise based on;

"1,000 cow dairy in the Limestone Coast on 450ha, producing 7.5 million litres of milk per year"

This would indicate; 7.5 million litres ÷ 450 hectares = 16,667 litres per Ha.
1 billion litres ÷ 16,667 litres per hectare = 60,000 Has..

Estimate 2:

Table 12 has been compiled from a Beston Prospectus dated 31 July 2015 using production data from three SE farms; Kurleah and Pedra Branca at Allendale East and Weneeda at Kalangadoo. The areas, numbers of cattle and milk production characteristics of all three farms were totalled and then averaged to provide a litres per hectare average of 15,701. This was then divided into 1 billion litres to provide an estimate 63,689.

	Kurleah	Pedra Branca	Weneeda	Totals /Averages	1 billion litres
Has.	299	1,154	256	1,709	63,689
No. Cows	700	1,835	343	2,878	
Annual Production (Litres)	5,953,721	18,020,634	2,859,368	26,833,723	1,000,000,000
Litres per Cow	8,505	9,821	8,336	9,324	
Cows per Ha.	2.3	1.6	1.3	1.7	
Litres per Ha.	19,912	15,616	11,169	15,701	15,701

Table 12 – Estimation of land area required to produce 1 billion litres of milk.

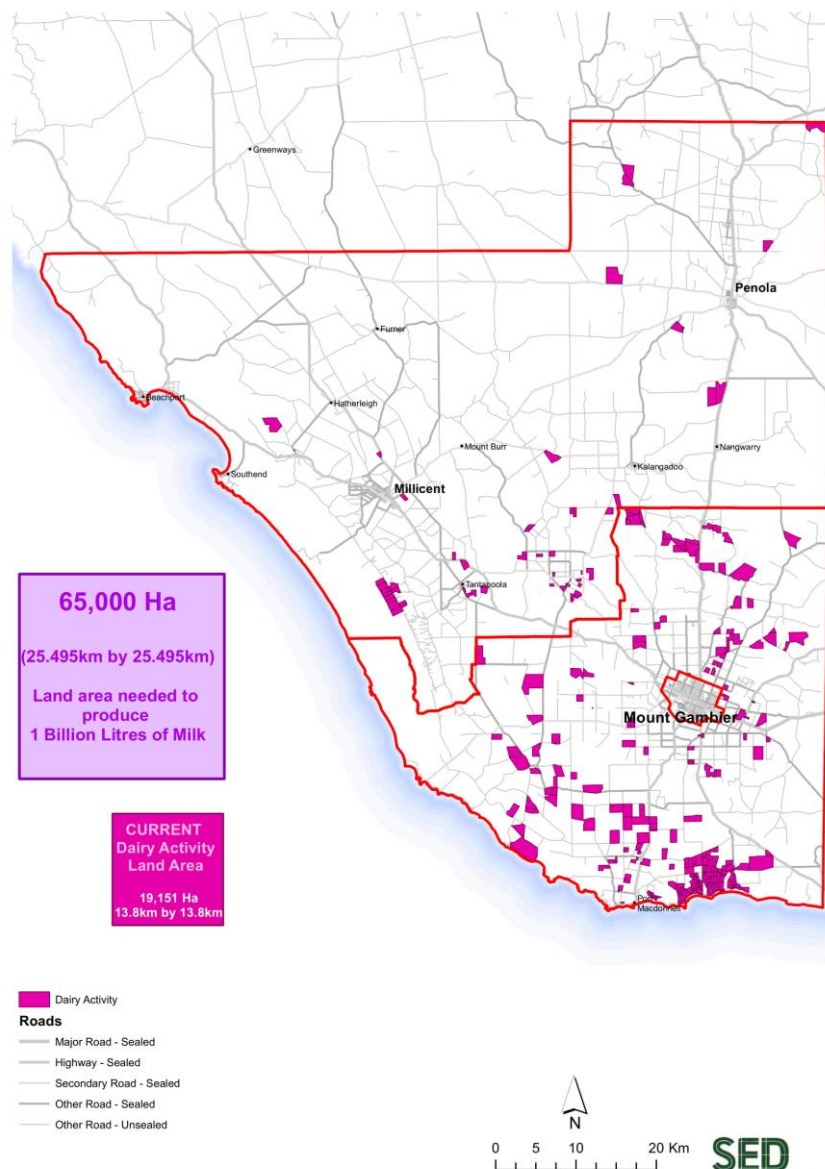


Figure 28 – Indicative dairy industry activity

As was indicated earlier, there are several pasture and feed systems used by farmers within the industry. The 'low cost' model is pasture based and relies heavily on the ability to grow perennial ryegrass and white clover pastures. This is not to say that there aren't alternative feed systems, however it is the benchmark used by many farmers to determine whether country is suitable for dairy production.

As such, when we consider the task outlined, we will base our estimation on a simple premise that any land identified as suitable for dairying must be capable of growing a high-quality perennial ryegrass pasture.

8.1.1 Temperature and Soils

The SE has many different soil types. They are lighter than the volcanic loams and clays found across the border in Victoria. They also tend to be shallower and are mostly situated over limestone that provide the free draining characteristics the area is known for and are of advantage when grazing large animals and moving them to and from the dairy.

Similarly, Figure 29 shows the soil types of the SE. The overlay indicates that there is a close correlation between the location of current dairy activity and volcanic ash-based soils. Unfortunately, there aren't many other locations with this soil type that aren't already in use.

Those who live in the SE are aware of the significant temperature gradient that increases the further North you travel as described in **Error! Reference source not found.** Modelling undertaken by dairy industry advisors, indicates that the soil types are too sandy, and temperatures are too hot around Naracoorte to establish perennial ryegrass pastures.

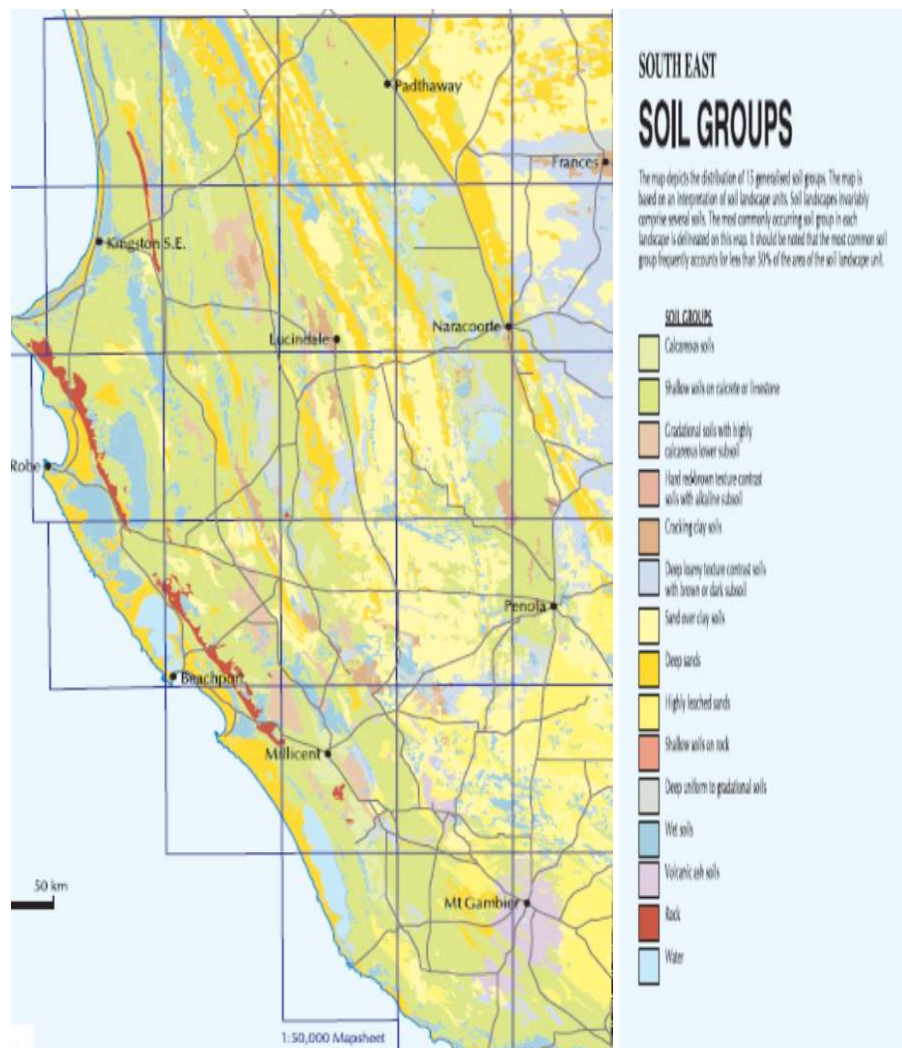


Figure 29 -Map indicating SE soil types

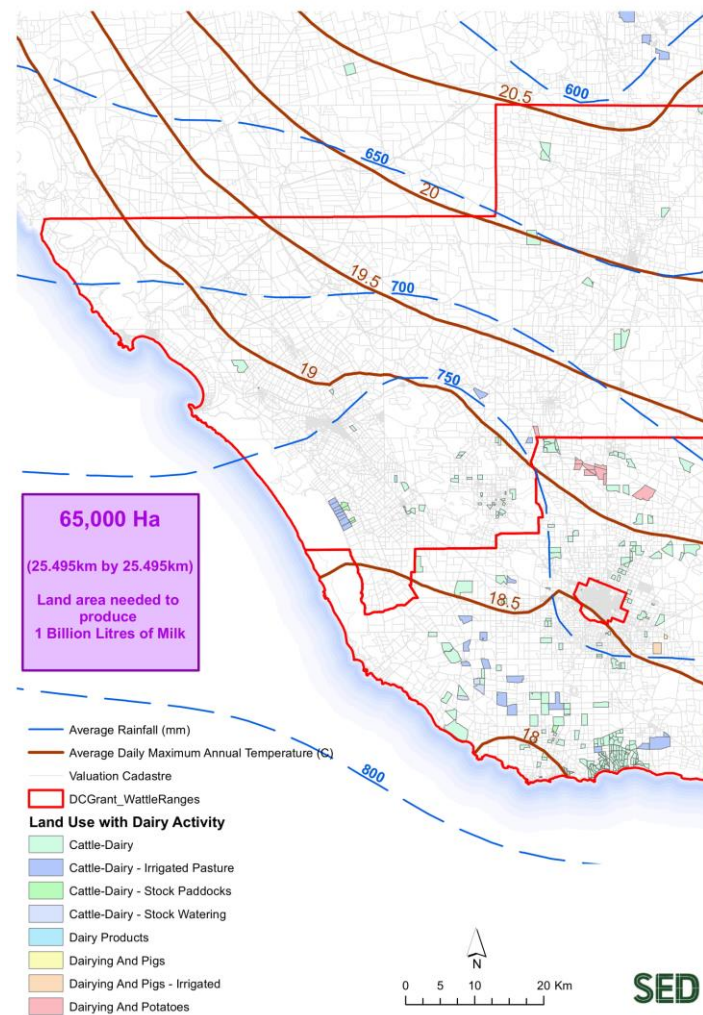


Figure 30 -Map showing average annual temperature

8.1.2 Water and irrigation

Is an important distinction in understanding the difference in dairy production either side of the border. Western Victoria has relatively little access to irrigation compared to SA however, their soils are heavier, providing some compensation, in that they will hold moisture in the profile for longer supporting perennial pasture growth. Depending on the season, this may extend their growing season by 6 to 8 weeks beyond what is possible in the SE without irrigation. The lack of irrigation also explains the highly seasonal nature of the Victorian production curve.

In the SE, irrigation, little and often (the holding capacity of soils South of the Mount is said to 9 – 13mm), keeps the soil profile moist and extends the season far beyond what would otherwise be possible. Access to the unconfined aquifer is the principal reason that the SE dairy herds outperform most other regions, or as one industry adviser put it;

‘Without water you can’t grow grass in the South-East.’.

Figure 31 shows the water management areas of the SE with the orange shaded areas indicating areas either fully allocated, or that have less than 1,000 megalitres of entitlement available, according to the most recent management plan.

Generally, water can only be traded into management areas that have surpluses and, as such, the areas indicated by the orange shading, are unlikely to receive water for future dairy expansion, unless it is able to be reallocated from a different use within the management area.

Finally, perennial ryegrass also doesn’t like wet feet, specifically when it comes from groundwater inundation causing salt to rise through the profile. Figure 32 indicates country to the West and North of where dairy farming is currently practised, is subject to groundwater inundation that, according to our production benchmark, would also be deemed unsuitable.

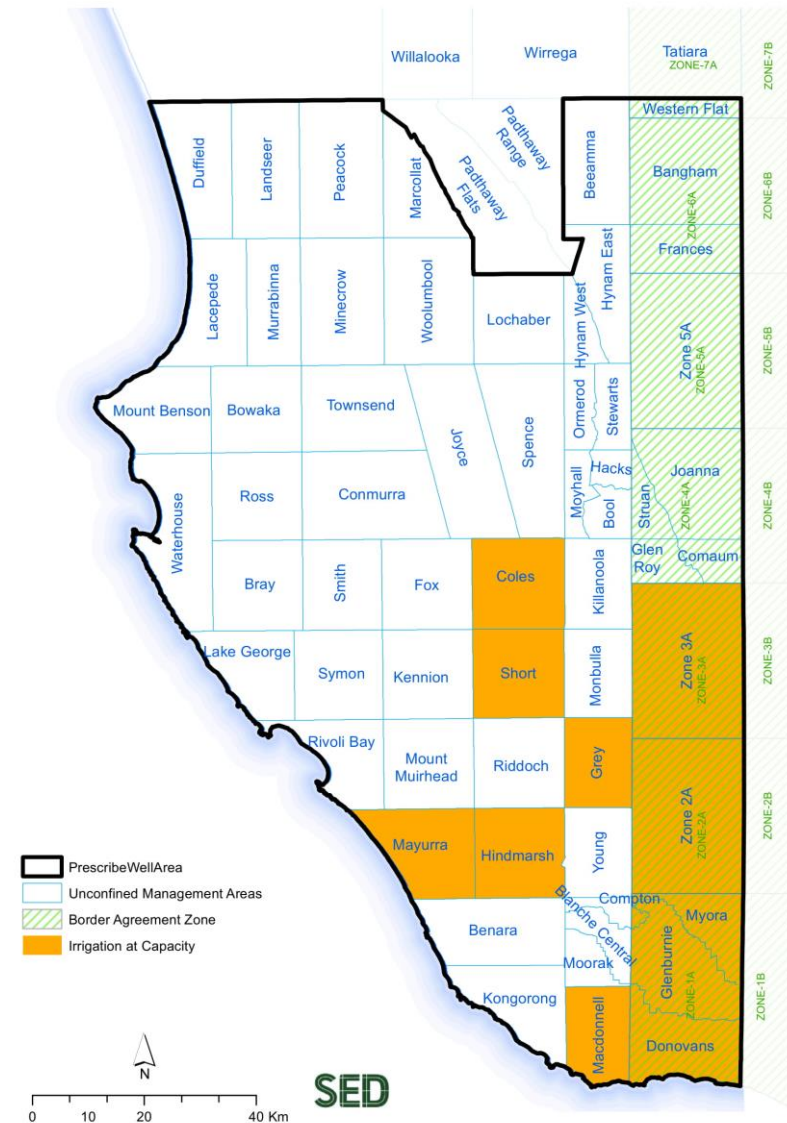


Figure 31 –Water management areas at or near full allocation

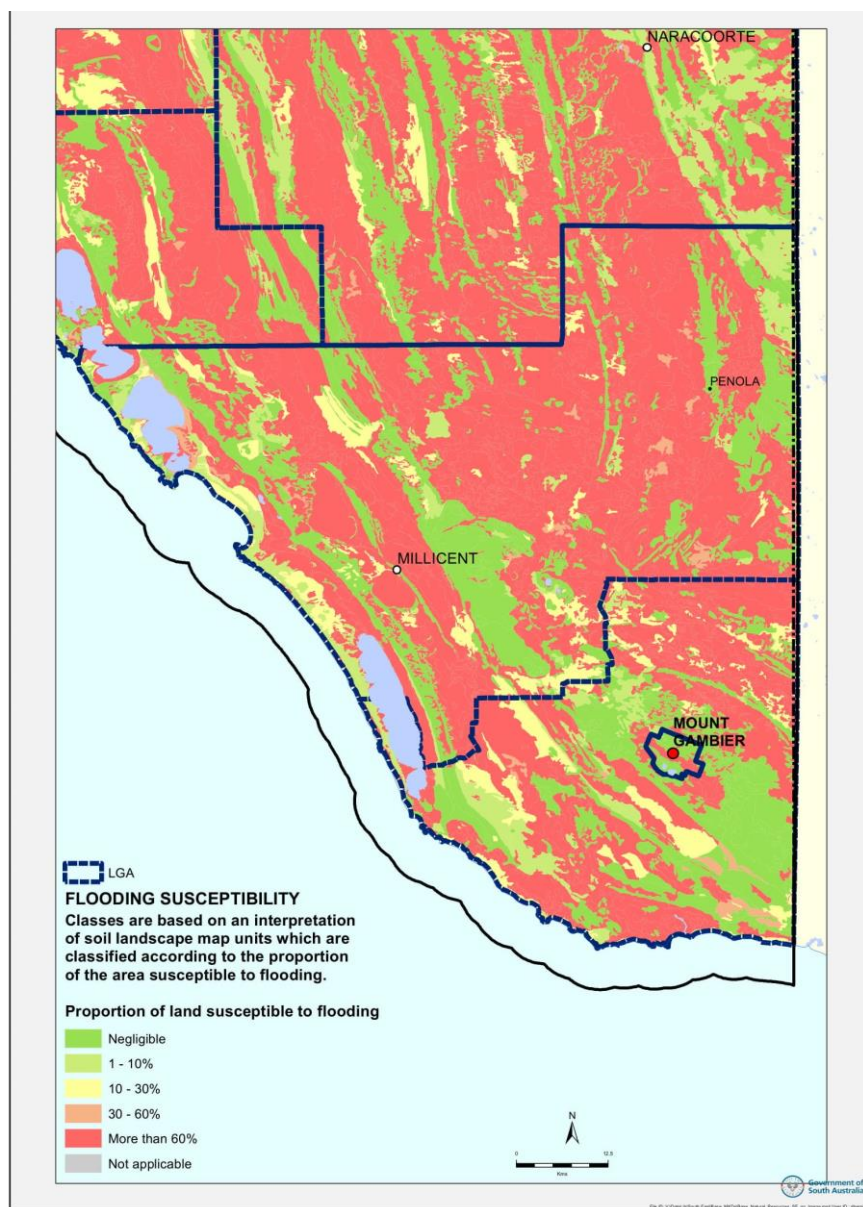


Figure 32 –Map indicating areas of The South-East susceptible to flooding

Our brief does not include definitively mapping these areas and, while we do not dispute that there are suitable areas that would lend themselves to development beyond what is currently farmed, based on the overlays provided above, we question whether the potential for ‘a further billion litres’, is in fact realistic, with soil type, temperature, water availability and inundation being major potential constraints.

It would therefore be of immense value to understand which land is suitable for potential growth to both manage expectations, so that proper industry development and planning can be undertaken as this information gap presents a major barrier at present.

8.2 Examine opportunities for large scale value adding within Council areas

When researching the market opportunities, there appears to be some misconceptions around production capacity and matching processing capability. A review of recent SE production in Table 13 indicates;

	2012/13	2013/14	2014/15	2015/16	2016/17	5-year Trend	
						No.	%
No. Farms	110	108	105	100	99	-11	-10.0%
No. Cows	45,674	45,157	44,788	43,791	41,303	-4,371	-9.6%
Milk (Litres) Ave	349,876,370	336,390,550	339,383,029	na	295,738,704	-54,137,666	-15.5%
Ave. Milk /Farm	3,180,694	3,114,727	3,232,219	-	2,987,260	-193,435	-6.1%
Ave. Milk /Cow	7,660	7,449	7,578	-	7,160	-500	-6.5%

Table 13 – 5-year milk production figures for the SE

Table 13 indicates that a steadily decreasing trend in milk production of over 15% representing 54Mlts of milk over the past 5-years because of less farms, less cattle and less production per cow.

From information provided from processors we understand:

- Roughly 50Mlts goes from the SE to Adelaide on an annual basis via the Mil Lel storage to LDD, Bega and Parmalat. However, the number of direct deliveries, while not mentioned during consultations and therefore not considered significant, is largely unknown.
- 50Mlts goes to Mondelez
- 240 Mlts plus goes to UDC, of which roughly half comes from The South-East and half from Victoria.
- From the survey, at least another 50Mlts goes to Koroit, just from the respondents alone. Bega taking over the Koroit facility should further enhance competition.
- Beston Pure Dairies are looking to increase their milk supply by 90Mlts over the next two seasons, however, are not confident that there is enough supply in the SE (which we note is consistent with the findings of this report) and may need to source milk from across the border. While they have farms in the SE and look to source milk from the region, their current factory supply appears to be achieved through local supply via milk swaps, although this may change in future.
- There is also the possibility of further local liquid milk demand from Blue Lake Dairy should they undertake a second-stage expansion.

Given the above and making some production estimations; that current average annual production in the South-East is equivalent to around 300Mlts, an allowance of 5Mlts for unknown direct deliveries to Adelaide and that the Mondelez requirement is likely locally sourced, an indication of where local production is destined to and sourced from is provided in Table 14 and Table 15.

Destination	SE SA	
	Mlts.	(%)
Adelaide via Saputo/WCB - Mil Lel	50	17%
Adelaide direct - Say	5	2%
UDC	120	40%
Mondelez	50	17%
Victorian processors (as the balance)	75	25%
Total:	300	100%

Table 14 – Indicative milk movements from the South-East

Imports	Victoria
UDC	120 Mlts
Blue Lake Dairy (Powder)	100%

Table 15 – Indicative milk imports into the South-East

While the above tables are only estimates, they indicate that:

- An estimated 75% of production remains in SA and roughly 17% or more, supplies the Adelaide fresh milk market.
- Around 57% of the SE milk pool is processed locally (UDC and Mondelez).
- If all milk processed in the South-East (excluding BLD) was sourced from the local pool, then nearly 100% (290Mlts) would be processed within the region.
- More milk flows across the border from Victoria (120Mlts) than flows to Victoria for processing (75Mlts).
- As the UDC business is export oriented, as is milk processed in Victoria and Mondelez export 30% of their production, it would suggest that the majority of the SE milk pool, roughly 80%, is trade exposed. This would only increase should BLD progress to stage 2 of their development.

Competition doesn't appear to be the issue, Mondelez/Kraft have previously provided a local production base and UDC have and potentially BLD will provide in-region processing capacity not previously available, for what appears to be a shrinking milk pool.

The diminishing milk pool is not only a SE problem, it is reflective of the industry at large as indicated in Figure 5. In May 2017 and led to a previous Murray Goulburn announcement relating to the closure of three processing their plants in northern Victoria and Tasmania. There is currently excess processing capacity nationally.

Given the current state of the industry, the recent commissioning of the UDC plant and the fact there is roughly sufficient local capacity to process the local milk pool, our view is that providing more processing capacity into the current market doesn't make a lot of sense and is unlikely to occur in the short to medium term.

8.3 Review dairies to determine opportunities for sale, amalgamation, growth or value adding on farm.

From our consultations it is apparent that the industry has been through a period of turmoil and there is a sense of general disenfranchisement among farmers, many of who have been financially and emotionally effected by recent events.

We have formed the sense that those most affected are the smaller farmers, some of who may farm in what may be more marginal dairy country. Our consultations indicate a number are planning to exit. This is further evidenced by the recent Dairy Australia survey results. While Dairy Australia indicate that the difference between intentions and actions can be significant, it is a significant number and indicative of the depth of feeling within the industry.

While the last few seasons have provided the impetus for many to leave, the reasons for people leaving aren't necessarily purely financial, although a major contributor. In some cases, farmers have 'had a gutful' and, as indicated by both the report and the Dairy Australia surveys, they are of retirement age and, having witnessed the trials of their parents, their children have chosen not to pursue a path in the industry.

This plays well into the narrative of the large established dairy farmers who, despite recent seasons, have retained significant dairy platforms and sufficient water entitlements to allow them to expand. Many of these operations are reaching the stage where the third generation are of school age and beginning to assess their options. For some, expansion is an option and may offer a succession plan that wouldn't otherwise be available, however, land and water tends to be tightly held in some of these more established dairy areas.

Aggregation is a common thread currently being experienced in all agricultural industries as it increases margin by reducing unit overheads through volume production. While aggregation may provide a 'natural fit' for those exiting, there are practical considerations around location to existing operations and the viability of 'stand-alone' operations that may be in more marginal country.

While there is interest to sell, there is also 'a healthy scepticism' among farmers given that they have seen and heard of many 'tyre kickers' including several well promoted corporate ventures that failed to execute sale contracts, such as Aerem that was muted to spend \$750M buying 50 properties from Colac to Mount Gambier, Camperdown International and others. Similarly, there are others that prefer to purchase 'distressed assets' rather than pay market value.

We understand that there is current investor interest in purchasing a number of dairy properties, with at least a couple of parties actively in negotiations with farmers.

CASE STUDY;

Chris Procter is a New Zealand dairy farmer with many years' experience, having developed dairy properties in both the North and South Islands prior to identifying opportunities in the South-East. He has held property interests in the area for the past 11-years and has been resident in Australia for the past 4-years.

Over the period he has developed many relationships within the industry and finance sectors, he has had board experience with Local economic and Agri-political organisations, as well as his own company, overseeing various dairy industry investments.

He has a record of purchasing and developing properties using a low-cost pasture-based management system that has shown to be successful despite current industry conditions. He is successful in providing career pathways for young farmers to establish themselves in the local industry and grow their equity over time through the use of tailored joint-venture agreements.

8.4 Opportunities for niche production and farm tourism

Small manufacturers and niche dairy production helps to build a region's food profile and create the opportunity to increase tourism through providing another reason for people to want to visit a locality by extending the range of tourism product available there.

Generally, for such ventures to be successful requires them to 'build a brand', usually around provenance or product differentiation, in order to extract a premium price for their product to cover higher unit production costs from smaller production runs. The success of their marketing strategy can be as important as their industry knowledge and are they can sometimes be held hostage to their own success as increasing demand

requires further capital investment. 'Lifestyle' choice may also be a consideration as validation of the production process.

While the South-East is undoubtedly suited to dairy production, a stated weakness for producers of all sizes, is the distance between production and where the demand is. This is a significant draw-back from a niche producer's point of view, as the opportunity to interact cheaply and seamlessly with a mass audience is usually key to their success. While there are a couple of niche producers in the South-East, there are around 47 in the Adelaide Hills that we understand take between 200klts and 10Mlts. Market access and availability of their customer base is likely the key reason for their location.

Consultations indicated that while producers were keen to support niche producers as a way to market the industry, apart from the capital expense, there was also recognition that to be successful required people to have 'a completely different skills set', apart from which there weren't enough hours in the day for them to both farm and successfully process and market their own product.

Niche processing is a useful tool to increase the local industry's profile, however, it is unlikely to generate the demand volumes of the scale required to materially impact the status quo.

8.5 Addressing Skills Shortages

The current level of skill shortage in the industry has been borne out through consultations and surveys. Unless addressed, skills shortage will become a constraint on industry growth,

That this industry suffers from skill shortages is not new, however the issue would now appear to be becoming more acute. Together with people exiting the industry, these shortages place strains on existing farmers and new processors.

Wattle Range and Grant Councils should consider working with local skills and training organisations to develop courses and pathways into the industry. We note that the broader region is seeking population growth and the industry has a role to play in providing employment opportunities.

8.6 Alternate strategies to assist dairy production within the region

Understanding the limited opportunity for Council engagement or intervention in what is primarily private, commercial and industry arrangements, a more traditional approach may be to advocate and support a Government funded infrastructure programs to aid with the assessment of:

8.6.1 Road network assessment

From current work we are undertaking in South-West Victoria, providing an economic business case for dairy related road funding, has highlighted the productivity improvements to the dairy industry of allowing HPV vehicles to access the local road network, particularly farm milk collections.

A proactive role from Council in assessing road suitability could assist industry to make considerable cost savings while reducing the number of local truck movements on local roads without significantly impacting road maintenance costs.

Mention was made at a recent Greater Green Triangle Freight Action Plan (GGTFAP) meeting⁶ that Councils may not currently have the software capability to match HPV requirements to local road design specifications needed to assess they are suitable, or not. From other road infrastructure work we have undertaken, we understand that there is commercially

available software⁷ commonly used within the industry and purchased by the Queensland Department of Transport and Main Roads for use by Local Government, that may be worth evaluating.

8.6.2 Cattle underpasses

Previous schemes in Victoria have proven successful in improving road and workplace safety, higher farm productivity and removal of impediments to farm expansion. Bipartisan support from both sides of politics has seen \$13M spent on over 550 cattle underpasses under the Stock Over/Underpass Road Safety (SOURS) program and Cattle Underpass Scheme (CUPS), much of the money having been sourced from the Federal Government's \$200 million Agriculture Industry and Jobs Fund (AIJF), which aims to create jobs, boost exports, and support farmers in transporting their products from paddock to port.

Most underpasses cost in the vicinity of around \$120 - 160k and generally take around 3 days to install.



Figure 33 – Construction and completion of cattle underpasses.

⁶ GGTFAP meeting held at PIRSA offices Mount Gambier 9 July 2018.

⁷ AutoTURN®; [<https://www.transsoftsolutions.com/vehicle-swept-path/autoturn-select/autoturn/>]

8.6.3 Waste water

Previous work we have undertaken with water utilities, and the feasibility of agricultural precincts, their infrastructure and planning requirements and the impact of climate change, has highlighted the increased potential that waste water may play in providing water suitable for irrigation.

If, as outlined, availability of water from the aquifer becomes a restriction on industry expansion, then work to understand the quantity, quality and economic feasibility of potential of waste water sources to supplement current availability in these areas may be of benefit.

As an example, from other work, we are aware that Mondelez generate 5.9 megalitres per month of waste water, the majority of which is used for wash-down purposes and a further 7.5 meg of whey and water from production that is required to be trucked off-site. A farmer paying around \$1M for a bore into the confined aquifer for a further 150 hectares of irrigation also provides context to the economic context to the study.

8.6.4 Power

As noted in the report, the cost and often reliability of the power supply, was a nearly unanimous source of irritation to those interviewed throughout the consultation process. While electricity tariffs have been rapidly increasing nationally, it is generally accepted, and is confirmed by the recent ACCC report (refer to Table 6) that SA has the highest electricity costs in Australia.

Work undertaken on behalf of Dairy Australia in 2015 estimated an average of 48kWh of power for every 1,000 litres of milk produced on-farm. While it is difficult to obtain a current average rate, using a tariff of 30¢ per kWh, this is equivalent to \$14.40 per kilolitre, or if we use the Dairy Australia figures for average milk production of 7,589 litres per cow per annum (it is likely higher for the SE), then this equates to nearly \$11,000 per hundred cows. Given

there are a number of herds in the SE of between 1,000 and well over 2,000 cows, the relative numbers are significant.

Given current uncertainty relating to generation policy settings and related industry investment, the likelihood of any immediate remedy, or reduction in tariffs, would appear problematic, as would cost recovery from any network investment required to sufficiently upgrade the grid.

There was one producer interviewed who had contracted the services of a power contractor who had installed a solar system, that employs a kinetic storage device as an alternative to batteries. We understand they have dramatically reduced their power costs sufficiently amortise the capital cost over a 2-year period with a related State Government subsidy. Similarly, we understand that they are intending to trial similar technology to be able to operate centre pivots.

Such technology holds out the prospect of significantly reducing power tariffs while also addressing reliability issues being encountered by many primary producers, not only in the dairy industry. Verification and validation of the technology would assist to allay a lot of angst around an issue of great concern within the industry.

9. Conclusions

Dairy has been a cornerstone of economic development in the SE and will continue to be so in future. Because of the natural resources and environment, the South-East will remain a high producing region providing a secure milk supply. The degree to which production can be increased is yet to be determined.

Declining production trends due to recent poor prices, are mainly a result of global conditions. While prices continue to improve marginally, the increasing cost of input, particularly feed, will continue to dampen expectations.

The industry is currently undergoing a restructure and the trend towards amalgamation looks set to continue. Current problems partially stem from overstating earlier industry forecasts and the expectations of relatively uniformed investors.

These factors are expected to combine to reduce production over the short term, however the medium-term outlook is more buoyant.

There appears enough capacity and competition in the processing sector.

While assisting to raise the profile of the industry and assisting tourism, niche production is unlikely to materially affect prices or capacity.

Investment in future processing capacity needs to be well informed and sustainable, it is not the time to promote more speculative activity.

In the current volatile environment, the traditional role of Council in assisting with the assessment of future industry infrastructure requirements, would appear the most appropriate response.

10. References

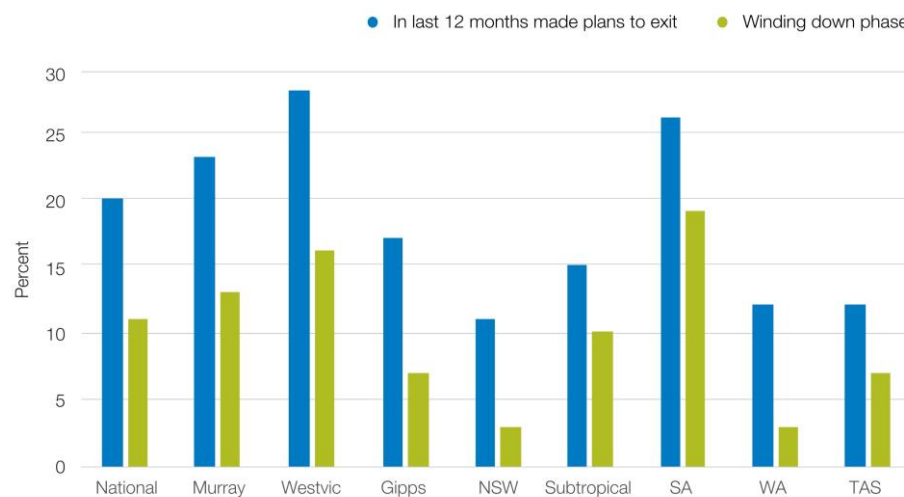
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APPENDIX A – SOUTH AUSTRALIAN DAIRY INDUSTRY SURVEY

Coincidentally, an industry survey was released in the latest Dairy Australia Market Update⁸. While the report is dated June 2018, the survey was undertaken from February to March from a sample of 800 farmers nationally. The SA results have been summarised in the infographic on the next page.

Of interest is that SA had the highest number of farmers change processor over the past 12 months (25%) compared to all other dairy regions. Given the different production profiles (manufacturing versus drinking milk segments) of the SA region, it could be expected that the majority of these changes would be in the South-East.

A telling result is the number of farmers planning to leave the industry has increased to 20%, or 1-in-5 nationally. Perhaps not unexpectedly, the highest level of farmers planning to exit are from Western Victoria and SA, suggesting most of those planning to leave in SA are in the South-east.



Both the number of farmers that have recently changed processors and the level of planned exits, point to an industry in flux with high levels of uncertainty.

⁸ Dairy Australia, June 2018, Dairy Situation and Outlook [<https://www.dairyaustralia.com.au/industry/dairy-situation-and-outlook/situation-and-outlook>]

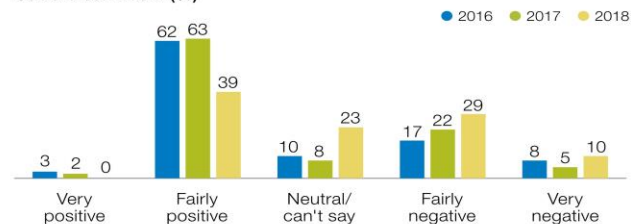
Regional NDFS results at a glance – Dairy SA

Summary

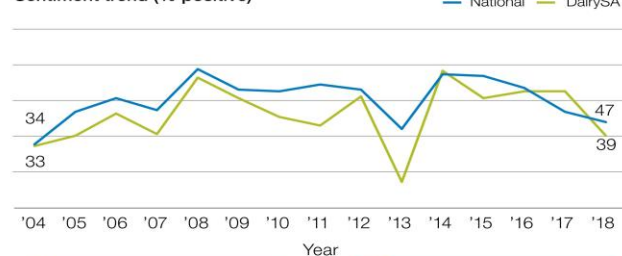
- Confidence in the industry's future has decreased significantly to 39%. In contrast, 60% are confident in their OWN business future. Low farmgate prices and production costs are the most commonly mentioned reasons for negativity.
- Despite low positivity, approximately three quarters of respondents made a profit last financial year and a similar proportion expect to do so this year.
- Transition to different milk companies is significantly more widespread than in 2017 (25%, was 5%) and a further 14% are considering changing in the future.
- Over the past year, Dairy SA respondents were among the most likely to have increased their herd size and looking ahead, almost half expect production will be increased by 2021.

Sentiment

Current sentiment (%)



Sentiment trend (% positive)



Positive drivers

Farmgate price ok (15%)
Decreased input costs (13%)
Demand for dairy (18%)

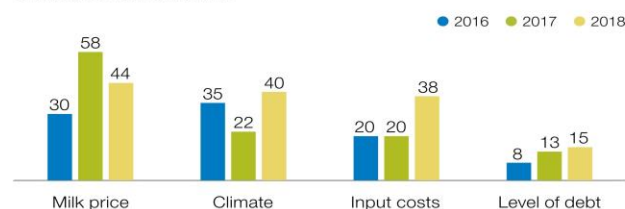
Negative drivers

Farmgate price low (28%)
Production costs (13%)
Small profit margin (6%)

Profitability and investment

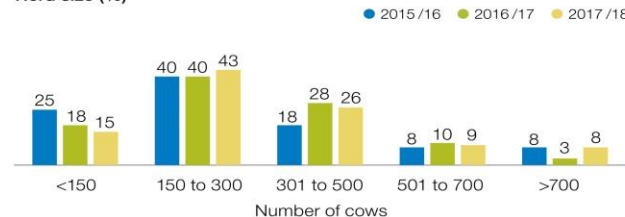
76% Made profit 2016/17	80% Invested on farm 2016/18
73% Expect profit 2017/18	74% Intend to invest 2018/20
40% Profit lower than 5 year average	35% Invest in machinery
31% Profit about same	29% Invest in dairy plant
29% Profit higher than 5 year average	20% Invest in irrigation plant

Challenges next 6 months



Current herd size and production

Herd size (%)

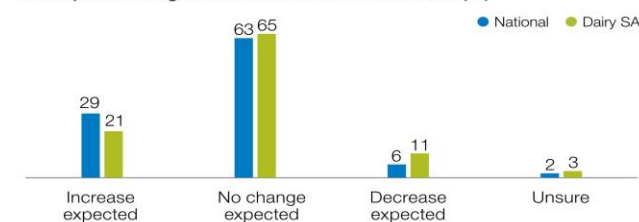


Herd production (%)

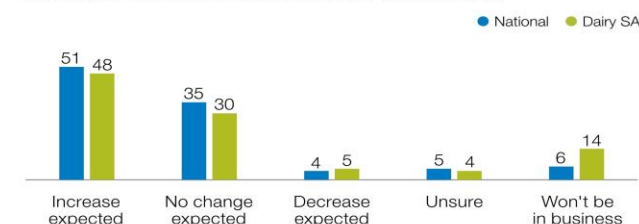


Forecast herd size and production

Anticipated change in herd size 2018/19 vs 2017/18 (%)

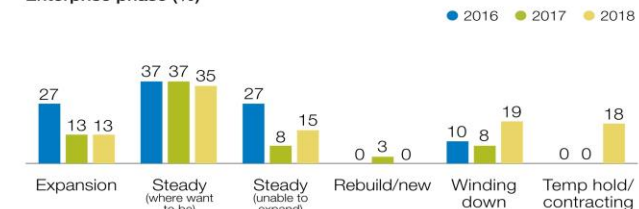


Anticipated change in production 2020/21 vs 2017/18 (%)



Regional profile

Enterprise phase (%)



The 'average' Dairy SA farmer



40% No change/intention to change company supplied
60% Positive towards OWN business future

61% Feeds moderate to high level of concentrates
1.7t (tonnes) Average grain fed per cow per year

