Growing the NSW Dairy Industry

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Growing the NSW Dairy Industry.

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Acknowledgments
Dairy Australia and the NSW Government.

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Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (August 2014). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of the Department of Primary Industries or the user’s independent adviser.
Scope & Purpose

This report “Growing the NSW Dairy Industry” was commissioned by NSW Government Trade & Investment. It was conceived to provide NSW dairy industry stakeholders and interested parties with a detailed analysis of potential opportunities on farm or in the dairy industry supply chain. The report aims to identify opportunities for NSW dairy farmers that will enhance their resilience through market options and the identification of unnecessary business impediments.

The key requirements for this report were:

• Provide a profile of the industry in 2014;
• Identify whether NSW has a competitive advantage in the export of dairy products;
• Identify and describe market opportunities, and competitors in emerging markets;
• Describe and analyse whole milk powder and other opportunities in China and elsewhere in Asia, including marginal band analysis between NSW farm gate and Chinese market price in product form;
• Identify trade restrictions and possible reforms, and give examples of successful ventures that have addressed restrictions and introduced reforms;
• Scope the investment required for industry expansion, and identify and evaluate alternative financing models and sources.

The report endeavours to provide a comprehensive fact-based overview of the opportunities and challenges facing the NSW dairy industry. It is intended for use as context for government, stakeholders and commercial players in their own strategic planning and analysis.

As the report is based largely on publically available information, the analysis and conclusions are necessarily general in nature and should be used by stakeholders as a guide only.

Note: The analysis of farm and manufacturing cost and performance contained in this report is indicative and based on the assumptions detailed in the text. The analysis should not be used in place of due diligence for current and potential investors, as actual farm, plant development and processing costs are highly variable based on the nature and scale of production.

Methodology

• In commissioning the report, it was acknowledged that a significant amount of data and analysis is available through Dairy Australia and the NSW government itself.
• Freshagenda were commissioned to build on this work and provide additional analysis of the NSW dairy industry’s current status and future opportunities and barriers.
• A desktop study was undertaken, with limited stakeholder consultation, commencing in mid May 2014. A committee was convened to review the draft in mid June, with the final report submitted in July 2014.
The approach

This chart summarises the various elements of the project work that have explored future scenarios for the NSW industry. We have explored future milk supply scenarios and their implication for potential milk availability to new processing projects. The competitive advantages of the NSW region have also been assessed to determine suitable products and markets. These give rise to some implications for future stimulation for industry development and the requirement for new projects in terms of their delivery of returns to the production sector.
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1. Key findings
# The main points

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<tr>
<th>Issue</th>
<th>Finding</th>
<th>Page references</th>
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<tbody>
<tr>
<td>Is there a supply gap?</td>
<td>The gap between NSW milk production and fresh milk demand is small and will rapidly diminish based on current trends described in our base case scenario. The tier 2 issue – lower payments for “surplus” milk – is evaporating for milk processors and farmers.</td>
<td>13-15 25</td>
</tr>
<tr>
<td>Can NSW produce more milk?</td>
<td>Our view is that the best prospects for significant growth into the medium term will come from large-scale production facilities in more competitive regions. They may be developed either to address the fresh milk supply gap, or as part of a new integrated supply chain model, which is capable of providing firm commitments on prices and volume offtake over a 5-year period. Given the history of lack of growth in milk production, expansion from existing farms looks unlikely based on the export returns outlook for WMP and UHT manufacture in the state. This analysis indicates these products and markets potentially offer lower returns than the current average NSW farmgate price – which is increasingly based on local fresh milk supply. Productivity gains may be available, as modelled in this report, but it would take a concerted effort to focus on improved pasture production, animal nutrition and cost management. The opportunity for expansion is also highly variable for the sub-regions throughout the state – largely determined by competition for land and water resources.</td>
<td>52-53 59-67 80-85</td>
</tr>
<tr>
<td>What competitive advantages does the NSW dairy industry have?</td>
<td>NSW does not have an absolute competitive advantage in milk production compared to Victoria and lower cost regions. However, it is a highly strategic region for the Australian dairy industry, servicing large local milk markets and effectively balancing fresh milk supply and demand between the eastern seaboard states. It is able to consistently produce milk year round relatively cost-effectively, and has a number of regions suitable for large-scale dairy developments.</td>
<td>27-29</td>
</tr>
</tbody>
</table>
## The main points

<table>
<thead>
<tr>
<th>Issue</th>
<th>Finding</th>
<th>Page references</th>
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<tbody>
<tr>
<td>What are the best export prospects for the NSW dairy industry?</td>
<td><strong>Building on the industry’s established export base of cheese</strong> and fresh products such as ice cream, and <strong>UHT milk</strong> offers the key opportunities for export and industry growth. This reflects the industry’s ability to produce milk year round and the state’s existing milk processing capacity. <strong>However</strong> returns are likely to be lower and more variable than current returns based largely on local fresh milk supply. In terms of the <strong>UHT milk export opportunity</strong>, trade barriers are typically higher for liquid milk compared to other dairy products, as governments seek to shield their domestic dairy industries. However, there are likely to be opportunities in China, Singapore, Hong Kong and Malaysia for increased milk exports from NSW. <strong>WMP</strong> is only viable for premium markets or as part of a value-added supply chain which can return farmgate prices at a significant premium to current commodity WMP returns.</td>
<td>18</td>
</tr>
<tr>
<td>What can be learned from other farm-manufacturing – export models?</td>
<td>The most <strong>successful models</strong> of farm and manufacturing co-investment for export have <strong>established market linkages</strong> with the right partner early and developed the infrastructure required to service <strong>customer requirements</strong>. These linkages have helped overcome some potential commercial barriers in penetrating new markets. Enterprises that have started from and focussed on the supply-end have tended to under-invest in processing capacity and get stuck in commodity manufacture or alternatively borne too much of the cost for brand and market development.</td>
<td>71-74</td>
</tr>
<tr>
<td>What investment would be required to grow the NSW dairy industry?</td>
<td>To <strong>grow</strong> the industry by <strong>120 and 220 million litres</strong> annually would require investment of between <strong>$124 and $276 million in farm capital</strong>. The growth scenarios developed for this report feature a combination of growth from existing farms, as well as new large-scale new entrants. There are a number of different financing models that may be applicable to the NSW dairy industry which are outlined in the report. From a <strong>government</strong> perspective, investing in critical <strong>support</strong> for <strong>productivity improvements</strong> and ensuring large-scale operations do not face significant <strong>regulatory hurdles</strong> will facilitate growth. Post-farm investment will depend heavily on the security and expansion capability of the milk supply-base as to the opportunity and scale for manufacturing within NSW.</td>
<td>67-69 76-78</td>
</tr>
</tbody>
</table>
2. The industry in 2014
Growing the NSW Dairy Industry

Major developments

- Formation of ACF/Dairy Farmers through coop mergers – dominant NSW player

- Deregulation of drinking milk price from July 2000.

- Drought conditions across much of Australia – grain prices increase

- Sale of ACF, formation of DFMC

- Parmalat purchases processing assets

- Norco-Dairyfields Joint venture launched

- Fonterra purchases MDP

- Bega launches cutting operation

- Imposition of tier 2 pricing

- MG enters fresh milk processing market with Coles contract

Source: Dairy Australia, Freshagenda
Volatility curbing production growth
• Unreliable climatic patterns and weather event extremes have limited production response to expanding export demand
• Feed costs fluctuating with increasing influence of world feed grain market and currency
• Shifting market access based on changes in supermarket supply contracts undermining confidence

Rising farm management complexity
• Farm cash flows pressured by variability of weather, competing uses of feed
• The struggle to cope with volatility is eroding farm confidence and farm sector wealth
• Diversity of farming operations and systems within the state based on size, management skill and market orientation

Less manufacturing in NSW
• Rationalisation of manufacturing infrastructure has resulted in loss of capacity within NSW
• Bega maintains a presence in southern NSW, producing processed cheese from local NSW and Victorian inputs
• A number of processors operate in the region, servicing the country’s largest city - Murray Goulburn has recently entered this market

Limited direct exports
• An equivalent 12% of NSW milk production was exported in 2012/13
• Southern NSW farmers linked to northern Victorian exporting region
• Trialling of fresh milk exports to China by Norco cooperative
• Bega Cheese – a successful exporter of cheese from NSW

Linkages with other regions
• The southern region’s milk is largely directed to exporters based in northern Victoria
• Northern region milk is focussed on servicing the fresh milk requirements of the growth corridor that stretches from southern Queensland into northern NSW

Supermarket influence
• The delivery of “trusted value” by retailers and quick service restaurants will remain a priority
• Growth in private label shares in mature markets, squeezing processor margins
• Move to direct sourcing of branded “Farmers Own” milk
• Long-term contracts signed with NSW-based manufacturer (Bega) for private label cheese and Norco and MG for private label milk supply within the state.
NSW industry in context

• NSW is the second largest dairy state after Victoria. The industry generates gross value of production estimated at $505 million, around 4% of the state’s agricultural GVP.

• The NSW industry is concentrated along the coast, but also has pockets of production in the irrigated southern Riverina region, and inland regions. Inland river systems including the Peel, Manilla Macquarie, Lachlan, Murrumbidge and Murray river are important for milk production in the state.

• The dispersal of dairy production across the state has led to a significant diversity in production systems and market orientation that is unique to NSW.

• In the north of the state, the industry is focussed on the supply of fresh milk for the populous, and growing north coast and southern Queensland regions. On-farm production tends to be year round, herd sizes are smaller and costs are higher.

• The southern irrigated region is adjacent to the major northern Victoria manufacturing area. A significant proportion of this milk is used in producing long shelf-life commodities such as cheese and milk powders. Production is more in line with pasture production, albeit with some irrigation and partial mixed rations utilised. Farms tend to be significantly larger and have lower operating costs on average.

• Five detailed sub-regional profiles are provided in Appendix 1.

## Table: NSW Dairy Farm Numbers and Milk Production by Region, 2014

<table>
<thead>
<tr>
<th>LLS</th>
<th>Farm numbers</th>
<th>Cow numbers</th>
<th>Milk prod (mill litres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSW</td>
<td>713</td>
<td>196,000</td>
<td>1052</td>
</tr>
<tr>
<td>Share of national</td>
<td>11%</td>
<td>12%</td>
<td>12%</td>
</tr>
</tbody>
</table>

Source: Dairy Australia, Agriculture NSW
The NSW dairy industry in 2014

**Long-term demand and supply trends**

- NSW milk production peaked in 2000 at around 1.4 billion litres. The impact of deregulation, as well as dry conditions in the early 2000s have eroded the state’s production.
- More recently, the imposition of tier 2 pricing by the two major drinking milk processors has been a further constraint on milk production – particularly in the central and northern regions. NSW milk production reached just over 1 billion litres in 2013/14.
- The loss of almost 400 million litres of milk production since 2000, as well as the sale of NSW’s largest farmer-owned cooperative (Dairy Farmers) in 2008, has seen a rationalisation of manufacturing infrastructure in the state.
- At the same time, the gradual increase in demand for drinking milk, in line with population growth has increased the industry’s exposure to the drinking milk market.
- As shown in figure 2, in 1999/2000 the proportion of the state’s production sold as drinking milk was estimated at 45%; in 2012/13 that share had increased to 68%.
- The milk equivalent share of the state’s exports has remained fairly stable over this period declining from 14% in 1999/2000 to 12% in 2012/13. This does, however, represent around 70m less litres exported.
The NSW dairy industry in 2014

The processing and manufacturing sector

- The NSW processing and manufacturing sector is made up of a number of different business models.
- It is estimated that Dairy Farmers Milk Cooperative (DFMC) has the largest share of NSW milk intake. DFMC is the supply cooperative that was formed in the restructuring of the largest NSW farmer cooperative Dairy Farmers. Upon the sale of ACF, the manufacturing and marketing arm of the cooperative, to National Foods (now Lion) in 2008, DFMC entered into a 10-year exclusive supply agreement with the buyer (Lion).
- Upon the sale of ACF to National/Lion, the Australian Competition & Consumer Commission required the divestment of NSW assets to ensure competition. These assets were subsequently purchased by Parmalat.
- Since that time, National/Lion moves to focus their NSW operations on the fresh milk and product market have seen ongoing rationalisation of manufacturing plant within the state.
- The swapping of private label milk supply contracts for Coles and Woolworths between the major processors - which in 2012/13 accounted for over 200 million litres in NSW - added to the uncertainty for farmers and processors alike, as access to milk market could change within a short period of time.

<table>
<thead>
<tr>
<th>Major NSW dairy companies</th>
<th>Type</th>
<th>Product mix*</th>
<th>Market mix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bega</td>
<td>ASX listed</td>
<td>Cheese – nat &amp; proc</td>
<td>Domestic &amp; export</td>
</tr>
<tr>
<td>DFMC</td>
<td>Supply coop</td>
<td>Fresh milk</td>
<td>Domestic</td>
</tr>
<tr>
<td>Fonterra (MDP)</td>
<td>Foreign owned</td>
<td>Fresh milk &amp; products</td>
<td>Domestic</td>
</tr>
<tr>
<td>Lion</td>
<td>Foreign owned</td>
<td>Fresh milk</td>
<td>Domestic</td>
</tr>
<tr>
<td>Norco</td>
<td>Integrated coop</td>
<td>Fresh milk, ice cream</td>
<td>Domestic &amp; ltd export</td>
</tr>
<tr>
<td>Murray Goulburn</td>
<td>Integrated coop</td>
<td>Fresh milk, cheese &amp; powders</td>
<td>Domestic &amp; export</td>
</tr>
<tr>
<td>Parmalat</td>
<td>Foreign owned</td>
<td>Fresh milk</td>
<td>Domestic</td>
</tr>
</tbody>
</table>

* Use of NSW milk

Figure 3: Estimated NSW milk intake shares by company 2013/14

Source: Dairy Australia, Freshagenda
The processing and manufacturing sector (contd.)

- The introduction of tier 2 milk – lower prices for “surplus” milk was the response to this uncertainty for the major milk processors, attempting to manage their exposure to high-priced milk in Queensland and NSW, and the shifts in market access, particularly associated with private label supply contracts.

- This has had major implications for the farm sector, and DFMC in particular, whose suppliers have borne the brunt of the tier 2 pricing approach from Lion. This has contributed to the erosion of DFMC milk intake in NSW as indicated in figure 4.

- The awarding of 10-year Coles private label fresh milk contracts to Norco and Murray Goulburn (MG) in early 2013 was a significant game changer for NSW. With the changeover scheduled for July 2014, Norco and MG in particular have been investing in fresh milk capacity, with the greater certainty provided by the long-term agreement.

- MG is establishing a $60m high-speed milk processing factory outside Sydney to service the Coles contract, the largest investment in NSW for at least a decade. MG’s foray into new areas of NSW with an uncapped offer to farmers for supply is a significant change for the NSW processor landscape.

- Norco has also invested $6m in improved processing plant.

- There is a significant use of milk by “boutique” processors in the Sydney metropolitan area estimated at 100 million litres per annum. A large proportion of this milk is currently sourced from Victoria, and does not appear in industry statistics.
The NSW dairy industry in 2014

The market for NSW milk

- Local drinking milk is the key market for the NSW dairy industry, accounting for an estimated 68% of the 2012/13 production.
- In 2013, sales of drinking milk within NSW totalled 737 million litres. The vast majority (84%) of these sales were as fresh white milk, with UHT products accounting for 10% of sales and flavoured products around 6%.
- Annual average growth in NSW milk sales has averaged 1.5% since 2005/06.
- Approximately 51% of NSW milk sales were through supermarkets in 2013. The importance of the supermarket channel varies by type, with UHT products having the highest dependence on the supermarket sales, and flavoured fresh milk the lowest.
- Private label – or retailer products – tend to have a higher share of the supermarket channel in NSW than nationally. In 2012/13, private label brands accounted for 59% of supermarket milk sales in NSW, compared to 52% for the whole of Australia.
- The greater share of private label milk sold in NSW has led to average retail prices for fresh white milk being lower than in other key states such as Victoria, reducing margins for processors who generally pay a higher price for milk sourced in NSW.

Figure 5: NSW milk sales shares by type & channel - 2013

Figure 6: Average fresh white milk price ($/l)

Source: Dairy Australia
The NSW dairy industry in 2014

The market for NSW milk

• Around 32% of annual NSW milk output is converted into shelf-stable commodities such as cheese and condensed milk, as well as fresh products such as yogurts.

• An estimated 20% of the state’s annual milk production is sold domestically as dairy products – mainly cheese, ice cream and other fresh products such as yoghurt.

• While the ABS records a significant number of “businesses engaged in dairy manufacturing”, the two major manufacturing sites within the state are Bega Cheese in the southern region and Norco Cooperative in the north.

• Bega is one of Australia’s leading domestic cheese brands, and the company has also secured a 10-year contract to supply private label cheese to Coles supermarkets nationally. Much of Bega’s processed cheese is sourced from the Bega Valley, while natural cheese is sourced from the Bega Valley and interstate for processing, cutting and packing at the Bega site.

• Norco Cooperative produces ice cream – bulk, tub and stick lines – and yoghurt at its Lismore factory for domestic and export customers.

• There are a number of smaller specialty cheese manufacturers throughout the state – which are largely focussed on local regional markets.
The NSW dairy industry in 2014

The market for NSW milk

- An estimated 12% of NSW milk production was exported in 2012/13. Since 2009, the volume of dairy exports from the state has declined 25% while the value has declined by 15% in nominal terms.
- NSW dairy exports totalled almost 34,000 tonnes in 2013, valued at $146 million (including mixtures). Cheese accounted for just under 45% of export value.
- The next largest export category in 2013 was mixtures – dairy products combined with other non-dairy ingredients – valued at almost $36 million or 24% of total export value. When mixtures are excluded, Japan was the largest market for NSW exports, accounting for almost 24% of sales value with $23 million of cheese sold to this market in 2013, and another $4 million in condensed milk sales.
- However, including mixtures results in New Zealand being the largest market – accounting for 21% of value compared to 20% for Japan. NZ is a significant buyer of the state’s ice cream and mixture exports.
- Note: While mixtures are included for completeness, further analysis of this category in terms of NSW industry exports is problematic given the variation in formulation and dairy product content, and the fact that dairy ingredients may be sourced from other regions or even from imports and subsequently exported from the state.
- Bega and Norco are the responsible for the bulk of exports from NSW. Richmond Dairies utilises the region’s excess fat in frozen cream exports.
The NSW dairy industry in 2014

Demand and supply trends

• The falling milk supply from within NSW since 2000, due to the after effects of industry deregulation and drought impact, as well as changes in processing sector ownership has meant a loss of manufacturing and export infrastructure from the state. This has increased the NSW dairy industry’s reliance on the liquid milk market.

• Adding to this trend in drinking milk orientation has been the loss of milk production from the south-east Queensland industry. As indicated in figure 2, Queensland’s milk production is effectively 100% used for supplying the state’s drinking milk requirements.

• Since 2010/11, drinking milk processors supplying the south-east Queensland market have increasingly drawn on NSW milk supplies to supplement seasonal lows in milk availability. This is an increasing trend which is raising the exposure of NSW dairy farmers to the local fresh milk market.

• The estimate of NSW milk available to meet the state’s needs as well as supplementing the southern Queensland drinking milk market is overlaid with an estimate of the milk available for fresh milk supply in figure 12. This assumes a significant proportion of the southern region’s milk is utilised for manufacturing other commodities (estimated to be 62% currently).

• As figure 12 indicates, for several months each year fresh milk demand is above the estimated milk available in NSW, and needs to be supplemented with Victorian supplies.

• In reality, the drinking milk needs of Queensland and NSW processors are increasingly managed across the three eastern seaboard states as indicated on page 20. Similar to much trade in many commodities, the eastern seaboard doesn’t recognise state borders. In 2000 the Australian dairy industry became truly a national one and the flow of milk demonstrates this.

• Indicative freight costs are also provided which indicate the costs of significant milk movements across and within NSW.
The NSW industry context

Use of NSW milk

1. In the north, the NSW dairy industry is linked to the southern Queensland drinking milk market through processor sourcing strategies.

2. Servicing Australia’s largest metropolitan market in Sydney, the NSW dairy industry also services a major growth corridor from the central and north coast to the Gold Coast.

3. In the south, the NSW dairy industry is linked to the northern Victorian exporting region, as milk is utilised for manufacturing long shelf-life products such as cheese and milk powders.

Supplementing NSW milk

4. Increasingly, Victorian milk is being diverted to augment NSW and southern Queensland supplies needed to service the fresh drinking milk market.

Freight costs can be highly variable based on tanker capacity, pick-ups and utilisation – the costs for major milk movements are indicative.
The NSW dairy industry in 2014

Influences on farm profitability

• Farmgate prices in NSW vary significantly between regions. While the averages shown in figure 13 indicate NSW sits between Queensland and Victoria in terms of farmgate returns, the reality is that farms in the southern region would receive prices close to those received in Victoria. Farms in the north of the state would be receiving prices for their milk much more in line with Queensland prices.

• As greater volumes of NSW milk are drawn into the southern Queensland fresh milk market, these higher prices will tend to have a greater influence on the state’s farmgate returns.

• At the same time, this usage of milk places a greater requirement for year-round flat milk production, which is in line with fresh milk market requirements.

• Feed – including grain, supplements and fodder – remain the largest and most variable input cost for dairy farms. In NSW feed grain prices have typically tracked Queensland prices closely.

• Over the past 12 months, as conditions have become drier in Queensland, grain prices in NSW have risen less than for northern dairy farmers (figure 14).

• Proximity to grain growing regions is a positive for farmers in inland NSW in terms of access and logistics costs compared to coastal farmers and farmers in southern Victorian regions.
The NSW dairy industry in 2014

Influences on farm profitability

• Northern NSW dairy farmers have good access to supplies of summer crops (figure 15), while pasture hay is also priced competitively for dairy farmers across NSW.

• However, as figure 16 indicates, the dairy industry faces significant competition for grain from intensive poultry and pig users, as well as beef producers within the state.

• Electricity costs represent 2 cents per litre according to ABARES figures, and appear to have risen more quickly in NSW (figure 17).

• The 2012/13 NSW Farm Monitor indicates 12% of farms are concerned about future access to water. The security and usage of water varies across the state (see sub-regional profiles in Appendix 1).
The NSW dairy industry in 2014

Supply arrangements for farmers in NSW

In NSW as in other Australian regions, and most developed dairying regions around the world, there are generally exclusive supply arrangements between individual farmers and a single processor.

Traditionally this has allowed dairy companies to specify and differentiate quality and delivery parameters based on their product requirements. It has also given farmers the ability to deliver all their milk to a single buyer.

In NSW, drinking milk processors such as Lion and Parmalat, with generally much tighter requirements for quality and daily intakes have legally binding contracts with their suppliers, and allow for longer-term agreements on price. They also tend to specify the volume of milk to be supplied.

Manufacturers such as Bega and Murray Goulburn tend to have open-ended agreements with farmers that can be terminated by farmers and do not specify the volume to be delivered.

While exclusive supply arrangements have been the norm, some larger suppliers have negotiated delivery of their milk to different processors by segregating supply and maintaining separate infrastructure for pick-up.

The ability of farmers to sell to multiple buyers is being explored by Milk2Market, which has developed a model for matching buyers and sellers of milk. In theory this would allow farmers to sell parts of their milk profile to buyers with different requirements and market exposures. To date the concept has received limited support.

<table>
<thead>
<tr>
<th>Supply arrangement</th>
<th>Conditions</th>
</tr>
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<tbody>
<tr>
<td>Bega Agreement</td>
<td>Agreement to supply, No specified volume limits</td>
</tr>
<tr>
<td>DFMC Contract</td>
<td>1, 3 and 5 year terms available, Contracted volumes, dependent on regional intake and Lion requirements</td>
</tr>
<tr>
<td>Fonterra (MDP) Agreement</td>
<td>Agreement to supply, No specified volume limits</td>
</tr>
<tr>
<td>Lion Contract</td>
<td>Multiple length contracts, Specified supply volumes</td>
</tr>
<tr>
<td>Norco Agreement</td>
<td>Cooperative membership, Agreement to supply, No specified volume limits</td>
</tr>
<tr>
<td>Murray Goulburn Agreement</td>
<td>Cooperative membership, Agreement to supply, No specified volume limits</td>
</tr>
<tr>
<td>Parmalat Contract</td>
<td>Multiple length contracts, Specified volumes</td>
</tr>
</tbody>
</table>
3. Where to from here

A base case scenario
The supply:demand scenario

Outlook based on current trends

• NSW milk production is projected to grow 6% over the next five years, to almost 1.1 billion litres by the end of 2018/19. This assumes:
  • Northern NSW output stabilises at 2013/14 volumes
  • Production in the central and southern regions grows by 2% annually after 2014/15
  • These assumptions are well above trend for the northern and central regions, and on trend for the south.

• Queensland milk output is projected to stabilise at 2013/14 levels over the outlook period, again well above current trend for the last few years.

• Demand for fresh drinking milk has been projected based on Australian Bureau of Statistics population projections and static per capita consumption. For NSW, this sees fresh milk demand increase by just under 5% to 2018/19 while Queensland requirements increase by 8%.

• Assuming the milk used for manufacturing in the southern region falls from an estimated 62% to 60% over the 5-year period, there is likely to be an increasing deficit of milk available.

• Based on these assumptions, NSW “available” milk supply will be less than fresh milk demand for 7 months in 2014/15, with the number of months in deficit increasing over the next five years. By 2018/19 the net annual shortfall is estimated at around 100 million litres.

• This would be filled from the existing southern NSW region, potentially impacting on the manufacturing operations of Bega Cheese and Norco Cooperative within the state, and drawing milk from the northern Victorian manufacturing and exporting region.

Source: Dairy Australia, Freshagenda
4. SWOT analysis

- Farm
- Processing
SWOT analysis

Highlights

• An analysis of the strengths, weaknesses, opportunities and threats (SWOT) for the NSW dairy industry has been developed for both the farm and processing sectors (pages 26 and 27).

• These analyses highlight a number of characteristics of the NSW dairy supply which give the industry some competitive advantages in supplying domestic and export markets.

• The competitive advantages suggested by the SWOT highlight a number of new and expanded opportunities for NSW dairy in both domestic and export markets.

• The NSW dairy industry has a significant role in balancing fresh milk demand and supply requirements across the eastern seaboard states, particularly if the southern Queensland industry cannot keep pace with the region’s fresh milk demand.

• The NSW industry already has an established cheese and ice cream export base. The SWOT analyses suggest the competitive advantages of the industry in terms of year round and regionally diverse milk production may also be favourable for the export of fresh products requiring consistent year-round production, such as liquid milk in fresh, ESL or UHT form.

• There are, however, threats identified in the SWOT including significant competition for land, water and feed resources from other agricultural industries and the mining industry.

• In terms of milk sourcing strategies, the higher cost of milk inputs and lack of scale in dispersed NSW regions is a deterrent to manufacturing within the state.

Competitive advantages for NSW dairy

• Cost-competitive year-round production compared to Queensland
• Regions with scope to expand efficiently
• Scope for development of large-scale farming operations
• Proximity to grain-growing regions and feed supplies
• Well-developed milk processing capacity
• A strategic region for eastern seaboard milk supply management
• Proximity to the largest metropolitan domestic market in Sydney and coastal growth corridors connecting Newcastle and southern Queensland.
### SWOT analysis – farm sector

An analysis of the strengths, weaknesses, opportunities and threats for the NSW dairy industry.

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
</table>
| - Regional diversity – different climate, different market roles  
- Access to Queensland/NSW feed supplies – particularly inland/west  
- Supplying the largest metropolitan market for milk  
- Flat supply of milk cheaper than Queensland so this is increasing access to southern Queensland market  
- Highly fertile regions along coast and in Hunter Valley  
- Large and efficient producers in southern irrigated regions. | - Farm cost base/lack of scale in fresh milk regions  
- Lack of enterprise culture  
- Limited support infrastructure/services – private/public, scattered sub-regions make critical mass challenging  
- No growth culture and experience – capped for many years in central and north  
- Exclusive supply arrangements limit growth and risk diversification opportunities  
- Limited ability to handle volatility of climate and markets  
- Caution from finance sector  
- Lack of cohesive state representation. |

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
</table>
| - Successful farm models to benchmark from  
- Improvements in irrigation infrastructure – MDB plan implementation  
- More large-scale farms that can supply year-round markets  
- Improved logistics for delivery of milk to markets – domestic and export  
- Increased competition for milk and opportunity to grow with entry of Murray Goulburn  
- New large-scale entrants being established  
- New business models developed to link to diversified markets. | - Competition from Victorian producers  
- Growth of industries that will compete for grain (chicken and pig)  
- Uncertainty of water access – competition from mining in the Hunter Valley  
- Urban competition for land and water – particularly in coastal regions  
- Heifer exports reducing herd capacity  
- Increasing community concern about production systems  
- Increased infiltration of ESL/UHT milk to replace local fresh  
- Climate variability – threat of flooding on north coast. |
## SWOT Analysis – Processing Sector

An analysis of the strengths, weaknesses, opportunities and threats for the NSW dairy industry.

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
</table>
| • The largest metropolitan region in Australia to service – Sydney metropolitan markets – as well as expanding population regions along northern and southern coasts  
• Relatively flat milk supply year round  
• Access to alternate market demand (SEQ) as well as supply (Nth Vic)  
• State of the art facilities – milk, processed cheese, ice cream. | • High cost supply chain – logistics in balancing milk, distribution costs  
• Low margin region – higher farmgate price and relatively low margin for fresh milk  
• Slow to no growth in fresh milk market  
• Higher proportion of private label products in market mix  
• Cost of shipping – limited infrastructure at port  
• Excess capacity for fresh milk processing – limited alternate manufacturing capacity  
• Limited experience/exposure to export markets for some players. |

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
</table>
| • Larger route trade distribution network – opportunity to reduce costs (ESL)  
• Regional niche brands that may engage community  
• Marketing or product innovations to restore profitability  
• Cheaper air freight rates from Sydney airport for niche chilled product  
• Demand for dairy products globally is strong  
• Sound food safety/quality assurance systems  
• Good reputation for Australia/NSW products  
• Technologies to reduce supply chain costs. | • Retailers seeking to take greater control over fresh milk supply chain  
• Focus on value will remain – limits ability to restore profit margins  
• Fragmentation/lack of capacity to access global markets |
5. Global dairy market

Diversified market opportunities
Market opportunities

Overview

• The following section provides a global market overview, as well as an assessment of the three products – identified by the SWOT and specified in the project brief – the opportunities and barriers. Profiles of major competitors are also included in this section.
• Milk in liquid form has been identified by the SWOT, while whole milk powder (WMP) was specified as a product to explore as part of the project brief. Linked to WMP demand, is the market for infant milk formula (IMF).
• WMP and IMF are in high demand, particularly from China. A great deal of interest has already been identified in establishing WMP and IMF supply chains in NSW, other Australian regions and competitor producing countries.
• Drinking milk products were identified through the SWOT as a product for which NSW may enjoy a competitive advantage due to its ability to produce year round at a relatively competitive price – given its farming systems and availability of processing infrastructure.
• For each of these products the top markets were identified and ranked as prospects based on the current volume and trend in import demand in the table. More detail on trends in these markets is provided on page 36.
• The NSW dairy industry already has a well-established export base for cheese and ice cream, and therefore these products have not been assessed in detail, although an overview for cheese is provided on page 38.

Product and market opportunities

<table>
<thead>
<tr>
<th></th>
<th>WMP</th>
<th>Milk</th>
<th>IMF</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>XX</td>
<td></td>
<td>XX</td>
</tr>
<tr>
<td>Singapore</td>
<td>XX</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>XX</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td>XX</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Taiwan</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
</tr>
<tr>
<td>Thailand</td>
<td>XX</td>
<td></td>
<td>XX</td>
</tr>
<tr>
<td>Malaysia</td>
<td>XX</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Sth Korea</td>
<td>X</td>
<td>XX</td>
<td>X</td>
</tr>
<tr>
<td>Philippines</td>
<td>XX</td>
<td>XX</td>
<td></td>
</tr>
</tbody>
</table>

Indicative margin analysis

• A marginal band analysis between the NSW farmgate price of milk and the price the Chinese market is prepared to pay for milk in product form has been included in this section on page 37.
• While IMF is one of the product forms under review, the diversity of formulations make the provision of an indicative cost unfeasible.
Global dairy market

Overview

• Milk is produced in most countries around the world - mostly for domestic consumption as fresh milk and other products. Traditionally only around 7% to 8% of milk production is internationally traded, mostly as shelf-stable products such as milk powders, cheese and butter.

• Rising incomes and increasingly westernised diets continue to drive demand for dairy products, particularly in developing economies and regions such as China and south-east Asia.

• Many of these countries do not have sufficient local production to meet growing consumption needs due to unsuitable climate, limited natural resources and inadequate infrastructure.

• This has led to an expansion in world dairy trade, driven mostly by a massive increase in demand from China – now the world’s largest dairy importer.

• Supply from competitor countries such as NZ and the US has expanded with this trade. The European Union is also increasing production, and will remove restrictive production quotas in 2015.

• However, supply is still projected to struggle to meet demand over the next decade, given expectations of ongoing demand growth, and the constraints on production due to climate variability and resource constraints.

• With global dairy market balance continuing to be heavily influenced by small changes in supply and demand, international market returns will continue to be volatile.
Global dairy market

Whole Milk Powder (WMP)

• WMP is now the most heavily traded dairy commodity globally, largely thanks to the huge growth in Chinese demand since 2008.
• NZ dominates WMP trade, aided by a favourable free trade agreement with China. It is estimated that more than 60% of NZ’s annual milk production is used to manufacture WMP, and this scale and the continued growth in milk supply has allowed for significant investment in large and efficient plants.
• NZ exports accounted for well over 50% of WMP trade in 2012 and over 60% for 2013 (for the year to October/November).
• China accounted for an estimated 43% of total WMP imports in 2013, where it is used in IMF, growing up milk powders and for reconstituted liquid milk products, ice cream and bakery.
• Algeria has been a large, although variable market for WMP, largely serviced by EU exporters.
• While Venezuela is also a large WMP purchaser, it is largely serviced within the Latin American region by exporters such as Argentina and Uruguay.
• Given the dominance of a single buyer and seller, global WMP prices are highly responsive to changes in operating conditions for either China or NZ.
• Looking ahead, Chinese WMP demand is expected to stabilise, as the trend toward lower cost ingredients such as SMP, whey powders and vegetable fats and proteins continue.
Global dairy market

Packaged or bulk milk

- Liquid milk is a lightly traded commodity, given the costs of transporting a product that is mostly water, and the logistical issues that can impact a short shelf-life product.
- Barriers to trade tend to be higher for liquid milk, as governments seek to protect local industries.
- Fresh milk shipments have been trialled by a number of local companies. Currently Norco is shipping product under an improved clearance regime that reduces shipment time significantly. However, with a landed cost estimated at above US$4/l, this trade is likely to remain niche.
- ESL – extended shelf-life milk – extends the life of milk from 40 to 90 days, while still requiring chilled distribution.
- UHT allows milk to be distributed under ambient conditions with a shelf life of many months, and so lends itself to lower cost ocean shipment.
- In 2013, global exports of milk were valued at just over US$1 billion. There is extensive re-exporting within Asia, making import and export numbers difficult to reconcile.
- Based on export data, milk trade has grown 52% in the past five years, while value has grown 26%, as shown in figure 24.
- NZ is the major exporter of liquid milk, followed by the EU and Australia. EU exports have declined over the past few years.
- Transport, concentration and treatment technologies will continue to improve the economics of liquid milk trade; however, the market is expected to remain focussed on wealthier consumers who prefer a fully imported product as a guarantee of safety and quality.
Global dairy market

Infant Milk Formula (IMF)
• IMF is a value-added product that incorporates varying amounts of dairy ingredient, including WMP. It is designed as a nutrition source for babies and infants.
• While the volume of IMF imports has declined by 4% between 2009 and 2013, the value of imports increased 72% in US dollar terms. Chinese buyers appear to have stocked up in advance of new regulations, with imports dropping rapidly in recent months.
• This reflects a trend toward trade in IMF ingredients that have been blended within importing markets rather than the finished product. Products that are traded have tended to be higher-end.
• In China, the melamine incident and other food contamination scares have increased demand for imported IMF products. It is estimated that foreign brands account for over 60% of IMF market share and over 80% of the high-end IMF market in China.
• In an effort to improve both the safety of domestic product and a growing trade in counterfeited imports, the Chinese government has tightened regulation of local producers and importers. The ability of the Chinese government to clean up local production and restore consumers’ faith in domestic product will have a large bearing on the future outlook for imported IMF products.
• In the longer term, an aging population in China may reduce some demand for IMF, although the ongoing development of life-stage powders could offset this.
Import market trends

- The following table outlines the top 10 market opportunities in the product categories identified for the NSW dairy industry. The markets were ranked based on market size and proximity/accessibility. It highlights the dominance of China in these product categories, demand into other markets such as Singapore. Hong Kong would also be linked ultimately to the Chinese market as a significant volume of processing takes place in these countries for re-export within the region.

- Care needs to be taken when comparing product returns across countries, as within broad imported product groups, specifications can vary significantly. For example, the Hong Kong price recorded for WMP is unlikely to relate to base WMP.

<table>
<thead>
<tr>
<th></th>
<th><strong>WMP</strong></th>
<th></th>
<th><strong>Milk</strong></th>
<th></th>
<th><strong>IMF</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Vol (t)</td>
<td>$US/t</td>
<td>Vol trend</td>
<td>Val trend</td>
<td>Vol (t)</td>
</tr>
<tr>
<td>China</td>
<td>619,397</td>
<td>4,240</td>
<td>249%</td>
<td>516%</td>
<td>184,567</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>74,143</td>
<td>15,835*</td>
<td>127%</td>
<td>259%</td>
<td>70,724</td>
</tr>
<tr>
<td>Singapore</td>
<td>89,681</td>
<td>4,024</td>
<td>21%</td>
<td>74%</td>
<td>39,414</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>58,792</td>
<td>4,235</td>
<td>5%</td>
<td>74%</td>
<td>6,596</td>
</tr>
<tr>
<td>Indonesia</td>
<td>50,750</td>
<td>4,724</td>
<td>1%</td>
<td>56%</td>
<td></td>
</tr>
<tr>
<td>Taiwan</td>
<td>52,353</td>
<td>4,236</td>
<td>93%</td>
<td>270%</td>
<td>22,467</td>
</tr>
<tr>
<td>Thailand</td>
<td>32,576</td>
<td>4,201</td>
<td>38%</td>
<td>147%</td>
<td>2,138</td>
</tr>
<tr>
<td>Malaysia</td>
<td>19,985</td>
<td>4,178</td>
<td>-32%</td>
<td>-3%</td>
<td>15,510</td>
</tr>
<tr>
<td>Sth Korea</td>
<td>1,799</td>
<td>4,299</td>
<td>55%</td>
<td>119%</td>
<td>11,261</td>
</tr>
<tr>
<td>Philippines</td>
<td>28,634</td>
<td>2,578</td>
<td>-16%</td>
<td>1%</td>
<td>56,204</td>
</tr>
</tbody>
</table>

Notes: Volume and unit value for 2013 calendar year, trend is the change in import volume and total value of imports between 2009 and 2013

Source: Dairy Australia
Export market margin analysis

- The project brief specified a marginal band analysis be developed for WMP as a potential diversified market opportunity for the NSW industry, based on export to China. An analysis of UHT milk is also provided for comparison.

### WMP

<table>
<thead>
<tr>
<th></th>
<th>Indicative margin (A$/l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>As WMP is typically used an ingredient in IMF, therefore no retail price is provided in this analysis</td>
<td>Retail price: n.a.</td>
</tr>
<tr>
<td>Market is based on export to China – shipping from Sydney to Shanghai</td>
<td>Import price: 0.54</td>
</tr>
<tr>
<td>WMP commodity price assumed to be US$4,000/t – close to the recorded average import price over the past four years.</td>
<td>Ocean freight: 0.01</td>
</tr>
<tr>
<td>Shipment assumed to be in 20 ft container with 27t capacity.</td>
<td>Duty &amp; VAT: 0.01</td>
</tr>
<tr>
<td>Farmgate price is a residual of import price and costs and is <strong>below</strong> the expected average <strong>NSW farmgate price</strong> for <strong>2013/14</strong> of <strong>52-53cpl</strong>.</td>
<td>Processing cost: 0.11</td>
</tr>
<tr>
<td></td>
<td>Transport: 0.01</td>
</tr>
<tr>
<td></td>
<td>Factory gate: 0.44</td>
</tr>
</tbody>
</table>

### UHT/ESL milk

<table>
<thead>
<tr>
<th></th>
<th>Indicative margin (A$/l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retail price for Devondale Australian UHT – online shopping Shanghai, June 2014</td>
<td>Retail price: 2.87</td>
</tr>
<tr>
<td>Freight estimate is difference between Australian export fob from Australia and average import price for China</td>
<td>Import price: 1.35</td>
</tr>
<tr>
<td>Farmgate price is a residual of import price and identified costs, and is <strong>above</strong> the expected <strong>NSW farmgate price</strong> for <strong>2013/14</strong> of <strong>52-53cpl</strong>.</td>
<td>Ocean freight (incl duty &amp; VAT): 0.26</td>
</tr>
<tr>
<td></td>
<td>Processing cost: 0.35</td>
</tr>
<tr>
<td></td>
<td>Transport: 0.12</td>
</tr>
<tr>
<td></td>
<td>Factory gate: 0.62</td>
</tr>
</tbody>
</table>
Import market trends

Cheese

<table>
<thead>
<tr>
<th>Vol (t)</th>
<th>$US/t</th>
<th>Vol trend</th>
<th>Val trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>236,191</td>
<td>4,728</td>
<td>28%</td>
</tr>
<tr>
<td>Korea, South</td>
<td>77,368</td>
<td>4,736</td>
<td>58%</td>
</tr>
<tr>
<td>China</td>
<td>47,316</td>
<td>4,883</td>
<td>179%</td>
</tr>
<tr>
<td>Taiwan</td>
<td>25,277</td>
<td>4,806</td>
<td>37%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>21,422</td>
<td>4,549</td>
<td>53%</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>13,859</td>
<td>6,542</td>
<td>4%</td>
</tr>
<tr>
<td>Singapore</td>
<td>12,828</td>
<td>6,794</td>
<td>39%</td>
</tr>
<tr>
<td>Malaysia</td>
<td>16,216</td>
<td>5,094</td>
<td>69%</td>
</tr>
<tr>
<td>Philippines</td>
<td>15,827</td>
<td>3,866</td>
<td>3%</td>
</tr>
<tr>
<td>Thailand</td>
<td>9,068</td>
<td>5,396</td>
<td>79%</td>
</tr>
</tbody>
</table>

Notes: Volume and unit value for 2013 calendar year, trend is the change in import volume and total value of imports between 2009 and 2013.

Source: Dairy Australia

• Cheese is the most important current NSW dairy export, with Japan as the largest market.
• Recent trade agreements with Japan and South Korea provide some further scope for cheese exports, although both are relatively mature and slow-growing markets for cheese.
• Chinese cheese imports have grown strongly between 2009 and 2013, albeit from a lower base. Greater urbanisation, increasingly western diets and the influence of foreign Quick Service Restaurant chains featuring burgers and pizza offerings are factors that are likely to increase demand for cheese.
• Both the EU and US are major producers of cheese, primarily for their domestic markets. However, both are major exporters of dairy product.
Barriers to trade

• Australian dairy export opportunities traditionally have been constrained by the high levels of border protection and regulation that many countries impose in order to protect their domestic dairy farming and processing industries.

• While the imposition of trade barriers is generally less pronounced in traditional milk-deficit markets within Asia and the Middle East, even in these regions countries can selectively restrict the import of certain dairy products (particularly fresh milk and milk powders) in order to support domestic farming and milk recombining.

• These barriers can be both direct - high tariffs, import quotas - or indirect - import licensing, factory registration. In practice these barriers shape both the observed mix of dairy product trade into particular markets and the future opportunities open to Australian dairy exporters.

• The trade policy framework facing Australian dairy exporters is undergoing considerable change at present. Australia and many Asian governments have recently entered into, or are moving to finalise, a range of bilateral and regional trade agreements.

• As these agreements phase in some - like the recent bilateral FTA with Malaysia (MAFTA) or the broader joint agreement with NZ and ASEAN (AANZFTA) – they will enhance Australia’s export opportunities in key Asian markets.

• In contrast, some agreements to which Australia is not a party will act to reduce the relative competitiveness of Australian dairy exports in different markets and will restrict our industry’s ability to take advantage of rising Asian and Middle Eastern demand for dairy products.

• The following section summarises the trade policy environment that is likely to face Australian dairy exports of the products under review - liquid milk, WMP and IMF – in the next 5 years.

• In addition, preliminary work undertaken by Dairy Australia has sought to quantify the impact of technical barriers to trade (TBT), and rank markets accordingly.

• Based on this preliminary assessment, the number of TBTs for each of the target markets is provided – with a higher number indicating a greater potential for trade to be restricted or higher costs imposed through production requirements, shipment compliance and administration. Lower numbers indicate fewer restrictions which would hamper trade or add to costs of selling into the target market.

• The Dairy Australia work is seeking to accurately identify and quantify these TBTs, giving a clearer picture of the commercial barriers to trade presented by each markets.
## Target markets

<table>
<thead>
<tr>
<th>Market</th>
<th>TBT rating</th>
<th>Technical and policy barriers to trade</th>
</tr>
</thead>
</table>
| **China** | 19         | • China applies relatively low barriers to dairy trade. Tariffs on most major dairy lines range between 5% (on IMF) to 15% (for liquid milk).  
• Besides direct border measures, China requires dairy exporters to be registered by its China Certification and Accreditation Administration (CNCA) in order to enter and sell product in China. In the case of IMF, CNCA accreditation extends to both processing facilities and to the product brands that are approved for retail sale. China is currently undertaking significant rationalisation of its import registration procedures, which will cloud short-term market development options for some exporters. Formula exporters must also provide evidence that their product has been successfully tested for Entrobacter Sakasaki.  
• An emerging challenge to Australia’s export positioning in China is the absence of a preferential trade agreement similar to the one NZ has secured in this major market. Under its FTA, tariffs on NZ dairy exports to China are being progressively phased out. Most NZ dairy products will enter China duty-free from 2020 and many lines will enter duty free from 2017.  
• In the case of liquid milk and milk powder, special safeguard (SSG) provisions apply to the NZ-China trade. These safeguards fix the volume of NZ product that can enter at lower duty rates in any year - with any additional trade volumes facing the higher general tariff rate. The 2014 SSG import trigger levels for milk and milk powder are 1.74 Million litres and 127Kt respectively. |
| **Hong Kong** | 12         | • Hong Kong allows the duty-free entry of all dairy products. |
| **Singapore** | 7         | • With no substantive domestic supply, and a large, export-orientated dairy blending and re-processing sector Singapore allows the free entry of all dairy products. |
## Target markets

<table>
<thead>
<tr>
<th>Market</th>
<th>TBT rating</th>
<th>Technical and policy barriers to trade</th>
</tr>
</thead>
</table>
| Sri Lanka | 13         | • Sri Lanka applies a general tariff of 30% on most dairy product imports – the exceptions being bulk milk powders such as WMP and whey powder (which attract 15% duty) and casein (which enters duty free).  
  • Infant’s milk food preparations can enter this market at a low duty rate of 5% provided the Sri Lankan Director of Health Services has previously approved them.  
  • Sri Lanka also imposes a range of additional taxes and charges that can affect the economics of dairy trade. These include an **Import Surcharge** (20% of the prevailing tariff) and a **Cargo Levy** (1% of import c.i.f. value). The country also requires certification for certain dairy products that they do not contain any genetically modified materials or ingredients. |
| Indonesia | 20         | • While Indonesia ratified AANZFTA in May 2011, it has taken some time for it to legally enact all the tariff commitments it made under this agreement. At present, Indonesian tariffs on dairy product imports from Oceania are low – 5% on liquid milk, WMP and IMF preparations and 10% for yoghurts. While tariffs on most dairy products are scheduled to phase out by 2025, tariffs on liquid milk and milk powders will remain in force, but at a lower rate from 2015 of 4%.  
  • Indonesia also requires halal certification for all dairy product shipments to its market. |
| Taiwan    | 11         | • Taiwan imposes a range of specific rate or ad valorem tariffs on dairy imports. These tariffs cascade, with lower rates being imposed on bulk whey and milk powder imports that are used as ingredients by local processors (15%) and higher tariffs imposed on more processed product lines that are put up for direct sale.  
  • **Liquid milk** imports attract a specific rate tariff of 18.4 TW Dollar per kg (which equates to around 66c/litre at recent exchange rates).  
  • Tariffs on milk powders for IMF and other non-standard dairy food preparations vary considerably depending on product composition (ranging from a low of 7.5% to 32.5%). |
**Target markets**

<table>
<thead>
<tr>
<th>Market</th>
<th>TBT rating</th>
<th>Technical and policy barriers to trade</th>
</tr>
</thead>
</table>
| Malaysia | 9          | • Malaysia historically has taken a split approach to border protection for dairy. It has supported local farmgate milk production through strong regulatory control of imports of liquid milk and cream. But it allows relatively free entry for other dairy products/ingredients.  
• Malaysia recently signed two separate trade agreements with Australia – the bilateral MAFTA and the broader AANZFTA that includes NZ and other ASEAN members. Under these deals Malaysia allows free access for all dairy imports from Australia and NZ other than liquid milk, cream and unsweetened concentrated milks.  
• In the case of milk, a general import tariff of 20% applies. However, trade in milk remains subject to strict import licensing controls that are operated by Malaysian government agencies. Licensing greatly impacts the pattern and viability of trade in liquid milk (e.g. traditionally, only shipments of bulk milk to firms with local processing capacity have been approved). There are now four separate tariff rate quotas (TRQs) operating in conjunction with Malaysia’s import licensing arrangements for milk.  
• All these TRQs, and the associated import licensing rules, will remain in force until 2020 or beyond. The country-specific MAFTA quota volumes will expand by 3–9% annually, while MNZFTA quotas will grow by 3.5% annually. The AANZFTA quotas will also expand by 1% annually.  
• Significantly, the MAFTA quota explicitly allows for 35% of the available quota volume to enter as consumer pack milk and with less rigid licensing rules. This represents an important market bridgehead for Australian firms, given the planned expansion in annual quota volumes. |
| Japan    | 9          | • The recently negotiated Japan Australia Economic Partnership Agreement (JAEPA) was recently concluded. The agreement was disappointing for the industry, particularly in regard to fresh cheese.  
• Natural cheese for processing to grow from 4,000 tonnes to 20,000 tonnes over 20 years (Australia will also continue to have access to Japan’s global quota for cheese under which around 30% of Australia’s cheese already enters duty free). Cheese for shredding to grow from 1,000 to 5,000 tonnes over 10 years. Fresh cheese tariffs remain at 29.8%  
• Immediate elimination of tariffs of up to 8.5% on casein, lactose, albumen, and milk protein concentrates with trade worth $53 million in 2013. JAEPA does not provide specific preferential access for Japan’s most sensitive dairy products (fresh milk, milk powders, butter and dairy spreads). |
### Target markets

<table>
<thead>
<tr>
<th>Market</th>
<th>TBT rating</th>
<th>Technical and policy barriers to trade</th>
</tr>
</thead>
</table>
| Thailand   | 14         | • Thailand has followed the common Asian model of protecting local dairy farming through strict limits on liquid milk imports, low tariffs on bulk ingredient products and higher tariffs on more processed and retail product lines. Technical issues around factory inspections and product testing procedures have also effectively restricted the volume of trade in certain products at different times.  
• Australia and Thailand are party to two FTAs – the bilateral TAFTA (2005) and the broader AANZFTA (2010). Under these agreements Australian exports of IMF to Thailand can enter duty free. The entry of WMP is subject to tariffs of between 5% and 18%, depending on end use and pack size, but these tariffs are scheduled to end by 2020.  
• The trade in liquid milk and SMP remains subject to quota restrictions. Australia has a small tariff rate quota for liquid milk under TAFTA. This allows for the entry of 140.4 tonnes of milk at a duty rate of 11% in 2014. Imports in excess of this amount are subject to a 36% tariff. Both the quota and the tariff on liquid milk exports from Australia are scheduled to operate for the next decade. |
| Philippines| 4          | • As a participant in AANZFTA, the Philippines offers relatively free access for dairy products from Australia and NZ and a small preference in duty rates relative to non-Oceania export suppliers.  
• Liquid milk from Oceania can enter at a 3% duty rate. This tariff will fall to 2% from 2015.  
• The tariff on WMP products is either zero or 1%, while yoghurt imports are subject to duties of 3% or 5%. Imports of filled milks and dairy preparations for IMF attract duty rates of 5% and 3% respectively.  
• Under AANZFTA, tariffs on most dairy products are scheduled to phase out by 2020. |
Target markets

<table>
<thead>
<tr>
<th>Market</th>
<th>TBT rating</th>
<th>Technical and policy barriers to trade</th>
</tr>
</thead>
</table>
| Sth Korea | 11         | • South Korea has traditionally defended its domestic dairy industry through very high tariff and regulatory barriers. In recent years, it temporarily reduced barriers on some import lines in order to secure adequate, reasonably-priced supplies for its domestic market following disease outbreaks and shortages. However, normal Korean dairy tariffs are high.  
• The current non-preferential tariff on liquid milk is 36%. IMF imports face tariffs between 36% and 40%. A small volume of WMP (less than 600 tonnes annually) can enter at a duty rate of 40%. However any additional trade is subject to a prohibitive 176% tariff.  
• Korea has recently signalled its intention to gradually open up its domestic dairy market by entering into parallel trade agreements with three major dairy exporters - the US, the EU and Australia. Under these agreements Korea will progressively phase out tariffs on most dairy products. The projected lead times for this phase out can be very long (e.g. tariffs on liquid milk imports phase out over 20 years).  
• As a transitional measure Korea has created quotas that allow for the duty-free entry of small, but expanding, volumes of specific products. All three exporter partners have quota allocations for the entry of butter, cheese and IMF mixes. The US and EU have also secured quota access for basic milk powders. Australia’s initial quota volumes for cheese and formula are 4,630 and 470 tonnes respectively.  
• Since these quotas will essentially operated by Korean agencies, the extent to which exporters will secure commercial benefits from this quota trade remains unclear at this point.  
• Because of the different signing dates and phase out rates of these three trade agreements – Australia’s FTA was finalised three years after the US and EU deals and has a longer phasing period – over the next decade Australian exports of milk and WMP to Korea will trade with an ongoing tariff disadvantage to US and EU products (e.g. US and EU liquid milk can now enter Korea at a tariff of 29% while Australian product faces a tariff of 35%). However, Australian firms will have a tariff advantage in this market over product from competitors that do not have direct trade agreements with Korea, such as NZ and Argentina. |
Competitor profiles

- The four major world dairy exporters are NZ, the EU, and US, followed by Australia.
- NZ is the world’s largest dairy trader, with well over 90% of annual production destined for export. NZ’s product mix is heavily weighted toward WMP production.
- Traditionally, the EU and US dairy industries have been heavily supported, and focussed on their large domestic markets.
- More recently, as some market support measures have been wound back, and demand for dairy from Asia has boomed, these industries have developed a greater export focus. Still less than 20% of annual milk production is exported in the US and EU.
- Figure 29 summarises the current and planned investment in processing capacity in these major competitor regions, as well as Latin America. It indicates much of the investment will be focussed on ingredients such as WMP, followed by UHT processing.
- Many of these investments are targeting opportunities in Asia – China in particular.
- Detailed competitor profiles have been prepared for NZ, EU, US and Argentina.

Figure 28: Dairy exporter shares 2012 (MEQ)

Figure 29: Estimated capacity added by competitors from 2012 to 2016 (000t)
New Zealand

- Dairy is a key industry in NZ, generating 2.8% of GDP and over a quarter of the country’s exports.
- The industry structure, with a dominant co-operative in Fonterra, has facilitated investment and engagement with Government on the industry’s business case, evidenced by favourable free trade agreement and government support on dairy’s trade agenda.
- NZ will continue to have an ever-expanding involvement and influence in trade in WMP, SMP and infant products.
- South Island will remain the growth engine for expansion, with many overseas buyers investing to secure supply chains.
- The returns available from other farming sectors such as beef and sheep will be critical to medium-term growth prospects for the South Island, which has driven NZ’s production growth in recent years.
- Heavy focus is likely to stay on large-scale WMP production and supply into China, which has reduced the availability to other customers. Rebalancing of market mix will be important for stability.

Future impact on world market balance

<table>
<thead>
<tr>
<th>Positives</th>
<th>Risks/threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Limits placed on growth by pressure on sustainability issues from the community</td>
<td>• Farming margins may promote stronger output into 2015</td>
</tr>
<tr>
<td>• Potential attrition of small farms exposed to greater world market volatility</td>
<td>• Highly dependent on climate</td>
</tr>
<tr>
<td>• Improving maturity in trade in Fonterra shares may improve scope for exits</td>
<td>• Gathering strength of smaller players adds to options and diversity</td>
</tr>
<tr>
<td>• Access to capital for further entrants and expansions</td>
<td>• Fonterra offering new price risk</td>
</tr>
</tbody>
</table>

Some aspects relevant to the outlook

- Critical outlook parameters

<table>
<thead>
<tr>
<th></th>
<th>Short term</th>
<th>Medium term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk output growth p.a.</td>
<td>3.5%</td>
<td>2 to 2.5%</td>
</tr>
<tr>
<td>WMP output growth p.a.</td>
<td>3.4%</td>
<td>3-4%</td>
</tr>
<tr>
<td>Cheese output growth p.a.</td>
<td>1-2%</td>
<td>2-3%</td>
</tr>
</tbody>
</table>

- NZ production - north v south (mill kgMS)

Source: DCANZ, NZX
Competitor profile

European Union

- Dairying in the EU has long been a highly political and protected activity. Negotiation of CAP reform will place limits on farm payments and affect viability in marginal areas.
- Major companies and many farmers are gearing up for the removal of production quotas in 2015. Major EU cooperatives such as Arla and FrieslandCampina have been able to consolidate and invest to position themselves for export opportunities.
- The redistribution of milk supply post-quota removal between northern and southern regions will present some uncertainty in terms of EU production.
- Over time there will be a shift in overall product mix towards cheese, which will be more evident in export volumes, and will rise while other products fall.
- Impact of tight consumer spending is evident in the short term, but generally there will be very slow growth in internal demand.
- Negotiation of CAP reform will place limits on farm payments and affect viability in marginal areas.
- Stronger community pressure to improve sustainability credentials.

Future impact on world market balance

<table>
<thead>
<tr>
<th>Positives</th>
<th>Risks/threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Limits placed on growth by regulation of sustainability elements</td>
<td>• Surge in output by competitive farmers in green belt regions</td>
</tr>
<tr>
<td>• Large % of milk in traditional high-cost vulnerable farms</td>
<td>• Sustained income support through CAP will keep farmers in survival mode</td>
</tr>
<tr>
<td>• Weakness of Eastern EU infrastructure/standards</td>
<td>• Will do better in most regions from climate change</td>
</tr>
<tr>
<td>• EU budget limits further investment in supports/subsidies</td>
<td>• Weak domestic consumption</td>
</tr>
<tr>
<td>• Uneven country prospects will see wider variation in milk prices</td>
<td></td>
</tr>
</tbody>
</table>

Critical outlook parameters

<table>
<thead>
<tr>
<th></th>
<th>Short term</th>
<th>Medium term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk output growth p.a.</td>
<td>1.5 to 2%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Liquid milk demand growth</td>
<td>0.3%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Cheese demand growth</td>
<td>0.5 to 1.5%</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Butter demand growth</td>
<td>flat</td>
<td>flat</td>
</tr>
<tr>
<td>WMP output</td>
<td>9 to 25%</td>
<td>2.0%</td>
</tr>
<tr>
<td>WMP exports</td>
<td>5 to 9%</td>
<td>1 to 2%</td>
</tr>
</tbody>
</table>

Some aspects relevant to the outlook

Source: ZMP, NZX
**United States**

- Expanding involvement in trade as a static home market means much of its growth is destined for export. In 2013/14, about 15% of US milk solids production will be exported, which is up 2% on 2013.
- Ongoing stronger support for the industry-funded Cooperatives Working Together (CWT) over time aids export market development and improves the spread of involvement and the quality of US product.
- Production is expected to grow more strongly in late 2014 as better milking margins provide confidence for expansion.
- Internal demand should be sustained with improving consumer spending – the fast food sector is growing faster in 2014, adding volume and unit price growth.

**Future impact on world market balance**

<table>
<thead>
<tr>
<th>Positives</th>
<th>Risks/threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Potential attrition of small farms exposed to domestic market volatility</td>
<td>• Getting better at exporting, building a greater presence in developing regions</td>
</tr>
<tr>
<td>• Exposure to increasing trade in feed commodities may expose margins to volatility over time</td>
<td>• Stronger feed margins in the short term may support faster growth in production</td>
</tr>
<tr>
<td>• Domestic market recovery will absorb more milk</td>
<td>• Weak domestic demand with tight internal supplies driving prices higher</td>
</tr>
<tr>
<td>• Farm balance sheet consolidation limiting expansion</td>
<td></td>
</tr>
<tr>
<td>• Limits on growth in cow numbers</td>
<td></td>
</tr>
</tbody>
</table>

**Critical outlook parameters**

<table>
<thead>
<tr>
<th></th>
<th><strong>Short term</strong></th>
<th><strong>Medium term</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk output growth p.a.</td>
<td>2-3%</td>
<td>1-2%</td>
</tr>
<tr>
<td>Economic growth</td>
<td>3%</td>
<td>3-4%</td>
</tr>
<tr>
<td>Fluid milk consumption</td>
<td>-2-3%</td>
<td>-2%</td>
</tr>
<tr>
<td>Overall domestic product demand growth</td>
<td>0-1%</td>
<td>1-2%</td>
</tr>
<tr>
<td>SMP output growth p.a.</td>
<td>1-2%</td>
<td>2%</td>
</tr>
</tbody>
</table>

**Some aspects relevant to the outlook**

Source: USDA, NZX
Argentina

- With milk production of just under 10 billion litres, Argentina exports about a quarter of its milk, with trade mostly focused in Latin American region. It has long been a low cost producer, however input costs are increasing, as an over-valued currency is weakening competitiveness.
- More investment in processing capacity is needed to cope with peak bottlenecks. Volatility in weather and economic conditions has reduced the attractiveness to foreign players.
- There is strong competition for land use, so that attraction of farm capital is dependent on dairy’s relative profitability with other enterprises.
- GDP growth is improving, however inflationary fears are undermining consumer confidence. Per capita consumption of dairy is stable despite inflation eroding purchasing power.
- Few trade agreements or alliances outside the Mercusor region to facilitate broader trade development.

Future impact on world market balance

<table>
<thead>
<tr>
<th>Positives</th>
<th>Risks/threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Demand from the Sth American region is strong, limiting reach of exports</td>
<td>• Natural advantages mean production could expand further</td>
</tr>
<tr>
<td>• Government consumer protection policies often hamper exports</td>
<td>• Rebound in exports if weather stabilises</td>
</tr>
<tr>
<td>• Poor investor confidence in farming and processing</td>
<td></td>
</tr>
<tr>
<td>• Growth in Latam demand</td>
<td></td>
</tr>
<tr>
<td>• If EU trade deal gets through, attention will turn from Asia to Europe</td>
<td></td>
</tr>
</tbody>
</table>

Critical outlook parameters

<table>
<thead>
<tr>
<th></th>
<th>Short term</th>
<th>Medium term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic growth</td>
<td>1.2%</td>
<td>2.5 to 3%</td>
</tr>
<tr>
<td>Milk output growth p.a.</td>
<td>3-4%</td>
<td>3%</td>
</tr>
<tr>
<td>Domestic demand growth</td>
<td>2-3%</td>
<td>2-3%</td>
</tr>
<tr>
<td>WMP output growth p.a.</td>
<td>5%</td>
<td>5%</td>
</tr>
</tbody>
</table>

Some aspects relevant to the outlook

Source: CLAL, NZX
6. Manufacturing investments

Feasibility considerations
Feasibility considerations

- Apart from market prospects, the volume and profile of milk supply for a manufacturing plant is a key consideration in terms of feasibility.
- While the imposition of tier 2 pricing in recent years has led to a perception of large volumes of “surplus” milk, in fact the gap between fresh drinking milk demand and supply is small in NSW and rapidly diminishing, as the analysis in section 3 of this report shows. Figure 30 indicates the annual volume of the milk surplus estimated and forecast in section 3.
- Based on these base scenario projections, there will be only five months of 2014/15 in which NSW production will be in “excess” of fresh milk and current manufacturing requirements. This necessitates the movement of milk from Victoria to NSW markets and to Queensland at times.
- Expanding milk supply in a sustainable way is critical to the long term viability of any manufacturing investment within NSW.
- Section 7 examines various scenarios for expanding farm milk supply, and these outputs have been used as the high (220 million litres) and low (120 million litres) scenarios for the plant feasibility considerations included in this section.
- This section examines some of the issues around securing milk from alternative uses, supply profiles and the capacity issues which affect returns from WMP and UHT plants.

![Figure 30: Estimated net NSW surplus milk* (mill litres)](image)

* Milk that is additional to estimated NSW and a portion of fresh Qld milk requirements, as well as milk committed to manufacturing use.

Source: Dairy Australia, Freshagenda
Feasibility considerations

Milk supply expands 220ML, fills fresh supply gap, makes milk available to powder plant

Milk supply expands 170ML, milk available to plant over minimum fresh milk demand

Milk supply expands 120ML, plant attracts 140ML from existing fresh market use
# Feasibility considerations

## Milk supply expands 220ML, fills fresh supply gap, makes milk available to powder plant

- Additional supply firstly meets fresh milk gap, with the excess directed towards a powder plant
- The volume of milk available is 140ML
- Likely utilisation is 50% of 240ML capacity
- Indicative full cost of processing $1200/t
- *Available milk price 36cpl

In order to achieve a base level of milk for a new plant, the existing fresh milk shortfall will be filled. This assumes that additional milk volumes will be at the same profile as existing milk flows. If additional milk were to be provided more seasonally (i.e. a higher volume in spring) this would lift the total volume available in those months; raise the total plant capacity to manage that peak; and most likely reduce plant utilisation – penalising returns.

## Milk supply expands 170ML, milk available to plant over minimum fresh milk demand

- Volume of milk available over the year is 170ML
- Likely plant utilisation is 65% of capacity, due to flatter supply profile
- Indicative cost of processing $1,000/t
- *Available milk price 40cpl

This provides the flattest milk supply profile on the largest available volume of these cases.

## Milk supply expands 120ML, plant attracts 140ML from existing fresh market use

- The volume of milk available is 140ML
- Likely utilisation is 70% of 240ML capacity
- Indicative cost of processing $900/t.
- *Available milk price 41cpl

To achieve this scenario, the plant must divert existing milk supply from current fresh market applications – fresh milk processing. In order to do so, the returns must compete with that use, and on the plant configuration outlined, this would require a powder price to a NSW plant of between US$5,200 and $5,500/t, and the willingness of the plant owner to pass that onto milk suppliers.

*These assume a WMP price of US$4,000/tonne FOB*
# Feasibility considerations

<table>
<thead>
<tr>
<th>Issue</th>
<th>Comment</th>
</tr>
</thead>
</table>
| Can a flatter milk supply improve the scope for returns? | • **Flat milk supply can boost available milk returns** based on the chart on page 52.  
• The starting point for any new facility inside a 3-year period is to work with available milk supply.  
• The difficulty is gaining access to a significant and viable flat milk supply that is dedicated to a new plant. A flatter supply will come at a higher cost on farm.  
• That said, in the case of WMP, most plants are based on seasonal supply, allowing time for necessary repairs and maintenance. |
| What if farms grew production at lowest cost? | • **This will not improve plant economics** - This could generate higher milk flow in NSW spring and early summer, but increases the capacity of a plant to cater for that peak in supply. |
| Can niche projects gain higher prices? | • **This may be feasible** if the plant is part of a supply chain that is developed to service a premium market, and where the return to farm includes a share in the upside of any premium above commodity returns.  
• We are aware of several stakeholders discussing such proposals, however no tangible evidence of the market returns (for specialised powder products); business models and indicative returns for milk producers have been available to date in order to further evaluate these opportunities. |
| Could cheaper 2nd hand plant equipment reduce the capital cost | • **Yes, but this may reduce competitiveness in other ways** - Certain parts of the factory requirement might be sourced from second hand suppliers to reduce the overall capital cost and the charge for depreciation.  
• These will however have implications for:  
  • The ability to meet tighter product specifications and stringent quality standards which other new facilities are delivering for higher unit value  
  • The ability to achieve efficient throughput and product recoveries  
  • The ability to minimise labour and maintenance costs |
The analysis of the potential returns to milk producers from supplying to a milk powder plant has been based on recent studies done for the Queensland and Western Australian industries.

The chart and table on the right show the results from modeling a plant configuration that would have the capacity to cater for the available peak milk supply in NSW, with added growth in production from improved productivity, existing farm expansion and new entrants.

The modeling of available milk supply to such a plant has considered a number of possible scenarios over the next 3 years, as set out on the following page.

These indicate it is difficult to achieve a capacity utilisation of more than 70% given the inherent seasonality of NSW milk and the underlying base fresh processing demand in the region.

On this basis, returns to milk are expected to be in the range of 36 to 41cpl. This assumes a relatively low return on capital for potential investors at 7%.

The question is whether that range of milk prices will encourage sufficient gains in productivity and farm expansion to produce the necessary growth in milk supply.

Unless significant cost reduction and productivity gains are achieved on farms, so that the additional growth in milk output comes at a significantly lower cost than current average costs of production, expansion won’t occur in NSW at the farmgate prices delivered by WMP exports.

### Assumptions

<table>
<thead>
<tr>
<th>Assumption</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plant capacity (tonnes/hr)</td>
<td>6</td>
</tr>
<tr>
<td>Shifts</td>
<td>16</td>
</tr>
<tr>
<td>Days</td>
<td>300</td>
</tr>
<tr>
<td>Capital cost</td>
<td>$90m</td>
</tr>
<tr>
<td>Cash costs ($/tonne)</td>
<td>$500</td>
</tr>
<tr>
<td>Fixed costs as % of operating costs</td>
<td>60%</td>
</tr>
<tr>
<td>Life of plant for depreciation</td>
<td>20 years</td>
</tr>
<tr>
<td>Return on capital</td>
<td>7%</td>
</tr>
<tr>
<td>WMP selling price/tonne</td>
<td>US$4,000</td>
</tr>
<tr>
<td>Butterfat selling price /tonne</td>
<td>US$4,000</td>
</tr>
</tbody>
</table>

### Notes

1. Conversion costs may vary with site selection that may provide different energy costs
2. Capital cost excludes a provision for the cost of land.
The Dairy Connect proposal

- We have illustrated the required parameters that would be associated with the proposal that has been broadly outlined to us by Mike Logan of Dairy Connect.
- These parameters are:
  - A WMP plant with the capacity to process 3.5 tonne per hour of powder
  - Yielding a farmgate milk price of 65cpl in NSW
  - Up to 150 million litres of raw milk
- Based on these assumptions, we have run our powder plant calculator (used in the analysis outlined earlier on page 55) using the variables at the right.
- This assumes:
  - The operation would require a WMP selling price of US$5,500/tonne from the business model with downstream customers and partners.
  - A plant running regime as shown – this works all available shifts and days to process 133 million litres at standard milk conversion parameters based on likely NSW milk solids (processing up to 150 million litres would require longer shifts and/or Sunday operations)
  - A plant owner would achieve (as an EBIT margin) an 8% return on capital employed in the facility.
- We have not been provided any documentation or access to relevant parties in order to validate the ability of the proposal to sustain the powder price and the returns in milk prices as indicated.

![Avail milk price at various plant utilisation rates (c/l)](image)

<table>
<thead>
<tr>
<th>Assumptions</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plant capacity (tonnes/hr)</td>
<td>3.5</td>
</tr>
<tr>
<td>Shifts</td>
<td>16</td>
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<tr>
<td>Days</td>
<td>305</td>
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<tr>
<td>Capital cost</td>
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<tr>
<td>Cash costs ($/tonne)</td>
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<tr>
<td>Fixed costs as % of operating costs</td>
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<tr>
<td>Life of plant for depreciation</td>
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<td>Return on capital</td>
<td>8%</td>
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<tr>
<td>WMP selling price/tonne</td>
<td>US$5,500</td>
</tr>
<tr>
<td>Butterfat selling price /tonne</td>
<td>US$4,200</td>
</tr>
</tbody>
</table>

**Notes**

1. Conversion costs may vary with site selection that may provide different energy costs
2. Capital cost excludes a provision for the cost of land.
• Costs for UHT plants are highly variable, but the smallest plant – able to process 2,000 litres per hour would cost around $3.5 million for stainless steel alone.

• Packaging costs are significant, and one of the most variable aspect of UHT processing costs. Packaging plant can be leased or amortised under contractual arrangements with suppliers such as Tetra Pak. The cost of the filling machine will depend on what is produced - with smaller packs more costly.

• On top of this are associated infrastructure costs – building, storage tanks and laboratory, pasteuriser and homogeniser, which typically double the costs.

• While cash costs vary significantly based on throughput, energy and packaging costs – an indicative range is between $200 and $300 per tonne of milk – around 20 to 30cpl.

• The available milk price from UHT manufacture for export is around 47cpl for a 100 million litre capacity plant at 60% utilisation.

• Fresh milk costs are broadly similar to UHT with lower processing and packaging costs for fresh offset by much higher distribution and logistics cost, given the requirement for rapid refrigerated delivery. Given the high cost and logistics issues involved, fresh milk is likely to remain niche.

• The table on the right summarises the latest Australian UHT plant investments in Australia, indicating the variability between investment and capacity, dependent on some of the above factors. It also highlights the significant investment that is already being undertaken in UHT capacity in Australia and NZ.

### Avail milk price at various plant utilisation rates (c/l)

<table>
<thead>
<tr>
<th>Plant capacity</th>
<th>40%</th>
<th>50%</th>
<th>60%</th>
<th>70%</th>
<th>80%</th>
<th>90%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>26.5</td>
<td></td>
<td></td>
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<td>52.6</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>57.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>63.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

###Estimated UHT capacity added in Australia & NZ in 2014

<table>
<thead>
<tr>
<th></th>
<th>Investment (A$mill)</th>
<th>Capacity (mill litres ann)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murray Goulburn</td>
<td>19</td>
<td>70</td>
<td>Addition to Leongatha plant</td>
</tr>
<tr>
<td>Pactum</td>
<td>40</td>
<td>100</td>
<td>Greenfield site in Victoria</td>
</tr>
<tr>
<td>Parmalat</td>
<td>150</td>
<td>n.a.</td>
<td>Additional lines at Rowville plant</td>
</tr>
<tr>
<td>Fonterra, NZ</td>
<td>111</td>
<td>95</td>
<td>Greenfield site</td>
</tr>
</tbody>
</table>
7. Growing milk supply
Developing growth scenarios

- The central theme of this work is “Growing the NSW dairy industry” - understanding the opportunities as well as the barriers and challenges for dairy’s expansion within the state.
- In previous sections of this report, Freshagenda has assessed the market opportunities for and competitiveness of NSW milk production.
- The returns from diversified products and markets identified through the SWOT analysis and in the project brief have been estimated based on indicative export market prices and processing costs. These estimated returns have generally been close to or below current NSW milk prices which are largely driven by the local fresh milk market.
- The analysis has also identified a widening supply gap in fresh milk supply within NSW and neighbouring Queensland that could be filled by industry expansion, reducing the requirement for supplementary supplies from Victoria.
- There is clearly a desire and a need for the industry to grow, but an important question is how would this be achieved given the settings that face the NSW dairy farm sector today. How probable is it that the existing supplier base could expand production to meet market demand, and what contribution might be made by new entrants? What investment is required for a given level of expansion?
- In this section, milk production scenarios are developed for expansion of the existing supplier base – using available data to test and modify existing NSW farm systems.

Approach to modelling milk growth & investment

- As illustrated above the question of how much milk is required to competitively service existing and diversified markets is somewhat circular in nature.
- For the purpose of this analysis, scenarios of an additional 120 million litres and 220 million litres have been developed, which have in turn informed the manufacturing analysis in section 6.
Resilience of NSW farms

- A key question in assessing the ability of the NSW dairy industry to grow is the resilience of current farm systems.
- NSW Farm Monitor data for 14 farms in 2012/13 was used to simulate an indicative northern and southern NSW average farm, as summarised in the table to the right.
- While it is acknowledged that the NSW Farm Monitor sample is small, and tends to represent the better industry performers - estimated to be in the top 30 to 40% of farms – the information is the most comprehensive and reliable data available.
- Freshagenda’s Dairy Business Navigator model (see Appendix for more detail) was used to model a 10-year climate scenario (baseline) and to determine how these monitor farms would perform in a number of climate scenarios. To further test the resilience of the farms, the DB Navigator generated an alternative scenario based on 50 additional climate outcomes that was more negative.
- The model generates a 10-year average EBITDA (earnings before interest, tax, depreciation and amortisation), average return and the number of years out of 10 in which cashflow is positive. The results are summarised in the table below:

<table>
<thead>
<tr>
<th>Category</th>
<th>Units</th>
<th>Sth NSW</th>
<th>Nth NSW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Herd size</td>
<td>hd</td>
<td>339</td>
<td>374</td>
</tr>
<tr>
<td>Milking (Effective Area)</td>
<td>ha</td>
<td>151</td>
<td>130</td>
</tr>
<tr>
<td>Milk per cow</td>
<td>Litres</td>
<td>7,297</td>
<td>6,427</td>
</tr>
<tr>
<td>Milk price</td>
<td>$/kgMS</td>
<td>6.30</td>
<td>7.00</td>
</tr>
<tr>
<td>Stocking Rate</td>
<td>Cows/Effective Area</td>
<td>2.25</td>
<td>2.88</td>
</tr>
</tbody>
</table>

**Figure 31: 10 year climate scenarios – baseline and alternative**

Growing the NSW Dairy Industry
Resilience of NSW farms

- The results indicate some vulnerability in the representative monitor farm systems in the north of the state, particularly in challenging climatic conditions.
- It is widely acknowledged that without improved returns and cash flow, milk growth from the existing NSW supply base is unlikely over the short to medium term.
- Data from the SW041 farm (hereafter referred to as benchmark VIC farm) – a participant in the Victorian DFM project in 2012/23 that has been identified as the most comparable size and supply profile, was used as a target for productivity improvements in order to model impacts on NSW business resilience and increased milk flow. (See table for base data comparison across the NSW and Victorian benchmark farms).
- Based on the improved productivity models, an expansion scenario was developed for each region, which would further increase milk production over the 10 year period.
- The modelled results are offered not only as an indicator of the “art of the possible” for NSW dairy systems, but also to determine where the greatest gains might be made for farms in the southern and northern regions of the state in terms of productivity and resilience.
- The analysis will also generate an indicative increase in milk flows which will then be extrapolated to develop whole of industry scenarios for milk supply growth.

### Approach to modelling milk growth from existing NSW supply

<table>
<thead>
<tr>
<th>Category</th>
<th>Unit</th>
<th>Nth NSW (Av Farm)</th>
<th>Sth NSW (Av Farm)</th>
<th>Benchmark VIC Farm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Herd Costs</td>
<td>$/cow</td>
<td>149</td>
<td>172</td>
<td>145</td>
</tr>
<tr>
<td>Shed Costs</td>
<td>$/cow</td>
<td>146</td>
<td>125</td>
<td>66</td>
</tr>
<tr>
<td>Admin Costs</td>
<td>$/cow</td>
<td>445</td>
<td>375</td>
<td>275</td>
</tr>
<tr>
<td>Cows/FTE</td>
<td></td>
<td>69</td>
<td>79</td>
<td>110</td>
</tr>
<tr>
<td>Milk Yield</td>
<td>l/cow</td>
<td>6,427</td>
<td>7,297</td>
<td>7,594</td>
</tr>
<tr>
<td>Cows</td>
<td>hd</td>
<td>374</td>
<td>339</td>
<td>470</td>
</tr>
<tr>
<td>Milking Area</td>
<td>ha</td>
<td>130</td>
<td>151</td>
<td>219</td>
</tr>
</tbody>
</table>
Productivity improvement

North

- Using data from the benchmark VIC farm, productivity improvements include: costs reduction (herd, shed and admin costs); increased labour efficiency (cows/FTE); increased yield (milk/cow) and increased feed efficiency (feed management and feed production).
- The modelling of productivity improvements indicate there are significant gains to be made in northern farms, particularly in the area of milk yield.
- The improvement in profitability between the two simulations is $1,029/cow with milk yield contributing $411/cow while costs reduction was second ($283/cow). Labour efficiency and feed efficiency contributed $237/cow and $99/cow, respectively.
- In the baseline, the average annual simulated cashflow/KgMS was negative in 2 years (6 and 7), but overall increased from $1.04 in Year 1 to $1.40 in Year 10.
- The productivity improvements flowed through to projected cashflow over 10 years, lifting it above the baseline, and ensuring there were no years when cashflow is negative.
- The simulation suggests that when allocating scarce resources, most gains could be accomplished by investment in increasing milk yield.
- Given that the monitor farm averages tend to be on the higher end of performance compared to other farms in the region, the scope for productivity gains is possibly higher in the general population.
• Using data from the benchmark VIC farm, productivity improvements include: costs reduction (herd, shed and admin costs); increased labour efficiency (cows/FTE); increased yield (milk/cow) and increased feed efficiency (feed management and feed production).

• The improvement in profitability between the two simulations was $500/cow. The most important factor contributing to this difference was costs reduction ($207/cow). Labour efficiency followed by $125/cow. Milk yield ranked third ($108/cow) and feed efficiency fourth ($60/cow).

  In the baseline, the mean annual simulated cashflow/KgMS increased from $1.28 (year 1) to $1.83 (year 10) and is positive in all 10 years.

• However, under the alternative (worse) climate, the average simulated cashflow/KgMS is positive in 7 out of 10 years.

• The productivity improvements flowed through to projected baseline cashflow over 10 years, lifting it well into positive territory and above baseline levels in each simulated year.

• Given that the representative southern farms were closer to the Victorian benchmark than farms in the north of the state, there were smaller gains from productivity improvements in this simulation, both in terms of cash and milk flows.
Expansion scenario

North

• To replicate the performance of the output of benchmark VIC farm, the herd was expanded by 96 cows and 33 additional hectares were purchased in year 2 (to maintain the same stocking rate as the average northern farm had under the baseline). The expansion impact was then modelled on top of the productivity improvement.

• Under the expansion, cashflow/KgMS increased from $2.69 (year 1) to $3.82 (year 10). Overall, cashflow/KgMS was greater under the expansion by an average of $0.26/year as compared to the productivity improvement simulation.

• In both the productivity improvement and expansion simulations, the representative farm has positive cashflow/KgMS in 10 out of 10 simulated years – an improvement on the baseline result.

• The 10-year average EBITDA is greater by $135/cow under the expansion ($1,582/cow vs. $1,447/cow).

• The average return is also greater under the expansion by 1.4% point (14.1% vs. 12.7%).

• The cumulative effect of both the productivity improvement and the production expansion is to increase annual milk production by 46% on average - just above 1,183,000 litres from year 3 onwards as indicated in figure 37.
**Expansion scenario**

**South**

- To replicate the performance of the benchmark VIC farm, the herd was expanded by 131 cows and 58 additional hectares were purchased in year 2 (to maintain the same stocking rate as under the southern region average baseline), and the impact modelled on top of the productivity improvement.

- In the expansion scenario, operating cashflow/KgMS increased from $2.09 in year 1 to $3.41 in year 10. Overall, cashflow/KgMS was greater under the expansion by an average of $0.25/year as compared to the productivity improvement simulation alone. However, cashflow in the early years is lower, reflecting the purchase of additional land.

- In both simulations, the representative farm has positive cashflow/KgMS in 10 out of 10 simulated years.

- The average EBITDA is greater by $130/cow under the expansion ($1,319/cow vs. $1,189/cow).

- The average return is also greater under expansion by 1.4% points (11% vs. 9.6%).

- The cumulative effect of both the productivity improvement and the production expansion is to increase annual milk production by 43% on average - or over 1,141,000 litres from year 3 onwards (see figure 39).
Industry expansion scenario

Growth of existing supplier base

• Extrapolating modelled results to the entire NSW industry, assumptions have been made at sub-regional level on expansion – recognising the opportunities and constraints outlined in the sub-regional profiles (see Appendix 1).

• It is assumed that across the **northern** region 20% of farms take up **productivity improvement** opportunities, while 5% choose to **expand**. In the **south** the **same proportion** of farms take up the **productivity improvement** opportunity, and 20% take up the opportunity to **expand**.

• The table outlines the assumptions made at sub-regional (LLS) level in terms of the uptake of productivity and expansion opportunities, and the resulting impact on milk output. As the table outlines, it assumed not all LLS regions are amenable to expansion, mainly due to constraints on affordable land, and water.

• These fairly strong assumptions in terms of uptake of productivity and expansion opportunities yield an additional 42 million litres by year 3, a 4% increase on 2013 production.

• This scenario is a “low case” a “high case” has also been developed, involving even greater expansion uptake and additional growth region which yields 101 mill litres in year 3, as illustrated on page 67.

• Both scenarios indicate the **significance of the improvements in performance** that would be required to significantly lift production from the existing base.

<table>
<thead>
<tr>
<th></th>
<th>No of farms</th>
<th>Milk produced 2013 (mill litres)</th>
<th>Uptake assumptions</th>
<th>Additional milk Yr 3 (mill litres)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dec 2013</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>North</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North Coast (1)</td>
<td>227</td>
<td>178.7</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>Hunter (2)</td>
<td>145</td>
<td>176.3</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>Northern Tablelands (3)</td>
<td>1</td>
<td>6.8</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>North West (4)</td>
<td>14</td>
<td>22.8</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>Central West (5)</td>
<td>15</td>
<td>59.7</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>Central Tablelands (6)</td>
<td>8</td>
<td>25.6</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td><strong>Sub-total</strong></td>
<td>410</td>
<td>469.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>South</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greater Sydney (7)</td>
<td>12</td>
<td>36.5</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>Southeast (8)</td>
<td>183</td>
<td>296.3</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>Riverina (9)</td>
<td>12</td>
<td>28.5</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Murray (10)</td>
<td>96</td>
<td>221.2</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td><strong>Sub-total</strong></td>
<td>303</td>
<td>582.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>NSW Total</strong></td>
<td>713</td>
<td>1,052</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Industry expansion scenarios

<table>
<thead>
<tr>
<th></th>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nth</td>
<td>Sth</td>
</tr>
<tr>
<td><strong>Productivity uptake</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regions*</td>
<td>All</td>
<td>All</td>
</tr>
<tr>
<td>% of farms</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td><strong>Expansion</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regions*</td>
<td>3,6</td>
<td>9,10</td>
</tr>
<tr>
<td>% of farms</td>
<td>5%</td>
<td>20%</td>
</tr>
<tr>
<td>Milk added Yr 3 (mill litres)</td>
<td>18</td>
<td>24</td>
</tr>
</tbody>
</table>

**Notes**

- Expansion is a 26% increase in cow numbers in the north and a 39% increase in the south.
- The percentage increase in per farm production over 10 years as modelled for representative northern and southern monitor farms has been applied to 2013 actual farm population and regional milk production.

*Region numbers as detailed on page 66.
Scoping the investment requirement

<table>
<thead>
<tr>
<th>Scenarios</th>
<th>New milk Yr 3 (mill litres)</th>
<th>Cows (no. of head)</th>
<th>Total cost ($mill)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Expansion of existing supply base</td>
<td>42</td>
<td>101</td>
<td>2,700</td>
</tr>
<tr>
<td>New entrants (grazing)*</td>
<td>18</td>
<td>33</td>
<td>5,000</td>
</tr>
<tr>
<td>New entrants (free stall)</td>
<td>60</td>
<td>86</td>
<td>12,000</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>220</td>
<td>19,700</td>
</tr>
</tbody>
</table>

**Assumptions**

- Cost of cows is assumed to be $2,500/head
- Cost of land for addition to existing farms has been valued at between $10,000 and $15,000/ha based on farms in the Dairy Farm Monitor
- No capital costing has been applied to productivity improvements for existing farms
- Cow numbers for new farms are based on purchasing twice the eventual cow numbers in order to establish a milking herd
- Capital costs for new farms are based on benchmarks that set the range of costs for new grazing facilities at between $1 and $1.30/milking cow and for free-stall facilities at between $1.40 and $1.75/milking cow. The range will vary due to the different scale options and land costs that may be feasible in each.
## Barriers to NSW dairy growth

<table>
<thead>
<tr>
<th>Subject</th>
<th>Requirement or barrier</th>
</tr>
</thead>
</table>
| Business management     | • Skills in holistic farm business management, to evaluate and implement strategy  
                        | • Cashflow management  
                        | • Access to technical skills and support                                                                                                                          |
| Environmental regulation| • Approval of Environmental Impact Statement and Environmental Management Plan (site-specific) requirements for new developments or major expansions from local government (shires) up to 800 cows. Over 800 cows requires Environmental Protection Authority (EPA) involvement  
                        | • This must address (inter alia) odour, effluent and nutrient use, waste, livestock, noise, dust, visual impact, chemicals  
                        | • Potential local government requirements  
                        | • Effluent management regulation up to 800 cows local government responsibility, over 800 cows EPA license required  
                        | • Adherence to native vegetation management regulations                                                                                     |
| Feedbase                | • Access to sufficient secure irrigation water entitlements                                                            |
| People                  | • Availability of skilled dairy staff  
                        | • Availability of sufficient unskilled labour in regional areas  
                        | • Adherence to OH&S regulations  
                        | • Adherence to award wage regulations                                                                 |
| Energy                  | • Access to reliable and efficient electricity supplies                                                                 |
| Business operation      | • Adherence to industry standards on animal welfare best practice  
                        | • Large-scale dairy licence requirements  
                        | • Adequate transport access for efficient milk haulage arrangements  
                        | • Compliance with Dangerous Goods regulations                                                                 |

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Growing the NSW Dairy Industry
8. Case studies
Case studies

Challenge cooperative

• The Challenge Dairy Cooperative (CDC) was established in Western Australia in 1999, and commenced operations in 2001 with 70 members and 70 million litres of milk.
• The establishment of a farmer-owned cooperative was seen as a way of supporting farmgate prices and giving an avenue for the growth in milk supply. The existing dairy companies within the state were focussed on a highly competitive domestic market for fresh milk.
• The fledgling cooperative established itself with a $10m convertible grant from the WA government and support of a number of large and progressive dairy farmers.
• It was soon recognised that the operation was undercapitalised and international investment was sought.
• In 2002/03 Challenge established a joint venture with Chinese dairy company Sanyuan Dairy, with a joint investment of US$27m.
• In 2003 another joint venture was formed with Singapore-based QAF Ltd. CDC was renamed Challenge Australia Dairy.
• By 2009, the cooperative had established retail milk, specialty cheeses, yoghurt and custard lines. It had established a trade in bulk export of milk (reportedly the only profitable part of the business), as well as whole and skim milk concentrates, 100 different lines ranged in state and national markets.
• The co-operative's joint venture with QAF failed in 2010, resulting in the loss of CDC’s manufacturing assets and its milk procurement role.
• Around half of the state’s farmers supplied Challenge at the time of its closure. The CDC was placed in receivership in 2010 and has since been wound up.

Key takeaways

• CDC was established with inadequate capital and outdated facilities.
• The capital partners chosen did not deliver the path to markets that CDC hoped for.
• In seeking to exit commodity markets in which it could not compete, CDC embarked on a costly retail strategy in an already crowded local marketplace.
• CDC’s lack of profitability meant it was not an effective price-setter for WA farmers.
Case studies

Synlait Farms & Synlait

• Synlait Farms were established in the Canterbury region of NZ’s South Island in 2000 by two farmers and a farm systems scientist. Over the next 10 years, utilising equity generated from conversions and sourced from additional investors, Synlait continued to convert and acquire already established farms, peaking with 12 conversions and 3 purchased farms.

• The objective for the Synlait Farms founders had always been to manufacture products from their own milk. Having established market linkages, key staff and adequate milk supplies, a state-of-the-art manufacturing facility was commissioned to be built on one of the Synlait farms.

• Start up was aided by NZ regulation that requires Fonterra to supply new entrants with 50m litres of milk annually.

• In 2008, the first milk was processed, further success in contracting milk from third party suppliers meant an extension of the plant was viable, and enabled the manufacture of SMP at 1.5 million litres of raw milk per day.

• Synlait developed a strategy of moving beyond ingredients to become a significant global supplier of infant nutritional products.

• Bright Dairy of China became a significant partner and shareholder in 2010, and construction began on the largest and most sophisticated purpose-built IMF facility in the Southern Hemisphere.

• The Synlait Milk facility processes more than 500 million litres of milk each year. It is capable of processing 3.2 million litres of raw milk per day, from which up to 340 metric tonnes of milk powder can be produced.

• Shanghai Pengxin and the Synlait founders crossed the 90% compulsory acquisition threshold in their $85.7 million takeover bid for Synlait Farms in December 2013.

Key takeaways

• Synlait was established in a region with the best growth potential. With an average herd size of 700 they have supplied a 300% increase in milk volume since manufacturing began in 2008.

• Effective market partners were established early, providing a pathway for sales and the investment required to establish state-of-the-art, purpose-built facilities.

• Synlait specialise in tailor-made ingredients and nutritionals, rather than seeking to compete in bulk ingredients.
**Tasmanian Dairy Products**

- Tasmanian Dairy Products (TDP) was established in 2011 as a joint venture between investors – including dairy farm owners, Murray Goulburn Cooperative and later, Mitsubishi Corporation.
- Little Lion Holdings (LLH) had accumulated a portfolio of dairy farms in Circular Head, valued at approximately $100 million. The farms were purchased, developed, cleared and improved over a 5-year period.
- Representing a critical mass of milk supply, LLH spearheaded the move to introduce further processing capacity into Tasmania, which had been dominated by Fonterra.
- LLH together with MG formed TDP, with Mitsubishi buying a minority stake (24%) in 2012. TDP opened its $80 million dairy processing facility in Smithton, north-west Tasmania in September 2012, with the capacity to process up to 300 million litres of milk annually.
- The processing factory manufactures WMP and SMP for export.
- TDP obtains its milk from 60 farms throughout the state. After 18 months it has managed to fill 50% of its capacity and is currently offering farmers who are planning to grow a rebate on their investment.

- Murray Goulburn has recently increased its stake to 76% with Mitsubishi retaining its remaining 24% share. Tasmanian investors no longer hold any interest in TDP.

**Key takeaways**

- TDP was established with commercial partners who have significant experience in exporting dairy products.
- TDP are manufacturing commodity products but are seeking to move into more specialised products to improve returns.
- Filling capacity has been challenging for the new venture, even in a region that has grown over the past few years.
Case studies

Camperdown Dairy International

- Camperdown Dairy International (CDI) has been established by the EAT Group Pty Ltd (EAT) - an integrated agriculture investment and management group and MCG Pty Ltd. MCG Group is an Australian owned and operated resource development, property development, civil construction, drilling, and mining company.
- CDI wholly own the three subsidiary companies Camperdown Farms, Camperdown Processing and Camperdown Powder.
- CDI have reportedly purchased two farms in the region and have plans to develop and manage large-scale operations.
- EAT and MCG announced the purchase of the historic Camperdown Cheese & Butter Factory in early June. The plan is to group farm assets and develop a fully vertically integrated dairy export business and include an infant formula blending and filling site in Melbourne.
- CDI will initially produce tinned IMF for Asia and bulk WMP for the international market.
- A $120 million spray drier is planned, with processing scheduled to start towards the end of next year. The plant would process 100 million litres of milk annually from its own farms, with plans for up to 300 million litres in the next three to four years through partnering with local farmers.

- CDI claims it has large contracts in place which have underpinned the selection of the assets.
- CDI is currently seeking approval to export IMF to China and in the process of purchasing farms. CDI has also purchased a small blending plant in Melbourne.

Key takeaways

- CDI appears to have worked from the customer backwards, securing large contracts, and then sourcing the assets to deliver.
- Purchasing and grouping assets that are linked in a wholly owned supply chain should provide some advantages in supplying IMF under China’s new regulatory regime – as long there is strong linkage to a brand.
9. Investment models
Sources of external equity capital

- There is considerable global interest from a range of investors in the Australian dairy sector to take advantage of the long-term prospects for dairy markets.
- Australia competes with established and developing dairy production regions for that capital investment.
- The key ingredients of success include:
  - **Management** – skills of sufficient level to sustainably manage the business complexity and precision
  - **Incentive** – appropriate incentives are in place to drive results to match return horizons
  - **Risk capital** – adequate capital to meet the needs of the target businesses with the matching appetite for risk
  - **Contract** – there is a contract with the marketplace that provides sufficient certainty of demand and price band that underpins return expectations.
- Choices of investment models don’t make a difference to the underlying quality of the farm, herd and operating assets, but the appropriate model can provide a suitable blending of the above ingredients for a successful operation over time, suited to investor risk.

Currently the relative attractiveness of the NSW dairy industry as a destination for investment suffers due to:
- Lack of case history of external investments
- Lack of transparency in the performance of farms and value chains over time
- Difficulty in identifying candidate farms
- Perceived lack of scope for growth in asset values
- Limited appreciation of how to link successful farm units with appropriate structures
- Perception that it is difficult to access a pool of skilled managers
- For much of the state, there is a lack of relevance of available milk supply to the story of the global dairy opportunity.
Sources of external equity capital

Alignment with the interests of customers
Pros
- Riverina farms are of interest for processing into ingredients
- Potential scope for future interests of fresh milk processors ensuring security of milk supply
Cons
- Central and Northern NSW farms of limited interest to international customers due to distance from processing, small size of the available milk pool, and the lack of cost-competitiveness of existing farms for new projects

Attractiveness to capital providers
Pros
- Southern farms with connection to export markets
Cons
- Seen as fresh milk suppliers, struggling with domestic retail market competition
- Limited knowledge of the performance of farms in Central and Northern regions other than Riverina (which relies on assumption that they are similar to Northern Victorian farms)

Availability of management skills
Pros
- Available highly skilled farm managers operating in southern regions are appropriate to consider for Riverina farms
Cons
- Limited appreciation of the level of skills across Central and Northern region (with exceptions)
- Limited farm business consultants operating in these region

Quality of NSW farm assets for investors
Pros
- A number of Riverina farms would provide scope for inclusion in portfolios that encompassed other export producing regions
- Small number of large-scale farms in central and northern regions
Cons
- Limited awareness of the performance of NSW farms over time due to lack of financial and physical benchmarking
- Perceived weaknesses due to small scale and high cost farm sizes
- Farms operating below their potential capacity due to caps on growth in recent years

Relevance of investment models to NSW
- “Corporate landlord” model likely to be most suitable in the future given the relative stability of domestic market pricing compared with world markets
- “Integrated vertical” may suit large scale/greenfield projects developed into the medium term provided returns for milk delivered by such models deliver sustainable prices for year-round production on farm

Customer
Capital providers
Farm business
Assets & infrastructure
Management skill
Fresh agenda
Growing the NSW Dairy Industry
Sources of external equity capital

There are three basic investment structure models that operate in Australia as avenues to channel investment capital, which is interested in dairy investments in this country. These models vary in the risks taken by the primary capital investor.

**Corporate landlord**
- Investors
- Corporate landlord
- Investor injects capital in land and water assets
- Operator leases farm and water assets; takes dairy operating risk
- In the case of a portfolio of assets, a manager provides input to investor on optimisation strategy and close monitoring of performance

**Corporate farmer (with operating risk)**
- Investors
- Corporate farmer (with operating risk)
- Investors inject capital in the purchase and improvement
- Investor injects capital in the purchase and improvement
- Family unit manage on farm, ideally with equity incentive
- Manager provides input to investor on optimisation strategy and close monitoring of performance

**Integrated vertical (from market through to farm)**
- Investors
- Integrated vertical (from market through to farm)
- Investors are led by the downstream buyer of product but can involve their financial partners
- In the case of a portfolio of assets, a manager provides input to investor on optimisation strategy and close monitoring of performance.

**Key features**
- Investors inject capital in land and water assets
- Operator leases farm and water assets; takes dairy operating risk
- In the case of a portfolio of assets, a manager provides input to investor on optimisation strategy and close monitoring of performance

**Application**
- This has been the most common model being sought by overseas investment funds, given the complexities associated with operating risk
- This is also relevant as part of Integrated Vertical models, where land investors partner with a processor/marketer

**Examples**
- DFC model proposed by Cowbank and partners
- Option proposed by a number of overseas funds (e.g. TIAA-CREF)
- Aquila Capital (Victoria)
- Corporate leasing model managed by Murray Goulburn (as head lessee) with farmer sub-lessees

**Key features**
- Investors inject capital in the purchase and improvement
- Family unit manage on farm, ideally with equity incentive
- Manager provides input to investor on optimisation strategy and close monitoring of performance

**Application**
- This model is used in a number of structures in NZ
- This also provides a vehicle for financial or passive investors to create syndicates

**Examples**
- Van Diemen's Land (30 farms in Tasmania)
- Warakirri Dairies (10 farms in Victoria)
- ACE Farms (Victoria)
- AgInvest (NZ)
- Shanghai Pengxin (NZ)

**Key features**
- Investors are led by the downstream buyer of product but can involve their financial partners
- In the case of a portfolio of assets, a manager provides input to investor on optimisation strategy and close monitoring of performance.

**Application**
- This model is growing in importance as security of supply and brand integrity becomes more critical to processors

**Examples**
- Chinese processors (partnering with investment structures such as Modern Dairy in China)
- Bright Foods (in Synlait Milk and Synlait Farms)
- Fonterra Farms (China)
- Camperdown Dairy International
- Brownes (WA farms)
- Lion (King Island, Timboon, Heidi)
Appendix 1: Regional profiles
Sub-regional profiles

About these profiles

- The sub-regions developed for this report are an amalgam of the Local Land Services (LLS) regions used by the NSW Government.

- Regions were amalgamated as described in the table to ensure sufficient sample size from the 2014 NDFS data to allow meaningful profiles to be developed.

- Farm numbers are licensed dairy producers that we sourced from the NSW Food Authority as at December 2013. Milk production data was sourced from Dairy Australia and matched to LLS regions by NSW Agriculture.

- Data on herd size distribution, calving systems, grain fed per cow, calving systems, land area and irrigation have been sourced from the 2014 National Dairy Farmer Survey (NDFS) – a survey of 1,000 dairy farmers conducted by Dairy Australia in February 2014. There were 151 farmers interviewed for the survey in NSW.

- Herd size & feeding definitions are described in the table at the bottom right.

### Reporting regions

<table>
<thead>
<tr>
<th>LLS</th>
<th>Report sub-region</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Coast</td>
<td>North Coast</td>
</tr>
<tr>
<td>Hunter</td>
<td>Hunter</td>
</tr>
<tr>
<td>Greater Sydney South east</td>
<td>South east</td>
</tr>
<tr>
<td>Nth Tablelands North West Central West Central Tablelands</td>
<td>North &amp; Central</td>
</tr>
<tr>
<td>Riverina &amp; Murray</td>
<td>Riverina</td>
</tr>
</tbody>
</table>

### Herd size & feeding definitions (NDFS)

<table>
<thead>
<tr>
<th>Herd size range</th>
<th>TMR</th>
<th>PMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large 301+ cows</td>
<td>Total Mixed Ration – zero grazing</td>
<td></td>
</tr>
<tr>
<td>Medium 150-300 cows</td>
<td>Partial Mixed Ration – limited grazing</td>
<td></td>
</tr>
<tr>
<td>Small &lt;150 cows</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
North Coast

Key characteristics of the sub-region

• The majority of farms in this region are located in highly fertile coastal corridor, which has seen significant development. Expansion is challenging, with high land values driven by demand for lifestyle blocks in hinterland, close to popular coastal areas – and growing towns.

• Most of the milk supply from this region tends to service the immediate local areas, as well as the south-eastern areas of Queensland’s demand for fresh milk.

• A third of the region’s farms are classed as small – that is less than 150 cows.

• According to the National Dairy Farmer Survey (NDFS) farmers in the north coast region feed around 1.7 tonnes of grain per cow per year.

• The region is dominated by local farmer-owned cooperative Norco, which utilises some local milk for the manufacture of ice cream and other fresh products. Norco has developed regional branding which enjoys good distribution and local support. Norco is also supplying a long-term private label milk contract for Coles supermarkets estimated at around 65 million litres to northern NSW and south-east Queensland.

<table>
<thead>
<tr>
<th>Farms</th>
<th>Production (mill litres)</th>
<th>Av per farm p.a. (litres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Coast</td>
<td>227</td>
<td>178.7</td>
</tr>
</tbody>
</table>

Calving systems

Herd size distribution

Feeding systems

<table>
<thead>
<tr>
<th>Land area (ha)</th>
<th>Irrigated area (ha)</th>
<th>Share irrigated</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Coast</td>
<td>138</td>
<td>19</td>
</tr>
</tbody>
</table>

Sources: Dairy Australia, NSW Food Authority, NSW Agriculture
Key characteristics of the sub-region

• The Hunter Valley is a highly fertile region. Dairying competes with other high-value agricultural industries, as well as the mining sector for resources such as land, water and people.

• Over 50% of farms in this region are classed as “small” – that is less than 150 cows milked. Expansion is constrained by high land values and the loss of water to the mining industry.

• Farms in the Hunter Valley are highly dependent on irrigation, with NDFS data indicating that 44% of farming area is irrigated.

• NDFS data indicates farms in the region are feeding 1.7 tonnes of grain per cow per year. Based on the NDFS data, a large proportion of farms in the region are reliant on pasture, with feeding predominantly in the bale.
South east

Key characteristics of the sub-region

• The majority of farms in this region are located in highly fertile coastal regions that have a long dairying history. Expansion is challenging, with high land values driven by demand for lifestyle blocks in this attractive area, close to the southern tip of greater Sydney. A number of quite large farms are located in the greater Sydney region.

• Milk supply from these coastal regions tends to be utilised for fresh milk to service the Sydney market and other fresh products. It was a traditional stronghold of the Dairy Farmers Cooperative, and many farmers still supply Dairy Farmers Milk Cooperative in the region.

• The south east also incorporates the Bega Valley, which is orientated toward cheese production. The valley’s dairy industry has been based around the Bega Cheese Cooperative – which has one of Australia’s leading cheese brands and became a listed company in 2011.

• According to the National Dairy Farmer Survey (NDFS) farmers in the south-eastern region feed relatively high volumes of grain – around 1.9 tonnes per cow per year.

• A number of notable niche producers operate in the region such as Country Valley In Picton and Tilba/ABC Cheese in Central Tilba.

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### Farms Production (mill litres) Av per farm p.a. (litres)

<table>
<thead>
<tr>
<th></th>
<th>Farms</th>
<th>Production</th>
<th>Av per farm p.a.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greater Sydney</td>
<td>12</td>
<td>36.5</td>
<td>3,041,667</td>
</tr>
<tr>
<td>Southeast</td>
<td>183</td>
<td>296.3</td>
<td>1,619,038</td>
</tr>
</tbody>
</table>

### Calving systems

- Year round: 88%
- Split/batch: 12%

### Herd size

- Small: 21%
- Medium: 48%
- Large: 31%

### Feeding systems

- >1 tonne per cow in bale: 69%
- <1 tonne per cow in bale: 2%
- TMR: 10%
- PMR: 7%

---

### Land area (ha) Irrigated area (ha) Share irrigated

<table>
<thead>
<tr>
<th></th>
<th>Land area (ha)</th>
<th>Irrigated area (ha)</th>
<th>Share irrigated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greater Sydney</td>
<td>76.5</td>
<td>13</td>
<td>17%</td>
</tr>
<tr>
<td>Southeast</td>
<td>145.5</td>
<td>30</td>
<td>21%</td>
</tr>
</tbody>
</table>

Sources: Dairy Australia, NSW Food Authority, NSW Agriculture
North & central Key characteristics of the sub-region

• This region incorporates the Northern Tablelands, North West, Central West and Central Tablelands local land services areas.

• While this region represents a large area, the dairy farm population is small. Almost half of the farms here are classed as small, according to the NDFS – that is between 151 and 300 cows. However, there are a number of large farms that influence the average milk production per farm.

• Farms in this region largely service the fresh milk markets of NSW and increasingly, southern Queensland.

• A third of the farms in this region are classified as “small”.

• Farms in this region feed an estimated 1.9 tonnes of grain per cow per year. According to the NDFS, this region has the highest proportion of farmers feeding a partial mixed ration.

• A number of processors operate in this region, supplying NSW fresh milk market and some, manufacturing.

<table>
<thead>
<tr>
<th>Farms</th>
<th>Production (mill litres)</th>
<th>Av per farm p.a. (litres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>North West &amp; Tablelands</td>
<td>15</td>
<td>29.6</td>
</tr>
<tr>
<td>Central Tablelands</td>
<td>8</td>
<td>25.6</td>
</tr>
<tr>
<td>Central West</td>
<td>15</td>
<td>59.7</td>
</tr>
</tbody>
</table>

Calving systems

- Year round 69%
- Split/batch 31%

Herd size

- Medium 46%
- Large 39%
- Small 15%
- Other 8%

Feeding systems

- 1 tonne per cow in bale 38%
- <1 tonne per cow in bale 8%
- TMR 15%
- PMR 31%

<table>
<thead>
<tr>
<th>Land area (ha)</th>
<th>Irrigated area (ha)</th>
<th>Share irrigated</th>
</tr>
</thead>
<tbody>
<tr>
<td>North West</td>
<td>154</td>
<td>97</td>
</tr>
<tr>
<td>Central West and Tablelands</td>
<td>243</td>
<td>96</td>
</tr>
</tbody>
</table>

Sources: Dairy Australia, NSW Food Authority, NSW Agriculture
Riverina

Key characteristics of the sub-region

• The Riverina & Murray region is adjacent to the large northern Victorian production region. A significant proportion of the milk produced would be used in the manufacture of shelf-stable commodities such as milk powders and cheese by Victorian companies.

• Major Victorian based exporters such as Murray Goulburn and Fonterra are well-established in the region. Major fresh milk processors – Lion (with supply company DFMC) and Parmalat are also represented. This strategic region is therefore highly contested in terms of milk supply.

• Just 5% of farms in this region are classed as small, with milk production averaging well over 2 million litres per farm. More than half of the farms in the region are classified as “large” – that is over 301 cows milked, according to the NDFS.

• The region also has the lowest proportion of farms who produce year round, most batch calve, and just 5% of farms producing seasonally.

• According to the NDFS, farmers within this region feed an average of 2.2 tonnes of grain per cow per year. A significant proportion of farms interviewed in this region used a total mixed ration.

• Farms in the Riverina & Murray regions are the most reliant on irrigation in the state, with over 60% of land watered on average.
Appendix 2: DB Navigator
The DBNavigator enables the simulation of a long-term operation of a dairy farm with wide scope to change in physical and financial assumptions over that period. The principal aim of the DBNavigator is to provide users with a scenario planning tool capable of helping them explore the possibilities in optimising farm enterprise performance and impacts of change over medium to long term.

The DBNavigator provides a dashboard of key farm result areas that a user can readily assess and specify a response or various “what-if” scenarios. The major features of the design of the DBNavigator are as follows:

- Rapid “what-if” analysis to assess the 10-year impact of a range of variables:
  - Farm growth or expansion
  - Changing in the intensification of operations
  - Variable or random climates
  - Access to improved skills in feed production, feed and herd management, and cost control
  - The effects of fluctuating milk prices and grain costs
  - Changes in supplementary feeding
  - Changes in herd management/composition.

- The tool applies to multiple production regions and localities.
- It readily caters for different production systems – these can be tailored to individual farm situations.
- Limited front-end loading of farmer data – the tool requires farm layout, land use, calving patterns and herd structure. Cost parameters are pre-loaded and can be cross-checked with farm actuals as the model is used.
- A user can access the resilience of the enterprise by running multiple random climate and market scenarios to see how the farm performs financially and physically.
- A user can store and save farm plans and 10-year simulations.

[Image of DBNavigator interface]
Appendix 3: Sources
Sources

Sources
• Beijing Orient, Research Report on China’s Whole Milk Powder Market Supply & Demand, July 2012
• Dairy Australia, Assessment of Technical Barriers to Trade (unpublished)
• Dairy Australia, Industry database
• Dairy Australia, In Focus 2013, November 2013
• Dairy Australia, Situation & Outlook, May 2014
• Department of Agriculture and Food, Pre-feasibility study for production and export of milk and milk powder from Western Australia, April 2013
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• X-cheque, Subtropical Dairy Economic Modelling, November 2013