

# FUTURE FOCUS

DAIRY INDUSTRY STRATEGY  
MURRAY REGION 2019







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- Perin Davey - PD Strategy
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Most importantly a huge thank you to the 165 dairy farmers, consultants, agronomists, processors, regional agencies and organisations and local government representatives who contributed via the survey, individual consultations or through group sessions.





# FOREWORD

**KAREN MORONEY** Dip HRM (Dairy), GAICD  
Dairy Farmer - Eskdale  
Chair, Murray Dairy

I remember the day very clearly 10 years ago. I was an enthusiastic participant in a leadership program, which culminated in a day spent in Parliament House in Canberra. The day's proceedings ended with a dinner where we heard from various ministers and advisors responsible for the Agriculture portfolio. It ended with the inevitable Q&A session in which I asked: "Does our government have a strategy or a blueprint for agriculture in Australia". The answer was simply, "No".

Today, 10 years on, we see a drive from industry bodies, processors and farmers to develop a clear vision and purpose for dairy. Future Focus – Dairy Industry Strategy Murray Region 2019 is an important document in this context. It gives a clear and comprehensive overview of the dairy industry in the Murray Dairy region and provides valuable context and priorities for the broader National Dairy Plan to ensure a strong and viable industry over the next five years and beyond.

The Murray Dairy region is a significant contributor to our communities and the economy at a local and national level. With the industry in transition due to influencing factors such as the Millennium drought, rising input costs, volatility in domestic and international commodity markets, water policy and climate change, it can be said that these challenges also lead to opportunities. Future Focus has skilfully identified these trends by conducting an environmental scan of our industry, using comprehensive farmer and service provider consultation and using key industry documents and connected strategies to identify common priorities, opportunities, synergies and constraints relevant to dairying in our region.

A work such as Future Focus takes enormous effort and resources to pull together and the following people need to be acknowledged and thanked for their stellar support and efforts.

Firstly, to the initial drivers of this project, Jenny Wilson, ably supported by Amy Fay of Murray Dairy and Sam Birrell from the Committee for Greater Shepparton.

Secondly, thank you to all those involved in consultations or who contributed to the survey, made up of dairy farmers, consultants, agronomists, processors, regional agencies and organisations and local government. Without your valuable input this document would not exist.

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In my role as Chair of Murray Dairy, it is exciting to play a part in shaping the conversation and developing that "blueprint". More importantly, we as an industry are taking charge of where we see ourselves and our industry in the future by providing an invaluable reference tool that will give confidence and guidance to a broad range of stakeholders.

**SAM BIRRELL** CEO  
Committee for Greater Shepparton

Future Focus is a document that identifies an industry in the midst of significant change. Change presents challenges, but also opportunities. It is clear that the practices of the past cannot be relied upon to create a profitable dairy sector in this region into the future, so the industry must adapt.

Future Focus establishes six areas where the adaptation will be most critical: profit, systems, water, people, planning and promotion. These areas stand alone in terms of responsibility and expertise but are all interlinked in the sustainability of dairy in the region.

The latter part of Future Focus outlines the goals and subsequent strategies to be applied and most critically, the stakeholders responsible. Future Focus is not a static document, it is designed to foster engagement and collaborative partnerships to achieve collective outcomes.

Future Focus can promote a bright future for the industry if all stakeholders take ownership and enthusiastically work toward the goals identified. If stakeholders prevaricate and wait, we could see the decline of dairy in this region.

The Committee for Greater Shepparton is very pleased to be involved in such an essential analysis and pathway forward for one of the major economic drivers of our region.

# EXECUTIVE SUMMARY

The goal is clear: a strong, confident, agile and forward-looking dairy industry in the Murray region. An industry that transforms challenges into opportunities, is profitable and continues to support the communities that depend on its prosperity. Owning our own future will be the key to success.

In 2017-18 dairy in the **Murray region generated a farmgate value of \$916 million**, with the region's 1372 dairy farmers producing **2064 million litres of milk (22 per cent of the national total)**. A further \$730 million of economic contribution was injected into regional communities. Dairy is the leading employer within agriculture, employing 8700 people on-farm, in regional processing and within the broader service sector.

The Murray Dairy industry foundations are strong, including competitive land and resources, a modernised public irrigation network, a diverse services sector, competition with all major milk companies present plus specialised processors; and good transport links to Melbourne and other dairying regions north and south.

The industry is in transition, which presents challenges as well as opportunities. The region, and consequently its dairy industry, has changed significantly since the Millennium drought (1997-2009). Change drivers include water policy reforms, climate change, rising input costs, volatile seasonal

conditions and challenging commodity markets.

The future operating environment is likely to be characterised by increasing variability and volatility, requiring adaptive management at all industry levels. The industry has already demonstrated a capacity to evolve and adjust to these change drivers, but further support is required.

Future Focus – Dairy Industry Strategy Murray Region 2019 (Future Focus) brings together in a single plan, what the industry must collectively focus on to achieve its goal. Future Focus is designed to directly contribute to and be aligned with the 2019 Australian Dairy Plan as well as other state and industry plans and strategies.

Future Focus provides direction for all organisations working for the good of dairy in the Murray region – industry, local government, regional economic development entities and State agencies – to consolidate and grow the industry, and align support across regional communities.

Future Focus identifies six key themes, to coordinate effort, guide investment and ensure a long-term sustainable future. Each theme contains specific goals and strategies to guide collective action. A combined effort with all stakeholders and organisations working in the same direction will achieve the goals, to the lasting benefit of the region.

## KEY THEMES



# EXECUTIVE SUMMARY

**PROFIT**

**GOAL:** Sustainable farm profit that in turn supports communities and regional economies.

**STRATEGY:**

- Programs to improve business skills to proactively manage and reduce input costs and risks.
- Incentivise investment that supports new practices, farm systems and risk mitigation strategies such as feeding infrastructure and feed storage facilities.
- Platform for more transparent communication of market signals driving milk prices.
- Programs to improve farmers' capacity to understand and negotiate contracts.
- Alternative payment agreements, including fixed price and longer-term agreements.

**SYSTEMS**

**GOAL:** Farm systems that can respond proactively to a changing operating environment.

**STRATEGY:**

- Programs to increase farmers' understanding of the cost/benefit of investing in new practices, farm systems, and supporting infrastructure including feeding and feed storage facilities.
- Programs that improve farmers' capacity to implement new practices and systems.
- Increase RD&E into heat and drought-tolerant forage types, adaptive feedbase systems, heat-tolerant herd genetics and labour-saving farm technologies.
- Climate information in a readily accessible format to inform farm decision-making.
- Market forecast information in a readily accessible format to inform farm decision-making.
- Pre-emptive industry standards and policies for environmental outcomes and animal health.

**WATER**

**GOAL:** More efficient, cost-effective water use

**STRATEGY:**

- Programs to improve capacity and capability to operate in competitive water market.
- Programs to increase farmer understanding of the cost/benefit of investing in new water use efficient (WUE) practices and farm systems.
- Programs to improve farmer skills and capability to implement new practices/farm systems, including WUE and/or multi-use forage types.
- Goulburn Murray Water tariff review to remove cross-subsidies and other anomalies pushing up costs.
- Commercially sustainable and affordable off-farm irrigation infrastructure footprint.
- North East Sustainable Irrigation Plan completed to bolster pasture and cow productivity.
- Market-based regional water retention strategy.

**PEOPLE**

**GOAL:** Attract and retain high quality, highly skilled farmers, workers and service providers.

**STRATEGY:**

- Programs/courses to train current and new generation of agronomists, nutritionists and other advisors in diverse farm systems and transitions.
- Integrated training for modern farm systems across education providers and allied services.
- Career advisors actively promoting dairy to increase enrolments in dairy skills courses.
- Recruitment of new workers to the industry.
- Attract complementary skills from other industry sources.
- Programs and tools to increase understanding of employer and employee obligations.
- Increase in farm businesses actively planning for succession.
- Best practice templates for leasing, share farming and equity partnerships.
- Designated Area Migration Agreement (DAMA) for the Murray region.
- Continue dairy industry's investment in leadership training and development programs.

**PLANNING**

**GOAL:** Integrated planning to support investment and take advantage of emerging markets.

**STRATEGY:**

- An integrated regional land use planning strategy recognising industry's needs.
- A regional transport strategy recognising industry's needs.
- Energy initiatives to lower energy bills; improve reliability; and, provide a distribution system capable of supporting new technologies in milking and farm systems.
- Business case to maintain and grow State investment and resources available to support the dairy industry.

**PROMOTION**

**GOAL:** Change the conversation to tell a positive story of dairy's value and importance.

**STRATEGY:**

- Comprehensive promotional strategy to highlight:
  - Regional economic value
  - Social licence
  - Investment appeal
  - Career opportunities
  - Water and resource use efficiency
- A regional industry promotional strategy to drive adaptation to the new operating environment, and boost farmer and processor confidence to invest.
- Proactive engagement with stakeholders and organisations to implement this Strategy.



# POSITIONING THE INDUSTRY

Dairy is Australia’s third-largest agricultural commodity with a farmgate value of \$4.3 billion<sup>1</sup>. In the Murray Dairy region, the industry was valued at **\$916 million at the farmgate** in 2017-18<sup>2</sup>. However, the industry is far broader than the farmgate. It is **one of the leading rural industries in terms of value-add and downstream processing**.

The dairy industry within the Murray region, covering northern and north-eastern Victoria and southern New South Wales, has good reason to be optimistic about its future. The regional foundations are strong, including competitive land and resources; a modernised public irrigation network; a diverse services sector; competition with all major milk companies present plus specialised processors; and, good transport links to Melbourne and other dairying regions north and south.

The industry is in transition, which presents opportunities as well as challenges. Since the Millennium drought (1997-2009), consolidation has continued on farms and in processing. This is consistent with national trends since 2000 toward fewer but larger and more efficient dairy farms, and increasing milk yields per cow<sup>3</sup>. Dairy farm systems in irrigation districts are also diversifying away from a historical reliance on intensively irrigated pastures in response to national water policy reforms and climate change.

Rising input costs, volatile seasonal conditions, and challenging commodity market trends have somewhat dampened farmer confidence<sup>4</sup>. The future operating environment is likely to be characterised by increasing variability and volatility, requiring adaptive management at all industry levels.

Nonetheless, positive opportunities for industry profitability and sustainability continue to emerge. Future Focus – Dairy Industry Strategy Murray Region 2019 identifies five key strategic themes for action in the short, medium and long term that will deliver benefits well beyond the farmgate and into households and businesses now and in the future. Promotion across all strategic areas is the essential sixth element to ensure Future Focus is a living, dynamic document that drives and shapes the Murray Dairy region’s transition.

This Strategy provides a clear pathway to transform challenges into opportunities, to consolidate and grow the dairy industry, and align support for the industry across the regional communities who depend on a strong dairy sector.

## GRAPHIC 1. Future Focus - Dairy Industry Strategy Murray Region 2019

Outcomes of the Consultations identified Key Focus Areas

### KEY FOCUS AREAS



<sup>1</sup> Dairy Industry in Focus Annual Reports, ABARES, Dairy Australia

<sup>2</sup> Dairy Industry in Focus - 2018, ABARES, Dairy Australia

<sup>3</sup> Dairy Industry in Focus Annual Reports, ABARES, Dairy Australia

<sup>4</sup> Dairy Situation and Outlook June 2018. Dairy Australia



# AN INDUSTRY IN TRANSITION

# STATE OF THE INDUSTRY

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The Murray Dairy Industry has been in a transitional phase driven by environmental, market and policy changes. The operational skills acquired during this period, combined with geographic location and ample processing capacity and competition, give the region many operating advantages.



# STATE OF THE INDUSTRY PRODUCTION

## MILK

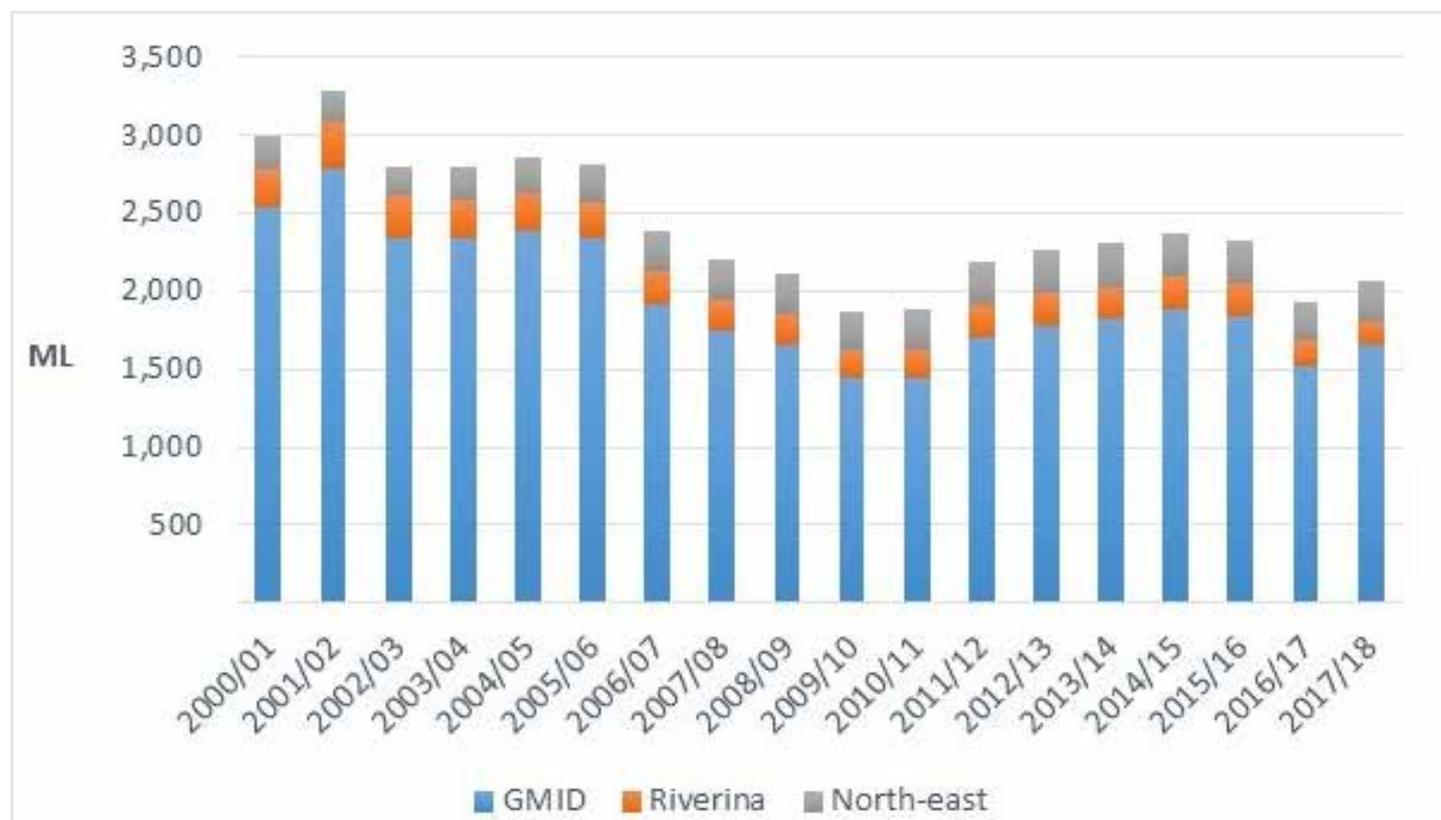
### MILK PRODUCTION AT A GLANCE

- Milk production was 2064 ML in 2017-18, down 30 per cent since 2000.
- 1372 farms in 2017-18, down 59 per cent since 2000.
- 358,000 cows in 2017-18, down 40 per cent since 2000
- Remaining farms support larger herds and milk yield per cow has increased.

Murray Dairy region milk production has declined by a third overall since 2000, from almost 3000 million litres down to 2064 million litres in 2017-18. After peaking at 3288 million litres in 2001-02, supported by exceptional seasonal, market and price conditions, annual milk production settled at about 2800 million litres in the early 2000s before the Millennium drought took its toll on production with low rainfall and reduced water availability for irrigation.

Milk production recovered after the drought broke in 2009, but has not returned to pre-2006 levels. This trend is most evident in the GMID subregion. It reflects a combination of reduced water availability and affordability due to the 2012 Murray-Darling Basin Plan recovering water for the environment from 2008; the 2016 milk price shock; and, a series of difficult seasons with dry extremes followed by wet extremes with few 'average' seasons in between.

GRAPHIC 3. Murray Dairy Milk Production



# STATE OF THE INDUSTRY PRODUCTION

## FARM SIZE

The Murray Dairy region trend since 2000 is toward fewer but larger and more efficient dairy farms, and increasing milk yields per cow, consistent with the national trend<sup>7</sup>.

The number of dairy farms across the Murray region has declined 59 per cent from 3340 in 2000, down to 1372 in 2017-18. The total Murray Dairy region herd has declined 40 per cent from an estimated 602,290 cows at the turn of the century to 358,248 cows now.

However, the milk production impact of fewer farms and fewer cows has been offset to some degree by the increasing average size of herds on the remaining farms, along with increased productivity per cow and greater efficiencies on-farm driving improved milk production as a whole. Consequently, milk production over the same period has declined 30 per cent.

Despite fewer farms and fewer cows, dairy's land use base has barely changed. What has changed is the way that land is used. Historically, most farms were small (~100 cows), with each farm being largely self-sufficient by growing its own feed to sustain that small herd.

Now, with the trend towards larger herds, consolidation has occurred with smaller farms being integrated into larger feedbases including outblocks to support larger herds. In addition, smaller farms have also been converted to feed blocks providing feed or agistment to other dairy farmers.

In simple terms, the industry occupies a similar land base as in the past but uses it differently now with a mix of dairy farms and other properties associated with dairy production by virtue of augmenting the feedbase.

## SUBREGIONAL VARIATION

The Murray Dairy region comprises three subregions: the Goulburn Murray Irrigation District (GMID), north-east (NE) Victoria (including the alpine valleys), and the southern NSW Riverina (also known as NSW Murray).

**TABLE 1. Sub-region Profiles 2017-18**

	Riverina	North-Eastern Victoria	Goulburn Murray Irrigation District
Dairy Farms	89	164	1119
Cows	24,867	42,083	274,547
Production (litres)	150,992,608	255,527,679	1,667,047,220
Farmgate Value	\$67 million	\$113 million	\$736 million
Return to local economy	\$53 million	\$90 million	\$589 million

Milk production and farm size trends display significant variation across the three Murray Dairy subregions, each of which has different climates, water access and infrastructure.

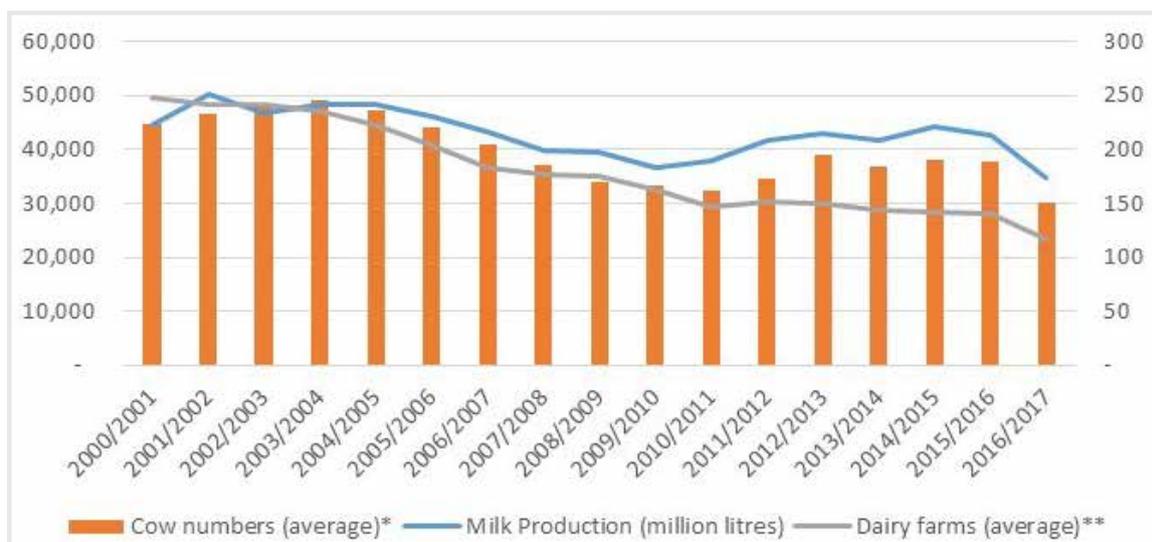
# STATE OF THE INDUSTRY PRODUCTION

## • SOUTHERN NSW RIVERINA

The southern Riverina dairy subdistrict is located within Murray Irrigation Ltd (MIL), the largest privately-owned irrigation network in Australia. Dairy is a significant component of the area's commodity mix: the southern Riverina's 89 dairy farms produced 151 million litres of milk in 2017-18, worth \$67 million at the farmgate and returning about \$53 million to the local economy

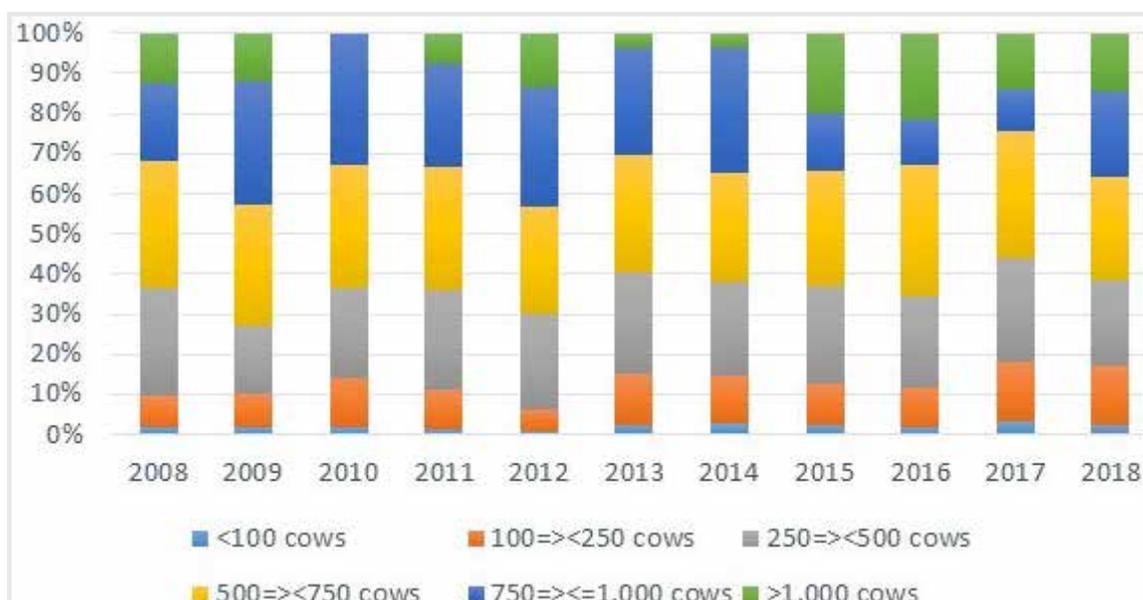
Since the turn of the century, farm numbers have halved, and the total herd has declined by a third, however milk production has only declined by 22 per cent, reflecting higher yields per cow and greater efficiencies on farm driving higher productivity (Graphic 4).

**GRAPHIC 4. Riverina herd, milk and farm trends**



Since 2008, production has remained relatively evenly distributed across different herd sizes, with the highest proportion of milk consistently produced by medium to large herds of 500 cows or more (Graphic 5). This contrasts with other Murray subregions, which have seen a significant swing from small herds to larger herds over the same time.

**GRAPHIC 5. Riverina milk production % by herd size**



# STATE OF THE INDUSTRY PRODUCTION

## • NORTH EAST

The North East dairy subregion extends from Benalla, including the Ovens valley, alpine valleys of the Kiewa and Mitta Mitta rivers, and the upper Murray River valley. Dairy makes a substantial economic contribution: the 164 dairy farms in the north-east produced 256 million litres of milk in 2017-18, worth \$113 million at the farmgate and returning about \$90 million to the local economy

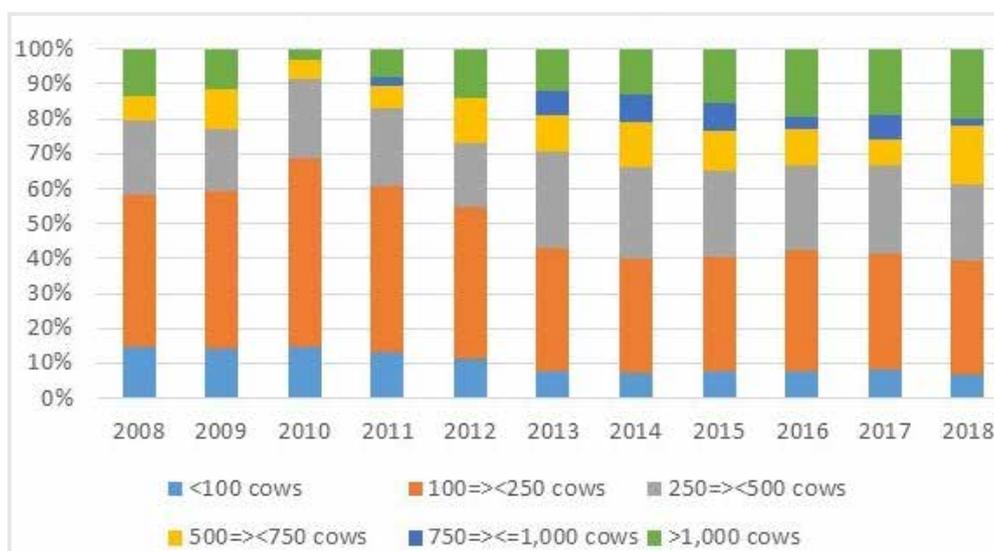
While the number of farms has fallen by 38 per cent since 2000, milk production nonetheless remained stable during the Millennium drought, and then increased post-drought. This reflects larger herd sizes and improved productivity on the remaining farms. However, milk production has declined since the 2016 milk price shock, driven by herd culls and farm exits.

**GRAPHIC 6. North East herd, milk and farm trends**



The North East has seen a large reduction in smaller herds, with 39 per cent of milk production in 2018 produced by herds with fewer than 250 cows in 2018, down from 58 per cent a decade earlier (Graphic 7). The trend towards aggregation was also apparent in this region, with milk produced by large herds with 750 cows or more increasing from 14 per cent in 2008 to 22 per cent in 2018.

**GRAPHIC 7. Milk production % by herd size**



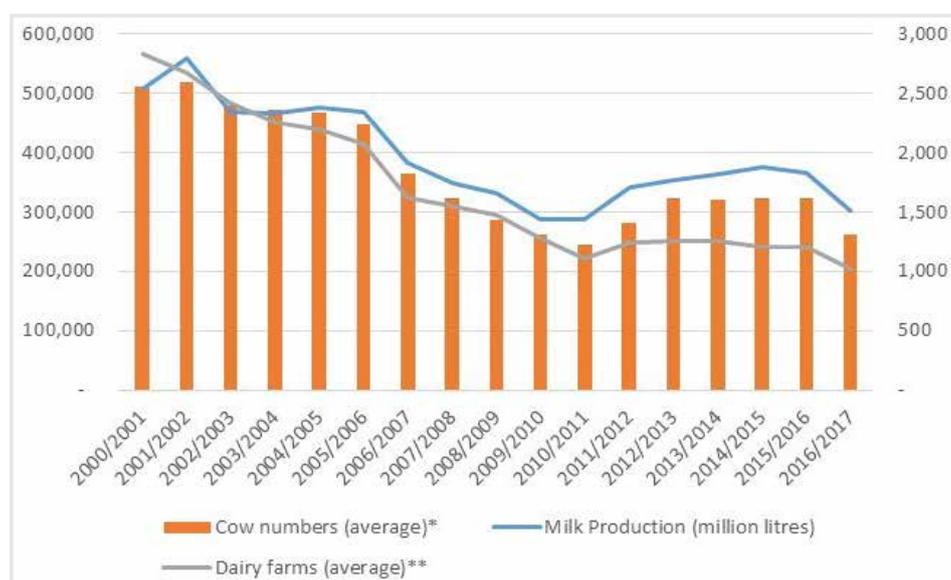
# STATE OF THE INDUSTRY PRODUCTION

## • GOULBURN MURRAY DISTRICT

The Goulburn Murray Irrigation District (GMID) spans 27,000 square kilometres in northern Victoria, stretching from Cobram in the east to Swan Hill in the west. It covers five local government areas: Moira, Greater Shepparton, Loddon, Campaspe, Gannawarra and Swan Hill.

Dairy is the major agricultural industry, with 1119 farms that produced 1660 million litres of milk in 2017-18, worth \$740 million at the farmgate and returning about \$590 million to the local economy.

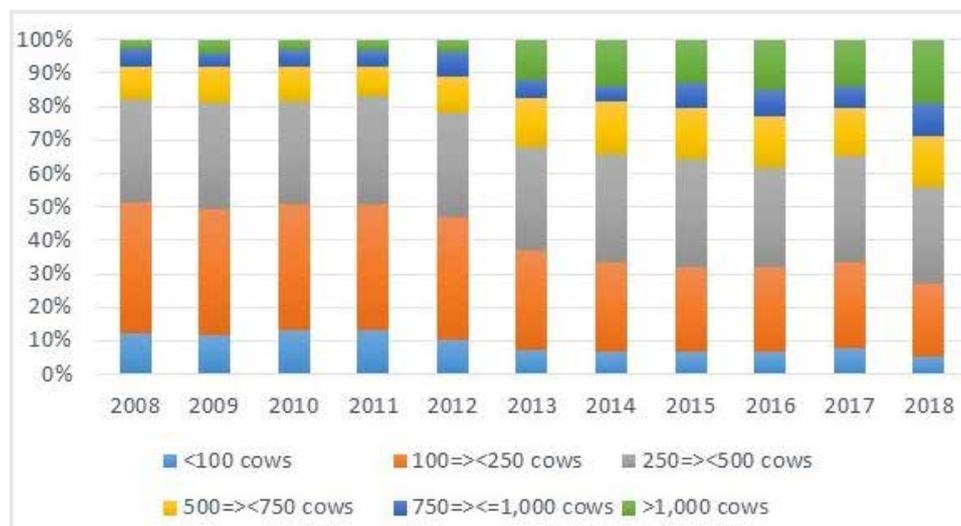
**GRAPHIC 8. GMID herd, milk and farm trends**



This subregion has been the most affected by the changes in operating environment driven by water policy reforms over the last 15 years (See Systems and Water sections for more information). Since 2000, GMID farm numbers have declined 62 per cent, cow numbers have declined 48 per cent and milk production has declined 40 per cent.

The GMID has also seen a significant reduction in milk produced by small farms as aggregation occurs. In 2008, 51 per cent of milk was produced by herds with less than 250 cows. In 2018 that figure was down to 27 per cent (Graphic 9). Over the same period, milk production from large herds with 750 or more cows more than tripled from eight per cent to 29 per cent.

**GRAPHIC 9. GMID milk production % by herd size**





# STATE OF THE INDUSTRY COMMODITY & INPUT MARKETS / SUPPLY CHAIN

## COMMODITY & INPUT MARKETS

### MARKET SITUATION

- While the Asian market has a positive demand pattern, international markets are inherently volatile, and farmers have limited opportunities to offset this.
- Australian market conditions are increasingly volatile, driven by climate, competing industries for fodder, grain and water, and international commodity market.

Dairy Australia sees a positive demand pattern driven by the Asian market<sup>8</sup>, however, international markets are inherently volatile. The impact of global dairy prices on local pricing arrangements continues to temper industry confidence.

Domestically, Australian market conditions for a range of inputs have become increasingly volatile, driven by climate, competing industries (for water, land, grain and fodder) as well as the international commodity markets. This is feeding uncertainty about future cost of production, and the long-term investment plans for processors in the Murray Dairy region.

There is opportunity to explore what financial and production strategies farm businesses can implement to help manage commodity market volatility, and how this can be supported at a processor level.

## SUPPLY CHAIN

### SUPPLY CHAIN ISSUES

- Water availability, reliability and cost are affecting consistency of supply to manufacturers.
- Increasing energy costs and unreliability of supply.
- Pressure on social licence to operate for animal welfare and sustainable land use.

From the farm through to the final product, issues facing one production stage impacts on others. On-farm production is directly linked to product manufacture. Fulfilment of farm supply contracts to milk processors enables fulfilment of market contracts for dairy products.

The Aither Water Market Drivers Report (2016) identified consequences for processors when milk production falls. Manufacturers interviewed for this Strategy identified consistency of supply as a key issue for their business success. They recognise that water availability, reliability and cost are key issues for consistent production in the Murray Dairy region. One processor said water prices can be an indicator for milk production depending on the time of the season.

A simmering issue raised by manufacturers is the cost of energy. While a current issue for processing facilities it is considered a horizon issue for their suppliers, particularly as farms consolidate and need larger milking and storage facilities with associated increased power needs.

Social licence to operate is another challenge confronting many intensive livestock industries across environmental, climate or animal welfare concerns. The rise of activism and access to social media has put these issues into the minds of the general population, influencing their choices in the grocery aisles.

Social licence and public confidence in the industry is acknowledged as an area that must be addressed in collaboration between processors and suppliers. The Australian Dairy Products Federation noted that manufacturers that had strong, direct relationships with their suppliers were better able to promote environmental or socially responsible standards.

<sup>8</sup> Dairy Australia Strategic Plan 2016/17-2018/19, MD Foreword, 2016.



# AN INDUSTRY IN TRANSITION

# INDUSTRY TRENDS

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Trends in six key areas are driving the transition in the Murray Dairy industry. The following pages describe each key area in detail. The industry has the capacity to direct some trends to its advantage, such as production, farm systems, and to a limited extent, profit. Others require partnerships with regional agencies and local government, such as planning and people. Some trends in water, profit and people reflect larger State and national policy levers, and national and market conditions. These will require a multi-faceted approach at regional, State and national levels to address.

# INDUSTRY TRENDS

## PROFIT



### FARM PROFIT TRENDS

- Average dairy farm EBIT (Earnings before Interest and Tax) is declining over time.
- \$500 million has been invested in new and upgraded processing facilities since 2013.
- But, farmers are not getting clear market signals to produce more.
- Many farmers want longer term consistent payment agreements to manage risk.

Dairy farming at an industry level remains profitable in the Murray Dairy region but profits fluctuate widely from one year to the next reflecting the constantly moving and largely uncontrollable matrix of weather; input costs; milk, livestock and feed prices; and, national and market conditions<sup>10</sup>.

GRAPHIC 10. Average EBIT \$/kgMS Northern Victoria

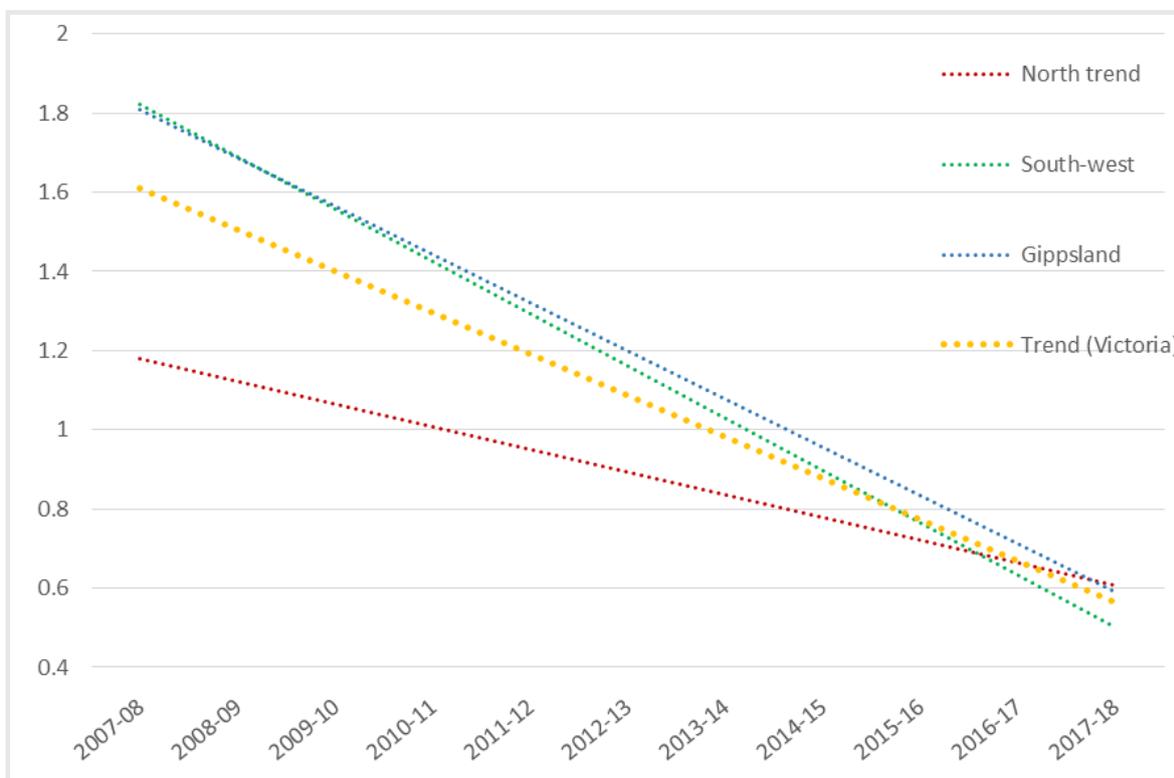


# INDUSTRY TRENDS

## PROFIT

The annual averages further mask wide fluctuations between the top performing 25 per cent of farm businesses and others. Overall, however, profits have trended down since 2008 (Graphic 10), consistent with anecdotal reports that farm margins are being squeezed ever tighter. It should be noted that some of the decline can be attributed to significant on farm investment being made to support farm system adjustment rather than purely from eroded profits. This is consistent with trends across the whole Victorian dairy industry. The South-west and Gippsland dairy regions demonstrate a similar pattern of average EBIT \$/kgMS, characterised by an overall downward trend since 2008 (Graphic 11).

**GRAPHIC 11. Average EBIT \$/kgMS all Victorian dairy regions**



<sup>9</sup> Water Market Drivers in the southern MDB: implications for the dairy industry. Report prepared by Aither for Dairy Australia, 29 July 2016.

<sup>10</sup> Dairy Farm Monitor annual reports, Victoria. <https://www.dairyaustralia.com.au/farm/farm-business-management> Website accessed 30 January 2019.

# INDUSTRY TRENDS

## PROFIT

The profit squeeze is reflected in Murray Dairy farmers' confidence in the industry's future, which continues to trend downwards and has fallen significantly the past year (Graphic 12)<sup>11</sup>, despite 60 per cent of Murray Dairy farmers expecting to make an operating profit in 2017-18, up from 44 per cent reporting an operating profit the year before.

Milk price remains the most commonly mentioned concern, however irrigation/drought issues are considerably more widespread than 12 months ago. Seven per cent of Murray Dairy farmers in the 2018 survey expected to leave the industry within three years. The 2018 National Dairy Farmer Survey was undertaken before the severe drought conditions of 2018-19 set in, with zero water allocations for dairy farmers in the southern NSW Riverina and rising temporary water prices on the market.

Nonetheless, despite the recent market and seasonal challenges, \$493 million has been invested over the last five years in on-farm infrastructure on dairy farms in the Murray region<sup>12</sup>, indicating confidence in future profitability. Most investment has been towards large Partial Mixed Rations (PMR) and Total Mixed Rations (TMR) developments.

The investment trend may be reflected in the 2018 National Dairy Farmer Survey, where compared to 12 months ago, a considerably higher proportion of Murray Dairy respondents increased their herd size (45 per cent compared with 23 per cent in 2016-17) and staff levels (17 per cent, compared with eight per cent in 2016-17). Encouragingly, more than half of Murray Dairy respondents (55 per cent) expect production to be greater by 2021, although the proportion was significantly lower than in 2017 (68 per cent).

The southern Riverina and GMID subregions are also well served by processing facilities in northern Victoria representing all major milk companies. This promotes competition for supply along with many small, specialised processors. Around \$500 million has been invested in new and upgraded facilities over the last five years, and companies are chasing supply from farmers to fill the stainless steel.

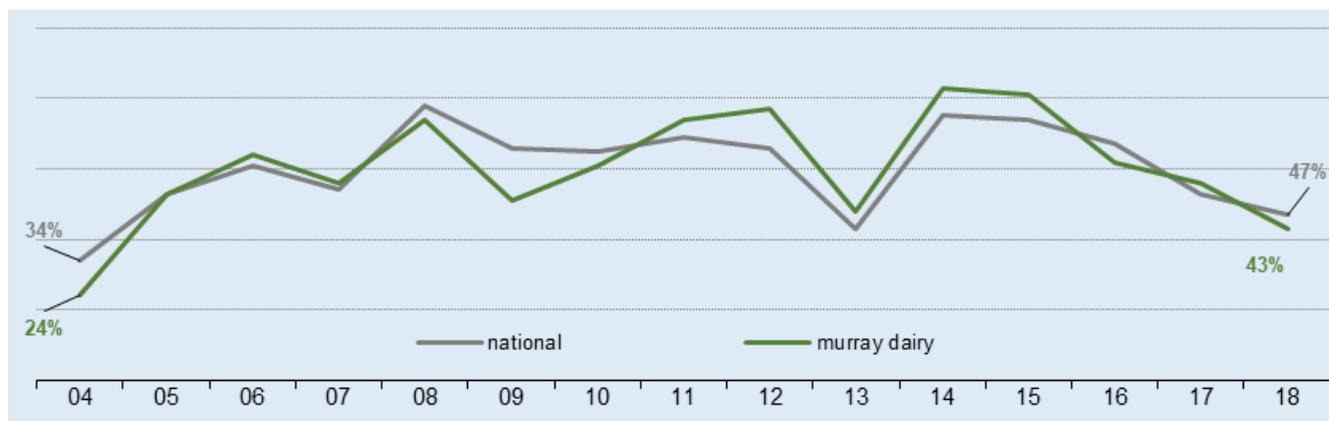
However, processing options are limited for suppliers in the North East subregion where facilities have been steadily rationalised over the last 20 years.

The question is whether the investment will be maintained or continue while regional milk production remains, and sensitive to adverse seasonal and market conditions. The production impacts are evident in Graphic 3 when the very dry 2015-16 season was followed by the extreme wet start to 2016-17 and compounded by the 2016 milk price shock.

Despite intense competition for milk supply among the dairy companies, farmers report not getting clear market signals to produce more through higher farmgate prices. The Victorian industry, like Tasmania, is highly exposed to global commodity markets with most of its production exported in processed goods.

Wary of volatile prices over recent years, many farmers in consultation for this Strategy said they were looking for alternative payment agreements to manage risk, including fixed price and term agreements over a longer period. This will also allow confidence and security to enable long-term investment to manage water market and climate volatility, such as feeding infrastructure and storage.

**GRAPHIC 12. Murray Dairy region farmer sentiment trend (% positive)**



<sup>10</sup> Dairy Farm Monitor annual reports, Victoria. <https://www.dairyaustralia.com.au/farm/farm-business-management> Website accessed 30 January 2019.

<sup>11</sup> Ibid.

<sup>12</sup> Agriculture Victoria Dairy Clients Summary 2016-2018 (AIDT Flagship).

# INDUSTRY TRENDS SYSTEMS



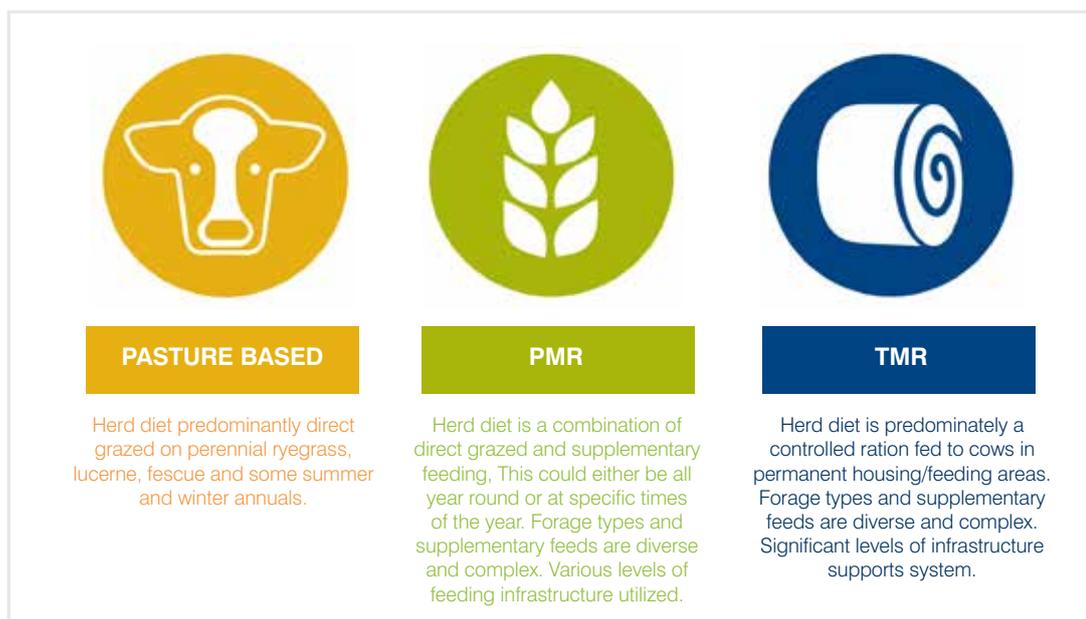
ALL SUPPORTED BY PROMOTION

## FARM SYSTEM TRENDS

- The last 15 years has seen a steady evolution towards PMR and TMR systems; these account for most of the \$493 million invested over the last five years in on-farm infrastructure
- The trend towards PMR and TMR systems is in response to decreasing water availability and affordability, and climate change.
- Feedbase species are also evolving in response to long and short term market and seasonal conditions, with a mix of perennial, summer active and winter annual species grown.
- The mix between species varies significantly year to year and farm to farm driven by water availability, price and individual security
- Some farmers are comfortable with this semi-feedlot system, but others wish to remain primarily pasture-based if they have the water security required to do so.
- Many farmers want to make changes but are deterred by diverse real and perceived barriers including finding the time to acquire relevant business management skills.

Milk production in the Murray Dairy region can be loosely grouped into three main feedbase systems, as outlined in Graphic 13: Pasture-based, Partial Mixed Rations (PMR) and Total Mixed Rations (TMR). There is significant regional variance in the mix of systems across the North-East, the Goulburn Murray Irrigation District (GMID) and the southern Riverina, influenced by differences in the operating environment including access to water, climate and geography.

GRAPHIC 13. Murray regional dairy production systems





# INDUSTRY TRENDS SYSTEMS

## • NORTH EAST

Farm systems in the North East subregion are primarily pasture-based. Where the conditions are favourable, pasture can be a low cost and low maintenance, high quality feed for dairy livestock.

Many farms here have limited or no access to regulated water for irrigation but benefit from high rainfall. Dairy businesses in the North East occupy on average 308 ha per farm, and irrigate approximately 11 per cent of this area<sup>13</sup>. Where farmers from this region have access to regulated water, there is opportunity for increased use of existing water rights to support increased feedbase productivity, particularly in the Ovens and Kiewa river catchments. Analysis of land use and water use against entitlements shows that, on average, farm businesses across all commodities in the north-east used 41 per cent of their total entitlement in 2018<sup>14</sup>. The North East Sustainable Irrigation Plan being developed by the North East Catchment Management Authority (CMA) will assist in identifying opportunities.

## • THE GMID

GMID dairy farm systems have historically been predominately low-input, intensively irrigated, perennial pasture-based systems, with businesses able to access abundant, cheap and secure water. The region is serviced by an extensive system of rivers, storages and channels, able to deliver water when and where it is needed by irrigators. Victorian High Reliability Water Shares (HRWS), have consistently delivered 100 per cent, or close to, annual allocations except in the last three years of the Millennium drought (2001-2009), giving irrigators with these entitlements a reliable source of water to use each season.

However, perennial pastures require constant watering, particularly through summer as they are not heat-tolerant. In this sense, these systems have less flexibility to reduce water demand when water availability and affordability declines. Analysis from the Accelerating Change project<sup>15</sup> - looking at improving efficiencies in feedbase and irrigation management across farms in this region - shows that due to decreased productivity over summer, and comparatively low water use efficiency compared to summer-active alternatives, return per megalitre applied on perennial ryegrass decreases significantly as water price increases.

With reduced water availability, first due to the Millennium Drought and then environmental water recovery under the 2012 Murray-Darling Basin Plan, GMID dairy farmers have already begun to diversify their feedbase to utilise more

summer and winter annual crops and pastures, delivering better feedbase value for the price of water.

GMID farm businesses now lie across the full continuum of pasture-PMR-TMR systems, contrasting strongly with the almost total perennial pasture systems typical of the GMID before 2006. While no two farms are the same, the average GMID dairy farm feedbase in 2017-18 (a year with full allocation and low temporary water prices), had 48 per cent perennial pasture (with lucerne making up 26 per cent), 11 per cent summer annual species, and 41 per cent winter annual species (e.g. annual ryegrass & cereal species). Typically, the perennial species being used include lucerne and fescue, with the remainder ryegrass. The summer annual forage crops include sorghum, millet and maize, while winter crops include annual ryegrass, oats, vetch, wheat and barley. This shift has significantly increased complexity and variation in and between feedbase systems.

Individual businesses are choosing their own mix of perennial pasture, summer and winter species, and various levels of investment in supporting infrastructure, in response to a wide range of drivers which include water security, extreme weather events, skills and experience including access to labour, geographical location and cultural and attitudinal factors.

<sup>13</sup> RMCG 2018, *North East Sustainable Irrigation Plan Renewal, Land and Water Management Plan, Discussion Paper*, North East Catchment Authority, accessed: <https://www.necma.vic.gov.au/sustainable-irrigation>

<sup>14</sup> *Ibid*

<sup>15</sup> *Accelerating Change Partner Farm Economic Analysis 2016-17*, accessed: <https://www.acceleratingchangeproject.com/spring-summer-16-17-stewart>



# INDUSTRY TRENDS SYSTEMS

## THE ACCELERATING CHANGE PROJECT

The Accelerating Change project (a three-year joint investment between Murray Dairy, Regional Development Victoria, Dairy Australia and the Department of Economic Development, Jobs, Transport and Resources) aimed to help farmers develop profitable and resilient businesses through increasing efficiency of feedbase and irrigation management.

Consistent with the conclusion of the Regional Irrigated Land and Water Use Mapping Project 2015-16, which suggested the dairy industry must turn short-term (drought) survival strategies into profitable business management strategies, Accelerating Change found farmers tended to over-rely on “rules of thumb” developed in an historic operating context rather than analysis of current and future conditions to inform on-farm decision-making.

Sustainable long-term management strategies now require complex decision-making based a range of factors and information sources resulting in different optimal outcomes for individual businesses. This combined with the volatility and increased rate of change in

the operating environment was consequently preventing individual businesses from developing systems suitable for current and future operating environments.

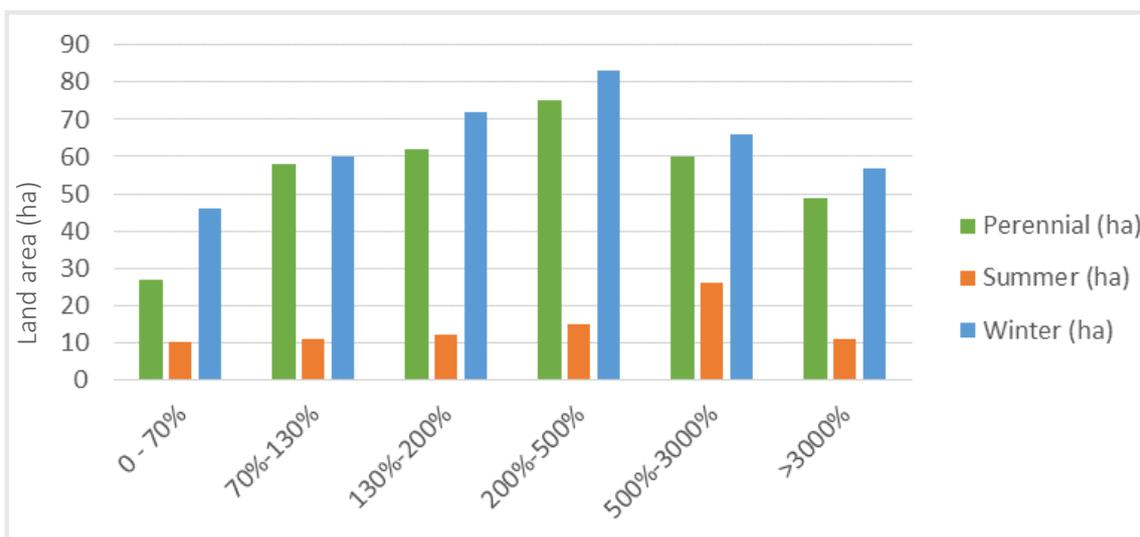
Accelerating Change found social barriers to change as well as knowledge gaps in evaluating best management practice tools and techniques. This could be linked to cultural and attitudinal drivers as well as industry confidence. A lack of certainty regarding key issues including water policy and industry stability was also undermining investment confidence at both a farm and processor level.

The Accelerating Change project and other work has shown a continued evolution towards PMR and TMR systems in the GMID over the last 15 years. This is occurring as farmers look for production systems that can manage a wide range of physical and financial risks.

# INDUSTRY TRENDS SYSTEMS

Water security has had a significant impact on the type of forages and feedbase systems implemented on individual farms. Graphic 15 shows that in 2017-18, a year of full allocation and low temporary water prices, GMID dairy farmers with high water security (i.e. who use 70 - 130 per cent of the HRWS they own) have smaller than average farms, and maintain proportionally more of their property under perennial pasture.

**GRAPHIC 14. Impact of water security on feedbase**  
GMID 2017/18 dairy mean irrigation activity (ha) by Use to HRWS %



Those with less water security tended to have less perennial pasture and use a higher proportion of their land for summer cropping and winter annuals. Data from the 2015-16 irrigation season demonstrates the impact both individual water security and overall seasonal conditions has on forage selection across farms. Graphic 16 shows water use and forage selection when temporary water prices were significantly higher. All farmers decreased their use of perennial and summer active species and increased their area of irrigation of winter annual species. Those with less individual water security decreased their irrigation of perennial species more dramatically than those with high water security. This demonstrates that farmers are making individual choices about forage selection year to year and between farm to farm, to respond to water availability and price.

**GRAPHIC 15. Impact of water security on feedbase**  
GMID 2015/16 dairy mean irrigation activity (ha) by Use to HRWS %



These changes in on farm forage selection are also driving changing water demand across the region. Increases in winter annuals and summer active species correspond to changed water delivery patterns, with higher volumes demanded in traditional shoulder seasons to start or finish annual species.

# INDUSTRY TRENDS SYSTEMS

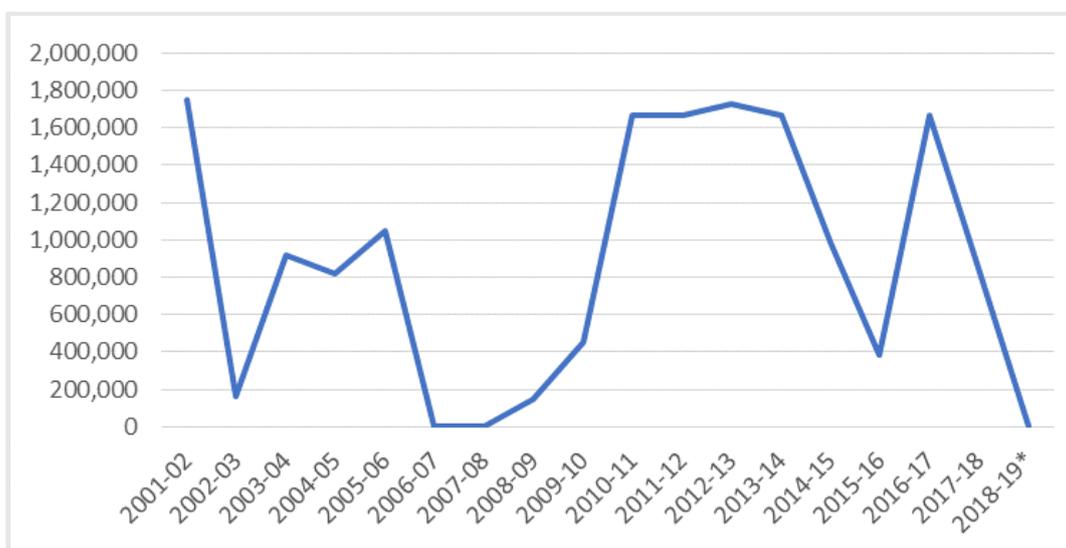
## • RIVERINA

Farm systems have always been more diverse in the southern Riverina, where dairy farmers own less reliable General Security water entitlements and are therefore more used to managing highly variable allocation volumes from one season to the next (Graphic 16).

Southern Riverina dairy farmers have already moved to business models supported by cropping and large-scale fodder production, and invested in the infrastructure required to draw on a range of feed sources depending on seasonal and market conditions. This region has a greater proportion of TMR and PMR systems than the other Murray subregions.

**GRAPHIC 16. NSW Murray General Security water allocations (ML)**

*GMID 2015/16 dairy mean irrigation activity (ha) by Use to HRWS %*



Geographical location is also playing a role in developing different feedbase systems. To the west of the GMID and in the southern Riverina, there are opportunities for large-scale cropping and fodder production (irrigated and dryland) to be incorporated into farm systems. Here, advantage can be taken of large property sizes, fewer infrastructure constraints such as roads, and proximity to broadacre cropping regions from which to purchase feed. This is leading to a general trend towards more PMR and TMR systems.

On smaller land areas, such as existing soldier settlement blocks in the GMID or in the North East, cropping on a large scale becomes more challenging due to smaller property sizes and more roads and other infrastructure hanging over from the historic subdivisions. Removing infrastructure to enable cropping or larger feedbase systems can be costly, which may be preventing consolidation of farms in the central GMID compared with other parts of the region. This area is also more likely to experience transport and access restrictions as compared to areas with larger land parcels.

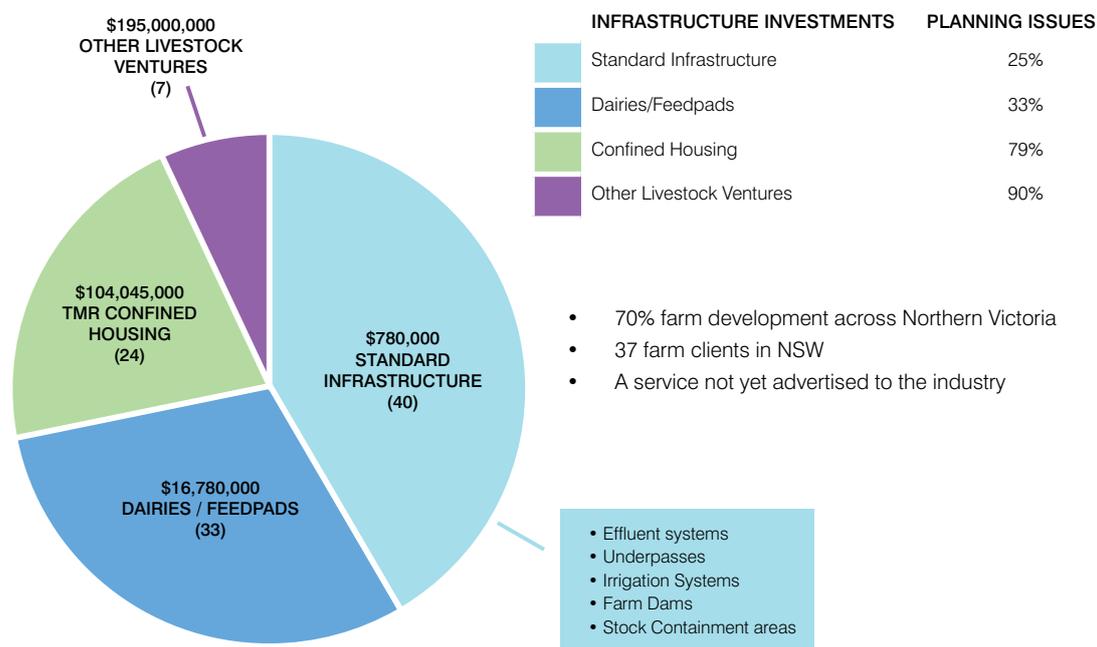
The industry in the Murray region continues to see a large number of pasture-based or grazed farm systems that are operating effectively. The question for all systems is what resources, including level of water security, commodity pricing, support, skills and capability, are required to successfully manage each system, and how can the resilience of individual businesses be built up to manage a volatile operating environment through a combination of farm system and business management adaptation strategies?

# INDUSTRY TRENDS SYSTEMS

## PMR AND TMR INVESTMENT

Despite the recent market and seasonal challenges, \$493 million has been invested over the last five years in on-farm infrastructure on dairy farms in the Murray region. The investment trend is strongly towards large developments based on PMR and TMR systems.

*Ag Vic Dairy Clients Undertaking Infrastructure Works (2016/17)*



The investment indicates many dairy farmers still have confidence in the future of dairy, with a desire to future proof their businesses against expected water market volatility and climate extremes, and to better manage risk and maintain business continuity.

It also illustrates transition is already well underway, with feedbases evolving and diversifying in response to reduced water availability and affordability, and climate change. The evolution is driven by the need to increase water use efficiency (WUE), and the need to be more opportunistic with water use to compete on the water market.



# INDUSTRY TRENDS SYSTEMS

## RISK MANAGEMENT DRIVING CHANGE

Risk management and adaptive management in financial and physical decision-making are becoming a key component of what drives a successful business in a volatile operating environment. Many farmers see PMR and TMR systems as a way to incorporate risk and adaptive management into their dairy feedbase systems.

However, the 2017 Gardiner Dairy Foundation feedbase survey<sup>16</sup> identified reasons why farmers do not or are reluctant to make changes to feedbase (and other) management practices, including:

- Cash flow and financial considerations;
- Concerns about seasonal and market conditions;
- Time availability;
- Labour availability and quality;
- Policy uncertainty;
- Farm layout and infrastructure;
- High self-reliance (on own, family or peer information and ideas);
- Social and learning preferences;
- Stage of life or achievement (winding down or contentment with current state);
- Being in a non-growth business stage of the farm business;
- Succession issues; and,
- Risk averseness.

The survey highlighted the need for programs that build:

- Leadership and people management skills;
- Problem solving, decision-making and planning skills; and,
- The industry skill base and promote career pathways.

The Gardiner Foundation survey identified improved business management skills as the second area that will support better feedbase decision-making. This is widely recognised among farmers as critical, yet it can easily be allocated a much lower priority among the day-to-day tasks and activities.

Establishing the principles of business management, financial management, people management, decision-making and planning will enable better implementation of feedbase fundamentals and innovations into the farm business.

## CLIMATE CHANGE

### CLIMATE TRENDS

- Rising temperatures and declining rainfall may be offsetting productivity and water efficiency gains from upgrading farm irrigation infrastructure.
- The warming and drying trend is contributing to farmers changing pasture and forage crop species due to warmer, shorter springs and plant heat stress impacts.
- Exposure to extreme events such as droughts and floods is set to increase.
- Higher temperatures affect milk production across seasons and generations, and income.

Rising temperatures and declining rainfall associated with climate change may be offsetting productivity and water efficiency gains achieved from existing adaptation strategies such as upgrading farm irrigation infrastructure or evolving feedbase systems.

Temperatures in northern Victoria have already risen by an average 0.5°C above the 1950-2005 mean since 2000. They are expected to be 1.2-1.8°C above the mean by 2040. Maximum temperatures will increase more than minimum temperatures<sup>17</sup>.

Rainfall patterns across the Murray Dairy region have also changed. From 1990-1999, this was a predominantly winter rainfall zone in which most rain fell during the winter months. Since 2000, the subtropical ridge has strengthened, pushing rainfall zones south. The result is a more uniform rainfall distribution between summer and winter<sup>18</sup>. Correspondingly the spring growing season has contracted over the last 15 years, with higher pasture growth rates in winter and early spring<sup>19</sup>.

<sup>16</sup> Cockfield G, Doran-Browne N, 2017. "Feedbase management: A survey of Victorian Dairy farmers" University Southern Queensland Australia for the Gardiner Foundation.

<sup>17</sup> Climate change impacts on Australia's dairy regions. CSIRO report for Dairy Australia, November 2016.

<sup>18</sup> 'New Australian climate developing'. Australian Export Grains Innovation Centre (AEGIC). Website accessed 18 December 2018. <https://www.aegic.org.au/new-australian-climate-developing/>.

<sup>19</sup> Cullen, Eckard, 2018. 'Simulating pasture growth rates in Australian and New Zealand grazing systems'. *Australian Journal of Agricultural Research*, 2008, 59, 761-768. Website accessed 18 December 2018. [https://www.researchgate.net/publication/29660381\\_Simulating\\_pasture\\_growth\\_rates\\_in\\_Australian\\_and\\_New\\_Zealand\\_grazing\\_systems](https://www.researchgate.net/publication/29660381_Simulating_pasture_growth_rates_in_Australian_and_New_Zealand_grazing_systems)



# INDUSTRY TRENDS SYSTEMS

Exposure to extreme events such as droughts and floods is set to increase. The percentage of time in drought is expected to increase from the current median of 33 per cent, up to 46 per cent, with implications for managing feed, water and animal heat stress during hot, dry conditions. Notwithstanding lower rainfall overall, extreme daily rainfall intensity is expected to increase with implications for flooding, erosion, infrastructure, transport, animal welfare and water-logging<sup>20</sup>.

Higher temperatures also reduce soil moisture and increase the amount of irrigation water required to maintain the same level of pasture and fodder productivity, at a time when farmers are dealing with lower water affordability and availability.

The warming and drying trend is already influencing the selection of pasture and forage crop species due to warmer, shorter springs and plant heat stress impacts. Perennial rye grass is a temperate species, which are not particularly heat-tolerant. The optimum temperature for perennial ryegrass productivity is in the low 20's°C, with higher temperatures reducing yield<sup>21</sup>.

There is also a stark contrast in longevity and persistence between temperate and hotter environments, for example Fulkerson et al (2001) found that ryegrass persistence was significantly higher in the cool environment of Tasmania compared to the hotter environment of South East Queensland<sup>22</sup>. These factors suggest higher temperatures negatively impact yield and persistence, and hence the cost of production of perennial ryegrass in the Murray Dairy region.

Increases in annual temperatures also affect herd milk production and income. November 2017 was the hottest November on record in Victoria, leading to a 12 per cent decline in milk production from the first week of the month to the last and an average loss of 2500 litres of milk per farm. In 2014, a heatwave from 14-20 January saw Victorian milk production drop 13.4 per cent drop over seven days<sup>23</sup>. Heat stress can also affect future fertility and milk production beyond the current season<sup>24</sup>.

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<sup>20</sup> Climate change impacts on Australia's dairy regions. CSIRO report for Dairy Australia, November 2016.

<sup>21</sup> Mason W, Kelly K, Blaikie S, Stockdale R, 1987. *New Directions for Irrigated Pastures*, Proceedings of the Australian Agronomy Conference, 4, 100-17.

<sup>22</sup> Fulkerson WJ, Donaghy D, Morris R, Sweeney G, Callow M, 2001. *Identifying factors which affect persistence of perennial ryegrass in dairy pastures in Tasmania, Western Australia, south-east South Australia, Queensland and the south coast of New south Wales*, NSW Agriculture, Final Report, DAN 099, Wollongbar.

<sup>23</sup> Meyer, Eckard 2018

<sup>24</sup> Cool cows. *Practical information and tools to manage heat stress in Australian dairy herds*. Dairy Australia website accessed 18 December 2018. [www.coolcows.com.au](http://www.coolcows.com.au)

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# INDUSTRY TRENDS WATER



### WATER TRENDS

- Water policy reforms, notably environmental water recovery, mean dairy farmers now own fewer water entitlements and are more reliant on the temporary water market.
- Increased reliance on the temporary water market is a new and significant risk, affecting the cost base but also the ability to transition to new business models and business strategies.
- Selling high security water rights during the Millennium drought was a key survival strategy that is no longer available to many businesses.

Farmers and processors alike will have to adapt to reduced water availability/affordability and climate change to maintain profitable businesses. The link between production in the Murray Dairy region, water availability and the cost of water on the temporary allocation market is apparent to suppliers and processors alike.

Water trend drivers since 2000 include the Millennium drought, unbundling water rights from land, removing restrictions to allow water trade across the southern Murray-Darling Basin, the introduction of carryover and drought reserves in Victoria, and increased competition for both water entitlements and allocation from new and expanding agricultural industries downstream, particularly almonds and other fixed horticultural plantings.

Water recovery from irrigators to increase environmental flows in rivers is the most significant driver. As of 30 June 2018, 828 billion litres (GL) had been recovered under 2004 The Living Murray and 2002 Water4Rivers programs<sup>25</sup>, with another 1744 GL of water recovered in the southern Basin<sup>26</sup> under the 2012 Murray-Darling Basin Plan. The Basin Plan includes more than 1430 GL<sup>27</sup> from irrigators, with the environment now owning about 20 per cent of all high reliability and general security entitlements in the southern Basin.

The prospect of further water recovery for the environment has created uncertainty in the Murray region dairy industry. The Basin Plan allows for another 450 GL 'upwater' by 2024. The Basin ministerial council agreed at a meeting in Melbourne on 14 December 2018 to strengthen the criteria so no further water can be recovered if it has adverse third-party or water market impacts<sup>28</sup>. This should provide more certainty for irrigated industries.

## REGIONAL IRRIGATED LAND AND WATER USE MAPPING

The Regional Irrigated Land and Water Use Mapping Project 2015-16<sup>29</sup> was led by the Goulburn Broken Catchment Management Authority in partnership with Murray Dairy/Dairy Australia and other agencies. A Dairy Evaluation report<sup>30</sup> was developed by Dairy Australia and Murray Dairy, drawing on dairy-specific data in the project to provide an analysis of the dairy industry. Mapping was repeated in 2017-18 to continue tracking trends in GMID land and water use two years on<sup>31</sup>.

<sup>25</sup> Murray Darling Basin Authority. Website accessed 18 December 2018. <https://www.mdba.gov.au/sites/default/files/docs/Pre-2009-water-recovery-table-2017.pdf>

<sup>26</sup> DAWR surface water recovery progress. <http://www.agriculture.gov.au/SiteCollectionDocuments/water/progress-recovery/surface-water-recovery.pdf>. Accessed 6 October 2018.

<sup>27</sup> RMCG 2018. 'Update on GMID water availability scenarios and Irrigated Production across the Southern connected Basin'. Report prepared for the Goulburn Broken Catchment Management Authority, 6 June 2018.

<sup>28</sup> Murray-Darling Basin ministerial council communique 14 December 2018. Website accessed 18 December 2018. <https://www.mdba.gov.au/media/mr/murray-darling-basin-ministers-meet-melbourne>

<sup>29</sup> Regional Irrigated Land and Water Use Mapping in the GMID 2015/16. Technical Report, Goulburn Broken Catchment Management Authority and partners, 2017.

<sup>30</sup> Dairy Evaluation Report, 2017. Available at <http://www.dairyaustralia.com.au/Industry-information/About-the-industry/Recent-industry-topics/Murray-Darling-Basin.aspx>

<sup>31</sup> Regional Irrigated Land and Water Use Mapping in the GMID 2017/18. Goulburn Broken Catchment Management Authority and partners. Report pending.



# INDUSTRY TRENDS

# WATER

The project highlights water ownership and use trends in the GMID over the last 16 years. The 2017 report proposed the dairy industry focus on turning the short-term survival strategies utilised over that time into longer-term profitable business management strategies, of which there are many examples across the region where this transition has already occurred.

Potentially negating the benefits of long-term implementation of such strategies is the fact that GMID dairy farmers now own 57 per cent less water than before the drought and in recent years have used between 43-57 per cent more water than they own, making them highly susceptible to the volatility in price and availability of the temporary water market.

This erosion of water security has implications for both the cost base and risk profile of individual dairy businesses, but also their ability to transition to these new business models and business strategies. Selling high security water rights during the last drought was a key survival strategy that is no longer available to many businesses.

Water policy reforms have affected the GMID the most. Overall, the volume of High Reliability Water Shares (HRWS) owned in the GMID has declined from 1600 GL to 900 GL through the combination of environmental water recovery (417 GL under the Basin Plan<sup>32</sup>) and water entitlements trading out of the district. In particular, GMID dairy HRWS ownership fell from 709 GL in 2003-04 down to 352 GL a decade later.

Since 2000, the volume of water use in the GMID overall has also declined, from an annual average of 2100 GL down to 1300 GL, dropping to as little as 600 GL in a dry year. The dairy industry is now using about 40 per cent less water in an average season now than it did pre-2006<sup>33</sup>.

However, despite using less water overall, the GMID dairy industry is now highly reliant on the temporary water market to meet irrigation needs. Pre-2006, GMID dairy farmers as a group used on average 30 per cent more water each year than they owned in HRWS. The additional water was available in the form of cheap 'sales' allocations within the GMID. Sales water was effectively a redistribution of unused or underused allocations.

This surplus 'sales' pool was absorbed through environmental water deals pre-Basin Plan; the activation and trade of 'sleeper' licences leading to full uptake of the available resource each year; the Basin Plan buybacks; and, the introduction of carryover and associated 'spillable' accounts. Drought has also changed the metrics for deciding annual water allocations, while climate change is also having an effect, particularly by reducing rainfall and runoff in the autumn break.

The result is GMID dairy in 2014-15 used 59 per cent more water (~740GL) than it owned in HRWS (465GL). In 2017-18, the dairy industry used 43 per cent more water (614GL) than it owned in HRWS (352GL). The reasons for the significant further reduction in dairy HRWS ownership over the last three years warrant further investigation, as do the drivers for the reduced water use.

Dairy farmers must now compete for the additional water they use in a temporary (or 'allocation') market spanning the whole southern connected Basin, and against new and expanding industries such as almonds that have emerged over the last 10 years. This water is generally available at significantly higher prices than traditional 'sales' allocations.

Land and water use mapping in 2017-18<sup>34</sup> confirms that dairy farmers remain heavily exposed to the temporary water market to meet their production needs. Graphic 15 shows in more detail that most GMID dairy farmers are using significantly more water than the volume they own in entitlements: 66 per cent are using more than 130 per cent of their entitlement volume, including 40 per cent using more than double their entitlement volume.

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<sup>32</sup> RMCG 2018. 'Update on GMID water availability scenarios and Irrigated Production across the Southern connected Basin'. Report prepared for the Goulburn Broken Catchment Management Authority, 6 June 2018.

<sup>33</sup> Regional Irrigated Land and Water Use Mapping in the GMID 2017/18. Goulburn Broken Catchment Management Authority and partners. Report pending.

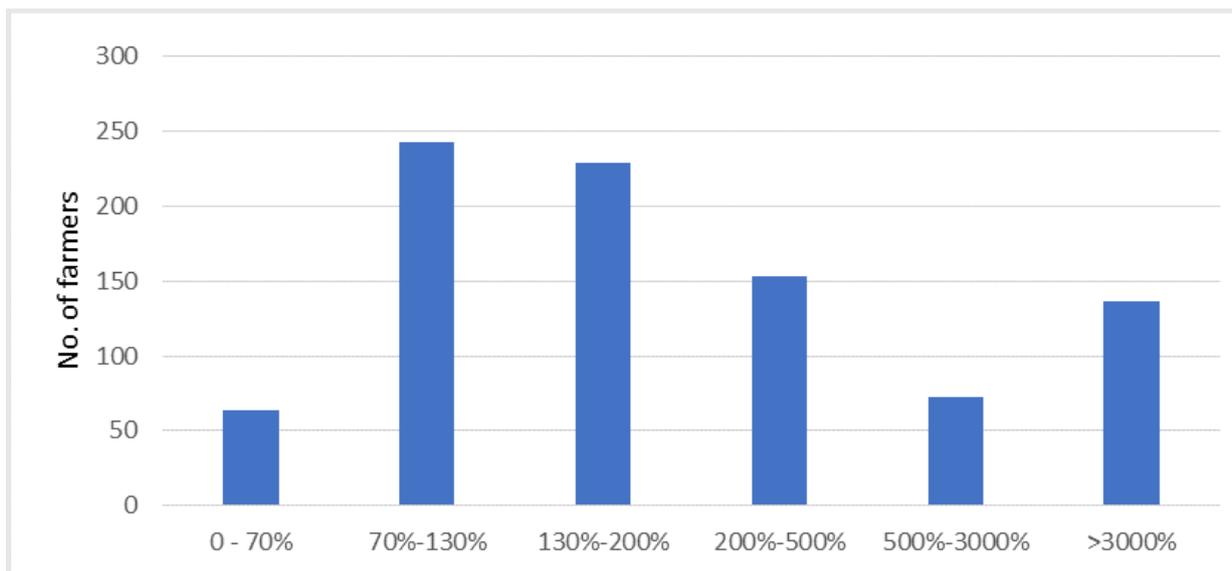
<sup>34</sup> Regional Irrigated Land and Water Use Mapping in the GMID 2017/18. Goulburn Broken Catchment Management Authority and partners. Report pending.

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# INDUSTRY TRENDS

## WATER

**GRAPHIC 17. GMID dairy water use as a percentage of entitlements owned**

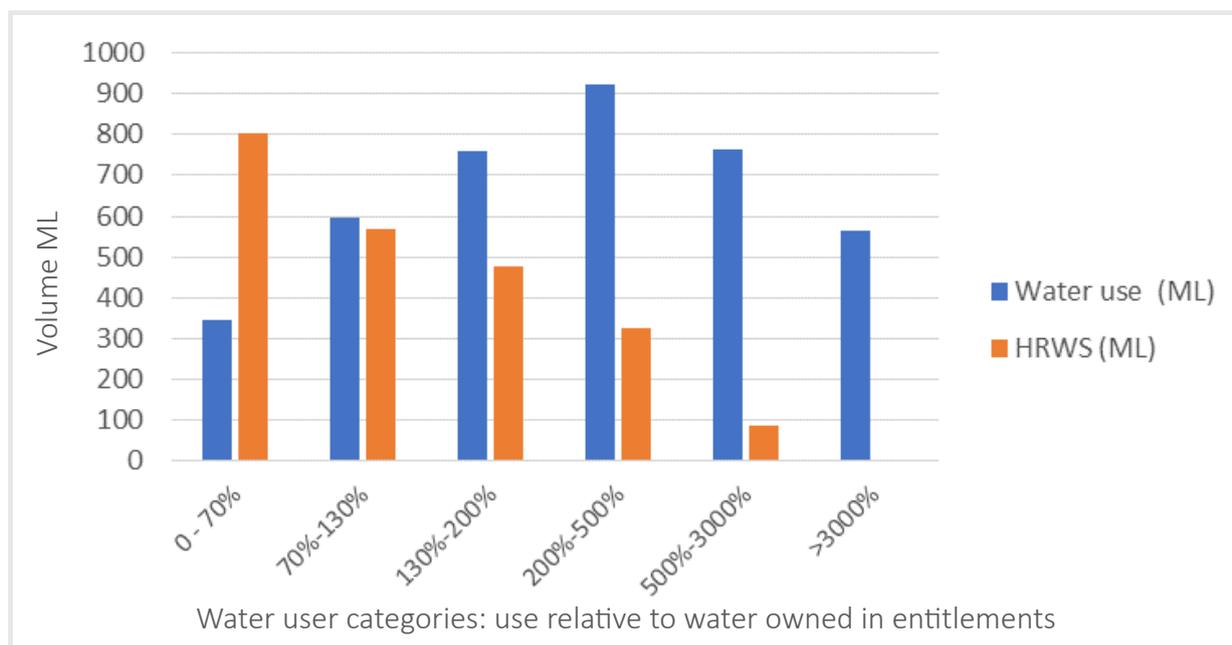


Graphic 17 shows that farm businesses with either very high or very low proportions of HRWS ownership are generally smaller water users. About 34 per cent of dairy farmers use less than half the volume of water allocated to their entitlement, or are roughly self-sufficient, using around the same amount of water allocated against their HRWS.

As water use increases, the proportion of HRWS owned decreases, until a tipping point where water used is more

than five times the amount of water owned. Then water users decrease their water use on average as water security decreases. A portion of the industry uses on average more than 30 times more water than they own. Most dairy businesses have relatively low water security, with 66 per cent using significantly more than they own in entitlements, highlighting the industry's vulnerability to a volatile temporary water market (Graphic 18).

**GRAPHIC 18. Mean volume of water used against volume owned in entitlements**



# INDUSTRY TRENDS

## WATER

Temporary water prices in the southern Basin are highly sensitive to seasonal conditions (Graphic 19). In dry seasons, low allocations against NSW General Security entitlements in the NSW Murray and Murrumbidgee drive prices higher. Increased competition from expanding horticultural developments downstream from MIL and GMID is adding further upward pressure on water prices.

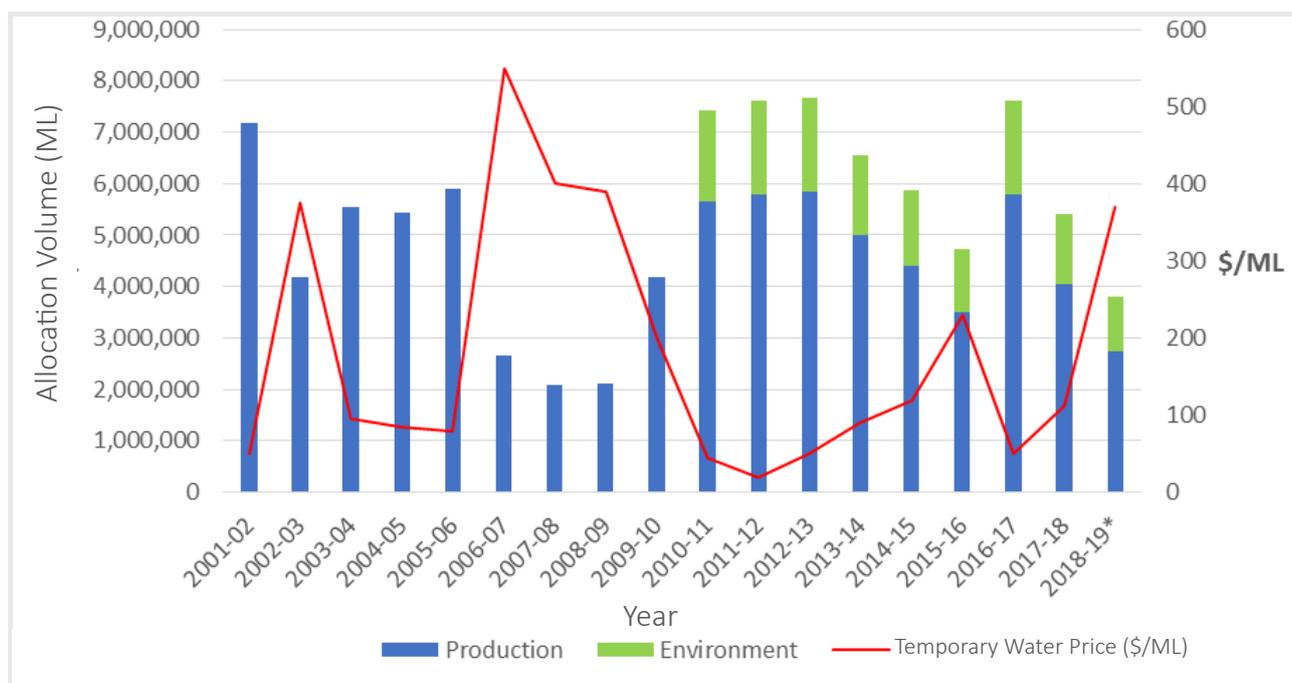
Dairy farmers are highly sensitive to the temporary water price: in 2015-16, 26 per cent said prices over \$150/ML were not viable for their business, and 56 per cent said prices over \$200/ML were not viable<sup>35</sup>. The shift in entitlement ownership relative to water use has meant a steep learning curve for many dairy farmers, who are having to navigate their way through a more complex water procurement landscape with brokers offering diverse portfolio options and market products.

### GRAPHIC 19. Allocations and weighted average temporary water prices

\*2018-19 allocations and weighted price average as of 4 February 2019.

Blue: allocations against entitlements for productive use

Green: allocations against entitlements held for environment



<sup>35</sup> Dairy Evaluation Report, 2017. Available at <http://www.dairyaustralia.com.au/Industry-information/About-the-industry/Recent-industry-topics/Murray-Darling-Basin.aspx>



# INDUSTRY TRENDS WATER

## REGIONAL IRRIGATION INFRASTRUCTURE

### ON-FARM IRRIGATION INFRASTRUCTURE TRENDS

- More than 65 per cent of GMID dairy farmers have upgraded farm irrigation infrastructure, with most reporting production improvements but also increased water use.
- The North East Sustainable Irrigation Plan under development will set the strategic direction and identify activities to enable sustainable irrigation and boost productivity.

Significant investment has already occurred in infrastructure on- and off-farm in the NSW southern Riverina and northern Victoria, using a combination of government funding and private investment.

More than 65 per cent of GMID dairy farmers have upgraded their on-farm irrigation infrastructure in last five years<sup>36</sup>. Of those surveyed, 75 per cent said they had seen production improvements through improved irrigation application and scheduling, but also through transfer to more intensive irrigation or higher value forage types.

Farmers also reported using more water than before the upgrades, to get the most productivity benefit from their new systems. According to analysis on water efficiency programs by Aither, since the introduction of on-farm water use efficiency programs in northern Victoria, participants' average water use increased by about 50 to 100 ML per year (11-22 per cent) compared with non-participants<sup>37</sup>.

However, while many dairy farmers have upgraded their farm systems to use water more efficiently and boost productivity, GMID milk production overall remains closely linked to the water available for the industry to use. GMID dairy farmers as a group now own 57 per cent less water in HRWS than in 2000, and in recent years have used between 43 and 59 per cent more water than they owned<sup>38</sup>, making them vulnerable to the vagaries of a volatile temporary water market.

In the NSW southern Riverina, the Commonwealth has invested \$284 million in upgrading and modernising the Murray Irrigation system since 2011 through the Private Irrigation Infrastructure Operators Program (PIIOP-NSW). The projects are generating an estimated 60 GL in water savings to be converted into environmental entitlements held by the Commonwealth.

In the GMID, more than \$2 billion of State and Commonwealth funding has been invested in modernising the off-farm infrastructure since 2007, to improve service levels and reduce system water losses. Of the 429 GL in savings, 150 GL is shared between irrigators and Melbourne, where households and industry contributed \$300 million to the upgrade; the balance is being converted into environmental entitlements held by Victoria and the Commonwealth.

In the North East subregion, the North East Catchment Management Authority is developing a Sustainable Irrigation Plan to identify activities to support more irrigation and boost productivity. The Plan will be used as a guiding document to align decision-making in land and water management programs by a range of agencies including North East CMA, Goulburn Murray Water, the Environmental Protection Authority, DELWP and Agriculture Victoria.

<sup>36</sup> Dairy Evaluation Report, 2017. Available at <http://www.dairyaustralia.com.au/Industry-information/About-the-industry/Recent-industry-topics/Murray-Darling-Basin.aspx>

<sup>37</sup> Aither 2017. Water market impacts of on-farm water use efficiency programs that require entitlement transfer. A Final Report prepared for the Department of Environment, Land, Water & Planning, December 2017. Available at: [https://www.water.vic.gov.au/\\_data/assets/pdf\\_file/0020/331535/Water-market-impacts-of-WUE-programs\\_Final\\_17-12-18\\_STC.pdf](https://www.water.vic.gov.au/_data/assets/pdf_file/0020/331535/Water-market-impacts-of-WUE-programs_Final_17-12-18_STC.pdf)

<sup>38</sup> Regional Irrigated Land and Water Use Mapping in the GMID 2017/18. Goulburn Broken Catchment Management Authority and partners. Report pending.



# INDUSTRY TRENDS WATER

## REGIONAL IRRIGATION INFRASTRUCTURE

### OFF-FARM IRRIGATION INFRASTRUCTURE TRENDS

- Changes in production systems are driving changes in timing and volume of water demand across the season, presenting a challenge for irrigation district infrastructure planning and pricing.
- Reduced water usage and more opportunistic usage patterns pose threat to the viability of water companies in terms of the revenue needed to sustain the infrastructure footprint.

Changes in water availability and affordability are driving changes in production systems, which are in turn driving changes in the timing and volume of water demand from dairy farmers. These trends in turn are presenting a challenge for irrigation district operators' planning and management.

Historically, the GMID and MIL irrigation season went from 15 August to 15 May, with a system shut down for three months over winter. Now, with the area planted under perennial pasture shrinking, demand for water over summer is falling or being redirected to other crops with different watering patterns (see the Systems trends section for more information). At the same time water demand is increasing in the shoulder seasons to support annual species, e.g. summer and winter cropping.

Stakeholders have expressed increasing concern over the level of water use, the size of their irrigation district's infrastructure footprint, and the associated cost structures. They perceive that reduced water usage and more volatile usage patterns as irrigators become more opportunistic, pose a threat to the viability of water companies in terms of the revenue needed to sustain the infrastructure footprint.

For example, since 2000, the volume of water use in the GMID has declined, from an annual average 2100 GL down to 1300 GL, and as little as 600 GL in a dry year. This has put significant pressure on the viability of Goulburn Murray Water (GMW) in terms of generating enough revenue to cover costs without dramatically increasing pricing structures.

The reduction in water use is linked to irrigators trading around 700 GL litres in high reliability entitlements out of the GMID since 2000; an estimated 417 GL in entitlements were sold or transferred to the environment under the Basin Plan but the balance was traded downstream mainly to support an expansion in almonds and other fixed horticultural plantings.

GMW has identified \$474 million in initiatives and \$15.2 million in efficiencies planned over the next 25 years to reduce costs, but still has a \$10 million a year revenue shortfall to cover to ensure financial sustainability<sup>39</sup>. GMW is looking for further savings to avoid increasing tariffs to cover this shortfall. This also involves reviewing its tariff structure, including ways to remove cross-subsidies that potentially disadvantage medium to large water users.

Similarly, Murray Irrigation Ltd (MIL) holds around 450 GL (28 per cent) fewer entitlements than it did in 1995 as a result of all environmental recovery programs to date. This represents a reduction of almost \$2.5 million a year in sales revenue (user charges)<sup>40</sup>.

On-farm water use efficiency programs can also impact irrigation infrastructure operators' business models. MIL has reported that participants in past programs were more likely to increase their overall volume of water required. From 2012-13 to 2014-15, annual water use by on-farm program participants went from 122 per cent of entitlement, to 131 per cent, to 140 per cent. Non-participants' water use by comparison went from 97 per cent to 106 per cent to 123 per cent<sup>41</sup>.

Understanding and implementing a fair and sustainable cost system for public irrigation infrastructure will be critical as water use patterns change and traditional revenue streams decrease.

Alternatives such as scaling back system operations may need to be investigated and managed, particularly as this may result in job losses and flow-on community impacts<sup>42</sup>.

There are also still areas of both the public and private irrigation network that require modernisation, but the appetite to participate in government-funded programs that invest in infrastructure in exchange for water entitlements, is now extremely low. This raises further questions about how to finance upgrades and maintenance of the irrigation network into the future.

<sup>39</sup> Goulburn Murray Water Review 2018. Strategic Advisory Panel – Independent Report to the Victorian Water Minister.

<sup>40</sup> Aither 2017. A review of socio-economic neutrality in the context of Murray-Darling Basin Plan

<sup>41</sup> Ibid

<sup>42</sup> Ibid



# INDUSTRY TRENDS PEOPLE

PROFIT

SYSTEMS

WATER

PEOPLE

PLANNING

ALL SUPPORTED BY PROMOTION

## WORKFORCE TRENDS

- A shortage of the right skills on-farm and in the services sector to support diverse systems.
- Demand for skilled labour is increasing but farmers are experiencing more difficulty attracting and retaining quality staff.
- Lack of profitability and investment is one of several key factors hampering the industry's attractiveness in competition for skilled workers.

Consultations for Future Focus revealed a need for greater diversity of information and technical specialisation of advice, reflecting water and climate conditions that are materially different to those in cooler, wetter southern Victoria. Farmers, particularly those operating PMR systems and looking to move to TMR, are already looking for advice on designs, management and feeding.

While Agriculture Victoria provides high quality advice and support to assist farmers with planning and regulatory compliance, more service provider support is needed in a range of areas from setting up businesses, to transitioning from family farms, to specialist skills in infrastructure, agronomy and associated economics.

In particular, the Murray region has a shortage of suitably qualified and experienced service providers informed by the regional trend away from low-input, pasture-based systems and towards a highly diverse and adaptive feedbase including TMR and PMR systems. As a result, Murray Dairy farmers are seeking expertise from overseas.

Demand for skilled farm labour is also increasing with the trend towards larger farms beyond the capacity of family members alone to operate. However, farmers are experiencing increasing difficulty in attracting and retaining quality staff due to declining regional populations, declining interest in the dairy industry as a career, and wage competition from alternative careers.

## 2019 DAIRY INDUSTRY SKILLS REPORT

Industry feedback in the 'Defining further dairy industry services sector skills' report<sup>43</sup> indicates a likely future with:

- Increased on-farm automation to address unskilled workforce shortages. This requires investment, which in turn requires confidence in receiving commensurate financial returns.
- Growth in highly skilled on- and off-farm management and specialist professions that will not necessarily be embedded in the industry, but will perceive dairy as an attractive segment of their business. This will require investment in resources and industry promotion to build the profile accordingly.

The report identified a skill gap among farmers generally, concluding that while tools and support are helpful, the most effective long-term solution is encouraging the next generation of farmers to be better educated. The two main skill gaps are business and human resource (HR) management to increase the scale of production beyond the traditional family unit.

Farmer feedback also confirmed difficulties sourcing high-quality, well-rounded expert advice in the absence of a defined 'pool' of agronomists and advisors. In addition, there is no set of standard qualifications, leaving farmers open to receiving advice from people with relatively little experience, operating outside their field of knowledge.

But in competing for a suitably skilled workforce with other growing regional industries, the Victorian dairy industry (and agriculture more generally) is further hampered by poor levels of industry attractiveness. This is evident in attitudes towards critical employment factors such as:

- Poor industry image
- Lack of profitability and investment
- On-farm working conditions
- Employment security



# INDUSTRY TRENDS PEOPLE

These attitudes have a flow-on effect on the service sector and its ability to attract, retain and invest in people and businesses for the dairy industry's benefit. Alternatively, service providers can, and do, work within other industries where their skill and expertise is also sought. It is important to understand that this also extends to 'education and skills development', a sector critical to promoting careers for the future benefit of the dairy industry.

The traditional method for disseminating knowledge is largely 'on-the-job training'. Historically, new methods and more efficient farm practice were provided by competent and experienced State-based research and extension officers who were usually trained in a State-sponsored education institution.

While the industry still relies heavily on on-the-job training, the industry needs to negotiate challenges to the traditional model including:

- Reprioritisation of State resources for training and extension.
- Increasing regulatory compliance systems and requirements, often testing the administration capabilities and resources of small businesses.
- Recent industry market and climate volatility changing the operational environment.
- Farm aggregation requiring different management structures and more specialised skills.
- More diverse and challenging technologies within the industry.

Without intervention, the industry will likely be significantly constrained in its ability to adapt or grow into the future. However, it is also important to note that the dairy industry cannot resolve all regional problems by itself, presenting an opportunity for the industry to work in partnerships in a coordinated effort to resolve regional issues.

## SUCCESSION

### SUCCESSION TRENDS

- Declining opportunities for new entrants and farm ownership, compounded by an ageing farmer population looking to transition high value assets when farm incomes are low.

Dairy being a capital-intensive industry, opportunities for new entrants and farm ownership are declining. The difficulties are compounded by an ageing farmer population looking to transition highly-valued assets to new owners and the next generation at a time when farm incomes are low and lending institutions increasingly conservative. This is a common issue faced by many agricultural sectors in Australia and internationally.

<sup>43</sup> 'Defining further dairy industry services sector skills'. Report by SED Regional Advisory for Dairy Australia, Victorian RDP Regions, Gardiner Dairy Foundation and Regional Development Victoria, January 2019.

# INDUSTRY TRENDS PLANNING

PROFIT

SYSTEMS

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PEOPLE

PLANNING

ALL SUPPORTED BY PROMOTION

## LAND USE PLANNING

### LAND USE TRENDS

- Feedbases are evolving and diversifying towards PMR and TMR systems in response to reduced water availability and affordability, and climate change.
- Perceived intensification of land-use with potential off-site impacts has led to new State planning guidelines for PMR and TMR systems.

The investment trend towards PMR and TMR systems has been perceived as a land use intensification with the potential for off-farm impacts on the environment and community. Dairy land use was consequently included in a 2016 review of intensive animal industry planning controls.

The planning review advisory committee said generic, broad-based definitions for intensive animal husbandry based on animal numbers or feedbase were problematic, and recommended introducing specific definitions to make the planning system much easier to use and understand<sup>44</sup>.

The Victorian Government responded with a more nuanced set of planning guidelines<sup>45</sup> in which dairy developments for planning purposes fall under one of two classifications. Systems in which cows will be permanently housed and fed (TMR) will require planning permits. Systems in which grazing remains part of the system, but cows may also be kept at times in areas with shelter structures and feeding stations (PMR), do not require planning permits.

While the 2018 planning changes have addressed regulatory issues for now, social licence to operate remains a challenge confronting many intensive livestock agricultural industries. The rise of animal activists and their sophisticated use of social media has put animal welfare into the minds of the general population, while environmental activists and the 'tree-change' phenomenon will continue to present a risk for conflict over land use and production systems.

These trends in planning and social licence are particularly relevant in the Murray region. Based on planning referrals to Agriculture Victoria<sup>46</sup>, 72 per cent of the new TMR systems are being developed in Victoria, and 87 per of those are in the Murray region. Investment in the infrastructure required for TMR and PMR systems accounts for most of the \$493 million invested in Murray region dairy farms by 163 Agriculture Victoria clients over the last two years, as follows:

- 48 clients considering dairies and/or permanent feedpad developments.
- 21 clients transitioning to freestalls = 68 sheds > 124,000 cows.
- 25 clients transitioning to barns = 43 sheds > 55,000 cows.
- 16 others dairy TMR with private sector (Agriculture Victoria aware, but not involved).
- 57 per cent of barn enquiries are from businesses with small to medium herds.
- 77 per cent of TMR developments clients are existing farms.
- 80 per cent of clients moved beyond concept stage (planning – under construction – completed).
- 19 per cent of significant developments experienced regulatory issues (EPA, Council involvement).
- Agriculture Victoria Dairy (AIDT) client enquiry path: 38 per cent farmer direct, 36 per cent private sector, 21 per cent government referrals (technical advisory role), and five per cent dairy industry stakeholders.

<sup>44</sup> Animal Industries Advisory Committee Report to the Victorian Government, 29 April 2016.

<sup>45</sup> Planning for Sustainable Animal Industries. Victorian Government planning reforms. Website accessed 18 December 2018. <http://agriculture.vic.gov.au/agriculture/livestock/2018-planning-reform>

<sup>46</sup> Agriculture Victoria Dairy Clients Summary 2016-2018 (AIDT Flagship).

# INDUSTRY TRENDS PLANNING

**TABLE 3. Intensive Murray Dairy Developments  
(Agriculture Victoria clients last 2 years)**

Dairy Freestalls	Composted Barns
7600 cows (existing) GB	1000 cows (existing) GB
5200 cows (existing) GB	1000 cows (existing) GB
800 cows (existing) GB	800 cows (existing) GB
1000 cows robotics (greenfield) GB	250 cows robotic (existing) GB
1400 cows (existing) GB	500 cows (greenfield) GB
3000 cows (greenfield) GB	800 cows (existing) GB
4000 cows (greenfield) NC	160 cows (existing) GB
800 cows (existing) NC	800 cows (existing) GB
1800 cows (existing) NC	300 cows (existing) NC
1600 cows (existing) NC	375 cows (existing) NC
2000 cows (existing) NC	500 cows robotics (existing) NC
700 cows (existing) NE	560 cows (existing) NC
	500 cows (existing) NC
	500 cows (existing) NC
	460 cows (existing) NC

*CMA Regions: GB: Goulburn Broken, NE: North East, NC: North Central*

## REGIONAL TRANSPORT

### TRANSPORT TRENDS

- Significant transport investment has already occurred, including a new \$8.65 million milk logistics and distribution hub in Strathmerton.
- Demand for heavy vehicle access to local roads is increasing, but access is constrained by channel crossings, narrow roads and bridges, weight limits, and poorly maintained roads.

Regional transport emerged as an important trend. Significant investment has already occurred, notably Booth Transport's \$8.65 million investment in a new milk logistics and distribution hub in Strathmerton in northern Victoria.

The hub includes a milk transfer station, truck depot, heavy vehicle washing facility and specialty milk refrigeration silos. It is intended to deliver transport savings and improve productivity by reducing bottlenecks in the transport supply chain, particularly for interstate markets<sup>47</sup>.

More investment is required, however, for example in another central hub in northern Victoria to facilitate two-way transport of milk with New South Wales and southern Victorian dairy regions.

Transport limitations also need to be addressed, in particular relieving east-west transport limitations through an additional Goulburn River crossing to enable heavy vehicles to bypass Shepparton; an additional crossing has been advocated for many years.

As farm and herd sizes continue to increase, demands for heavy vehicle access to local roads are also increasing. Heavy vehicle access including B Doubles for milk and feed transport, as well as heavy machinery, is being limited by channel crossings, narrow roads and bridges, weight limits, and poorly maintained roads.

The North East is also facing transport limitations, with distance and topography, combined with the closing of local processing, increases the isolation of individual farm businesses and the cost of transport of inputs such as feed as well as milk collection.

<sup>47</sup> 'Backing Booth Transport's bulk milk expansion'. Premier Daniel Andrews media release, 16 June 2017. <https://www.premier.vic.gov.au/backing-booth-transport-bulk-milk-expansion/> Website accessed 13 November 2018.

# RESPONDING TO INDUSTRY NEEDS

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The industry trends highlight the challenges faced by the Murray region dairy industry, but also identify the targeted, practical interventions that will assist in turning these trends to the industry's advantage.

These interventions are grouped into six key areas where relevant stakeholders can collaborate to align their actions and programs, to direct the transition now underway to deliver real, lasting benefits to the dairy sector and Murray region communities. The interventions described below provide a starting point for stakeholders to form collective and collaborative partnerships, foster innovation and change for the betterment of our industry.



# RESPONDING TO INDUSTRY NEEDS

## PROFIT

### PROFIT TRENDS

- Average dairy farm EBIT is declining over time.
- \$500 million has been invested in new and upgraded processing facilities since 2013.
- But, farmers are not getting clear market signals to produce more.
- Many farmers want longer term consistent payment agreements to manage risk.

A big impediment to strengthening the Murray region dairy industry is concern about low business margins commodity volatility. Whilst increasing competition in the processing sector is occurring it hasn't lead to a transparent environment.

Goal	Strategy	Stakeholder Lead
Improved farm margins	Programs to improve farm business skills to proactively manage and reduce input costs and risks.	Industry
Farm income stabilisation	Platform for more transparent communication of market signals driving milk prices. Programs to improve farmers' capacity to understand and negotiate contracts. Longer term consistent payment agreements to manage risk. Programs to improve farmer's capacity to analyse their farm system with the aim of enabling businesses to be positioned to optimise market opportunities.	Industry
Farming systems suitable for the new operating environment.	Incentivise investment that supports new practices, farm systems and risk mitigation strategies such as feeding infrastructure and feed storage facilities.	Government & Industry
Retain and maintain regional dairy assets	A regional industry promotional strategy to drive adaptation to the new operating environment, and boost farmer and processor confidence to invest.	Industry

.....

***“Higher margins would allow farmers to reinvest in turn strengthening the region”***  
**- Farmer.**

.....

# RESPONDING TO INDUSTRY NEEDS SYSTEMS

## SYSTEM TRENDS

- A steady evolution towards PMR and TMR systems in response to decreasing water availability and affordability, and climate change, however the region maintains significantly diverse farming systems.
- Feedbase species are also evolving in response to long and short term market and seasonal conditions, with a mix of perennial, summer active and winter annual species grown.
- The mix between species varies significantly year to year and farm to farm driven by water availability, price and individual security.
- Many farmers want to make changes but are deterred by diverse real and perceived barriers including time to develop relevant business management skills.
- Rising temperatures and declining rainfall may be offsetting productivity and water efficiency gains from upgrading farm irrigation infrastructure.
- The warming and drying trend is contributing to farmers changing pasture and forage crop species due to warmer, shorter springs and plant heat stress impacts.
- Exposure to extreme events such as droughts and floods is set to increase.
- Higher temperatures affect milk production across seasons, generations, and income.

On- and off-farm systems are ever evolving in response to the changing operating environment. The challenge is to develop systems that are proactive rather than reactive. The goal is to be prepared for the next dry sequence or the next milk price crisis.

Researchers, processors and extension services need to work together to investigate new systems suitable for the modern industry and rapidly changing operating environment.

*“We have changed our farm and management. We now keep a larger reserve for feed and are less reliant on permanent feed.”*

**- Farmer.**

Goal	Strategy	Stakeholder Lead
Diverse, response farming systems suitable for the new operating environment	Programs to improve farm business skills to proactively manage and reduce input costs and risks.	Industry
Diverse feedbase production and choices	Increase RD&E into heat and drought- tolerant forage types. Increased RD&E into adaptive feedbase options and information here and overseas that support adaptive management practices.	Industry, Government & Private
Improved use of climate forecast information	Climate information available in a readily accessible format that can inform farm decision-making.	Government
Improved use of forecast information on fodder, grain and dairy markets	Market forecast information in a readily accessible format that can inform farm decision-making.	Industry
Animals with greater heat tolerance and feed efficiency conversion	Increased RD&E into herd genetics.	Industry & Government
Labour saving technologies and practices, i.e. automation	Program to increase understanding of the cost/benefit of investing in new practices and farm technologies. Programs to improve farmer skills and capability to implement new practices and technologies. Increased RD&E into labour-saving farm technologies.	Industry
Best practice animal management	Develop pre-emptive industry standards and policies for environmental outcomes, and animal health and wellbeing.	Industry
Social licence to operate	Promote positive messages and images reflective of best practice across all farm systems.	

# RESPONDING TO INDUSTRY NEEDS

## WATER

### WATER TRENDS

- Water policy reforms, notably environmental water recovery, mean dairy farmers now own fewer water entitlements and are more reliant on the temporary water market.
- Increased reliance on the temporary water market is a new and significant risk, affecting the cost base but also the ability to transition to new business models and business strategies.
- More than 65 per cent of GMID dairy farmers have upgraded farm irrigation infrastructure, with most reporting production improvements but also increased water use.
- Changes in production systems are driving changes in timing and volume of water demand, presenting a challenge for irrigation district infrastructure planning and pricing.
- Reduced water usage and more opportunistic usage patterns pose threat to the viability of water companies in terms of the revenue needed to sustain the infrastructure footprint.

Water is unanimously recognised as both an opportunity and a risk. The biggest risk is the uncertainty created by evolving Government policy, particularly the potential recovery of another 450 GL of water for the environment under the Basin Plan. The opportunity comes from targeted water procurement and strategic, efficient irrigation use to support flexible feed-base production.

*“We recognise water is a major risk for our suppliers, that means it is a major risk for our business.” - Processor.*

Goal	Strategy	Stakeholder Lead
Improved capacity and capability to operate in a competitive water market	Programs to train farm businesses in understanding and using a diverse range of market products effectively to manage water procurement risks.	Industry
Commercially sustainable and affordable irrigation infrastructure	GMW tariff review removes cross-subsidies and other anomalies pushing up costs for medium-large water users. GMW 25-year assets strategy delivers cost-effective and fully utilised infrastructure footprint.	Government
New irrigation opportunities (NE)	North East Sustainable Irrigation Plan completed and implemented.	Government
Regional water retention strategy	Market-based mechanism to encourage entitlement and allocation sellers to prefer GMID/MIL buyers.	Commercial
More efficient water use	Programs to increase farmer understanding of the cost/benefit of investing in new WUE practices and farm systems. Programs to improve farmer skills and capability to implement new practices/farm systems, including WUE and/or multi-use forage types.	Industry
Water policies that support dairy industry viability and development	Development and advocacy of evidence-based water policies and reforms, and structural adjustment support to adopt WUE farm systems and technologies.	Industry



# RESPONDING TO INDUSTRY NEEDS PEOPLE

## PEOPLE TRENDS

- The right skills on-farm and in the services sector are in short supply to support diverse farm systems ranging from pasture-based to more diverse, adaptive feedbases.
- Demand for skilled labour is increasing but farmers are experiencing more difficulty attracting and retaining quality staff.
- Lack of profitability and investment is one of several key factors hampering the industry's attractiveness in competition for skilled workers.
- Declining opportunities for new entrants and farm ownership, compounded by an ageing farmer population looking to transition highly-valued assets when farm incomes are low.

People underpin the industry. Initiatives must be developed to attract and retain passionate and enthusiastic people. Skills must be developed through integrated training programs across all education providers designed with industry to meet needs across all skills and education levels.

.....

***“The skills required in a modern dairy are changing and there is potential for this region to lead in skills transition”***

**- Service Provider.**

.....

Goal	Strategy	Stakeholder Lead
More high-quality, suitably skilled advisors available to the dairy industry	Programs/courses to train current and new generation of agronomists, nutritionists and other advisors in skills in diverse farm systems and transitions.	Government & Industry
Attract, manage and retain more high-quality staff across industry	Career advisors actively promoting dairy to increase enrollments in dairy skills training courses.  Increased recruitment of new workers to the industry, including from novel sources such as migrants.  Attract complementary skills from other industry sources.	Government & Industry
Universal best HR management practice	Courses, training and tools for farm businesses to understand and implement holistic best management practice HR strategies.	Industry
A skilled workforce	Integrated industry training for modern farm systems across education providers and allied services.	Government
Clear professional development paths	Program to link training and career pathways between education providers and industry.	Government
More farms actively planning for succession and/or transition of assets	Programs to support farm businesses proactively develop succession plans.  Develop best practice templates for leasing, share farming, equity partnerships & other alternative business arrangements.	Industry
More skilled workers from overseas	Designated Area Migration Agreement (DAMA) for the Murray region.	Commercial
Highly capable industry leaders	Continue dairy industry's significant investment in leadership training and development programs.	Industry

# RESPONDING TO INDUSTRY NEEDS PLANNING

## PLANNING TRENDS

- New State planning guidelines for PMR and TMR systems.
- Significant transport investment including new logistics/distribution hub, but more needed.
- Demand for heavy vehicle access to local roads is increasing, but access is constrained by channel crossings, narrow roads and bridges, weight limits, and poorly maintained roads.
- Emerging issues with renewable energy projects, land use, third-party impact and amenity.
- Rising energy costs and ongoing issue over reliability of supply.

The need for integrated planning to ensure industry's needs is well recognised, and part of the broader planning process. Within the industry concern was expressed that some planning decisions are being made without considering the impact within the Goulburn-Murray Irrigation District.

This priority area requires a commitment from State Government, local government and industry stakeholders to work together to identify solutions.

***“We need to work together to make sure there are strategic freight routes and streamlined planning processes” - Local Government.***

Goal	Strategy	Stakeholder Lead
Land-use planning is matched and enables dairy development	Regional planning strategy for: <ul style="list-style-type: none"> <li>• Rural land-use</li> <li>• Transitioning land to new systems</li> <li>• Renewable energy facilities</li> <li>• Effective and efficient application of native vegetation framework and subsequent biodiversity management.</li> </ul>	Government
Effective and efficient regional transport	Regional transport strategy to support existing and future supply chain requirements, including: <ul style="list-style-type: none"> <li>• Intermodal freight terminals</li> <li>• Improved road infrastructure</li> <li>• Streamlined national and international market access.</li> </ul>	Government
Lower energy bills, more reliable supply	Programs to increase farmer uptake of solar, other renewable and energy efficient technologies on-farm and in factories. GMID microgrid feasibility pilot study.	Government
Energy distribution system to support new technologies in milking and farm systems	'Poles and wires' upgrade review of demand and costs.	Government
State support for dairy development and growth	Business case to maintain and grow State investment and resources available to support the dairy industry.	Industry



# RESPONDING TO INDUSTRY NEEDS PROMOTION

Promotion of the dairy industry, its opportunities and the strategies to realise those opportunities was constantly identified by all stakeholders as a priority in conversations, meetings and surveys.

Good promotion is essential to ensure that Future Focus is not just another strategy gathering dust on a bookshelf, but a living, dynamic document shaping and driving the Murray Dairy region's transition for profitability and sustainability now and in future.

.....  
*“Change the rhetoric. Rather than look at the negatives, help the industry realise their own potential and value”*  
**- Farmer.**  
 .....

Goal	Strategy	Stakeholder Lead
A positive dairy profile	Comprehensive promotional strategy to highlight: <ul style="list-style-type: none"> <li>• Regional economic value</li> <li>• Social licence</li> <li>• Investment appeal</li> <li>• Career opportunities</li> <li>• Water and resource use efficiency</li> </ul>	Industry
Dairy interests embedded in all relevant policies, planning and regulation	Proactive engagement with relevant agencies, and local and State government.	Industry
Attract nett investment in the industry.	Proactive engagement with local government and agencies developing regional economic strategies, to promote dairy's investment potential.	Industry
Retain and maintain regional dairy assets.	A regional industry promotional strategy to drive adaptation to the new operating environment, and boost farmer and processor confidence to invest.	
Attract and retain skilled farm and services workers.	Proactive engagement with relevant stakeholders to invest in programs to promote dairy as an employer of choice, and provide training in modern systems.	Industry



# ACRONYMS

<b>ADF</b>	Australian Dairy Farmers
<b>AgVic</b>	Agriculture Victoria (Division within DEDTJR)
<b>CMA</b>	Catchment Management Authority
<b>DAMA</b>	Designated Migration Area Agreement
<b>EBIT</b>	Earnings before Interest and Taxes
<b>GL</b>	Gigalitre (one billion litres)
<b>GMID</b>	Goulburn Murray Irrigation District
<b>GMW</b>	Goulburn Murray Water
<b>HRWS</b>	High Reliability Water Share
<b>MDB</b>	Murray-Darling Basin
<b>MIL</b>	Murray Irrigation Limited
<b>ML</b>	Megalitre (one million litres)
<b>NPAT</b>	Net Profit After Tax
<b>PMR</b>	Partial Mixed Rations
<b>TMR</b>	Total Mixed Rations
<b>WUE</b>	Water use efficiency



# APPENDIX 1. PROJECT BACKGROUND & METHODOLOGY

Dairy representative and industry bodies<sup>48</sup> have recognised the need for national, State and regional plans to guide the industry through its current challenges, and to support the transformation required for Australian dairy to emerge stronger, more sustainable and profitable across the supply chain. It is essential these strategies are aligned and mutually beneficial across each level.

Murray Dairy in collaboration with Dairy Australia, Committee for Greater Shepparton, UDV and Agriculture Victoria formally embarked on developing a regional dairy industry plan in November 2017. The process engaged 165 dairy farmers, consultants, agronomists, processors, regional agencies and organisations and local government representatives who contributed via the survey, individual consultations or through one of the group sessions. The consultation period was completed in November 2018.

## METHODOLOGY

Future Focus was developed in stages using a constraint analysis and prioritisation framework comprising six key elements.



The environmental scan included a desktop audit of key industry documents and relevant strategies undertaken to identify common priorities, opportunities, synergies and constraints relevant to the Murray Dairy region<sup>49</sup>. Table 1 summarises the key opportunities, risks and challenges identified.

**TABLE 1. Murray Dairy region opportunities and risks**

Opportunities for growth and sustainability	Risks and challenges
<b>Sharing the knowledge</b> <ul style="list-style-type: none"> <li>Research, development and extension including genetics and farm management techniques</li> <li>Knowledge export</li> <li>Data collection and use</li> <li>Professional development opportunities</li> </ul>	<b>Climate Change</b> <ul style="list-style-type: none"> <li>Impact on pasture and forage production</li> <li>Impact on animal health and welfare</li> <li>Changing rainfall patterns</li> </ul>
<b>Business Structure</b> <ul style="list-style-type: none"> <li>New business models</li> <li>Farm ownership and management - share farms, corporate farms, consolidation</li> <li>Succession planning</li> </ul>	<b>Water Availability</b> <ul style="list-style-type: none"> <li>Allocations</li> <li>Temporary market prices</li> <li>Entitlement portfolio management</li> <li>Access to relevant information</li> </ul>
<b>Innovation, infrastructure and technology</b> <ul style="list-style-type: none"> <li>Labour savings</li> <li>Input cost reductions</li> <li>Herd and crop genetics</li> </ul>	<b>Skills and extension</b> <ul style="list-style-type: none"> <li>Changing demographics</li> <li>Access to labour force</li> <li>Training</li> <li>Access to relevant information</li> </ul>
<b>Market Access</b> <ul style="list-style-type: none"> <li>Domestic and export</li> <li>Formal trade agreements</li> <li>Market synergies and partnerships</li> <li>Market expansion</li> </ul>	<b>Trust</b> <ul style="list-style-type: none"> <li>Social licence</li> <li>Nutritional benefits</li> <li>Animal welfare</li> </ul>

Extensive stakeholder consultation was conducted February and March 2018, and in August and September 2018<sup>50</sup>. To ground-truth the desktop literature audit, an online survey was conducted to evaluate what industry stakeholders believed were the key priority areas under each topic. The later consultations tested emerging strategies in response to those identified priority areas.

<sup>48</sup> Australian Dairy Farmers, Dairy Australia, and United Dairy Farmers Victoria (UDV)

<sup>49</sup> See Appendix 2 for the full list of relevant industry plans reviewed in the Environmental Scan report.

<sup>50</sup> Sector feedback is detailed in Annex 3, in the Interim Report and Consultation overview.



# APPENDIX 2. INDUSTRY PLANS REVIEW

## FROM ENVIRONMENT SCAN REPORT

1. Dairy Australia Strategic Plan 2016-2019
2. NSW dairy industry Strategic Action Plan 2016
3. ADIC Sustainability Framework 2016 – Australian Dairy Industry Council
4. Horizon 2020 – Dairy Australia
5. Accelerating Change – Murray Dairy
6. GMW Strategic Plan 2018-2022
7. Murray Local Strategic Plan, NSW Murray Local Land Services – 2016-2021
8. DELWP Corporate Plan 2017-2021
9. Water for Victoria 2017-2021
10. Regional Irrigated Land and Water Use Mapping in the GMID 2015/16. Technical Report, Goulburn Broken Catchment Management Authority and partners, 2017.
11. Pathways to profitable growth – Dairy Australia (WORKING DOC)
12. Water Market Drivers in the southern MDB: implications for the dairy industry. Report prepared by Aither for Dairy Australia, 29 July 2016
13. Australian Dairy Products Federation (website and phone interview)
14. Bega Foods (annual report and phone interview)
15. Murray-Goulburn (Corporate strategy and annual report)
16. Parmalat (annual report and phone interview)



# APPENDIX 3. SECTOR FEEDBACK

## FROM INTERIM REPORT AND CONSULTATION OVERVIEW

### Local Government

Local Government sees Dairy as an integral part of the community. They seek support from dairy for new innovations and local government proposals.

#### Observations

- Processors investing.
- Perception of foreign ownership (land and water) not matched by real world.
- Need to end the negative perceptions of industry and region.
- Industry needs an intergenerational vision.

#### Future

- Larger “super farms” – family corporates and investor corporates.
- Continued economic and community contribution.
- Innovation and value add products.

#### Challenge

- Energy and power prices – particularly for processors. Seeking support for regional solutions.
- Succession planning and skills.
- Transport efficiency – road access and modal transport.
- Water market - water use and competition.
- Climate change – feed base management and water use.

#### Mitigation

- Strategic freight network including intermodal terminals.
- State planning must consider water investment and use - ownership, location and native vegetation implications.
- Create value proposition for product.
- Harness local sustainable power sources – regionally and individually.
- Partnerships with local education providers. Training for modern farming practices. Broad and practical training – farm skills and associated services.
- Cross border synchronisation of laws.
- Local Government needs to keep rural land a viable size (living rural land document with all three shires). Integrated land-use planning and business support – advisors, local government, State Government Invest Assist.
- Land use conversion needs to consider infrastructure – water, roads – and how best to facilitate continued land management.
- Encourage equity partnerships to facilitate industry entry.
- Integrated farming practices – energy, water recycling, waste management

#### Opportunity

- Decentralisation strategies.
- Reduce red-tape (examples – processor master plan to streamline application process. Uniform land use planning controls between councils and streamlined approach for approvals).
- Technical innovations.

- Transition of farming systems (from pasture to responsive systems).
- Integrated farming systems – energy, waste management, milk production.

### Service Providers

#### Observations

- Rationalisation will be ongoing.
- There has been a shift from permanent to annual pastures and an adjustment from drought.
- Young people now coming home.
- There will be a shift from small family farms to larger operations.
- Manufacturers see a future – farmers don't.

#### Future

- Area recognised as productive dairy region.
- Sustainable.
- Modern and efficient evolving to best practice.

#### Challenge

- Reliable staff – the larger the farm the more reliance on staff.
- Aging demographics.
- Input costs – grain and water
- Water competition. Uncertainty with water recovery. Downstream demand.
- Industry entry and access to equity.
- Power prices a sleeper issue. Big current issue for processors.
- Land use and land conversion.

#### Mitigation

- Water portfolio management. Improve water market knowledge.
- New markets and new products.
- Increased processor competition.
- Alternative power supplies.
- Sabbatical program for professional development – continued farm management for training opportunities.
- Establish Dairy Industry water cooperative – buy entitlement, sell allocation only to dairy farmers in region.

#### Opportunity

- Competition from processors.
- Regional selling point – positive messages.
- Climate change if managed well.
- Corporate investment – equity partnerships.
- Global confidence in Australian product.
- Transport – rail access.



# APPENDIX 3. SECTOR FEEDBACK

## FROM INTERIM REPORT AND CONSULTATION OVERVIEW

### Dairy Farmers

#### Observations

- The Murray region requires a broader skill set. Farmers need to be croppers, irrigators and dairy farmers.
- Processors expanding but not necessarily working to support the industry in the policy setting.
- Sentiment is poor. Concern about mental health and wellbeing.
- Young returning but parents hold assets. Where assets such as water are sold in future is a concern.

#### Future

- Vibrant. Greater mix of farm types.
- Higher, stable milk price, higher margins delivering a profitable industry able to compete with other industries and to reinvest in water.
- Sustainable and operating in a (water) policy setting that encourages investment.
- Valued industry producing valued products.

#### Challenge

- Confidence is low. Reluctance to invest.
- Access to business support specialists (agronomists, business planners, nutritionists)
- Water
  - Access and affordability
  - Security of infrastructure services as well as access
  - Competition
- Changed land-use
  - Retured land
  - Land-use conversion - what are the limits
- Society needs to value milk. They want quality but don't want to pay. Disconnection between city and country and how food is produced. Processors need to get involved too.
- Succession planning, generational transition, industry entry.
- Climate change. Changes to traditional farming systems (feed-base).
- Social licence will continue to increase as an issue.
- Skills and training to meet needs of modern systems and technologies. Reliable staff.
- Input cost management and margins.

#### Mitigation

- Departmental renewal for research and extension. The Department is seen as a vital training ground.
- Promote industry. Proactive strategies. Promotion not advocacy. Promote whole of industry opportunities (genetics, nutrition). Promote nutritional value of products.
- Secure regional water. Dairy water pool (coop) purchase entitlement to sell allocation within industry. New water market tools.

- Policy stability.
- Develop industry entry or generational transition strategies. Equity partnership opportunities.
- Clearer price signals. Pricing structure needs to evolve to match new farming systems.
- More investment in evolving farming systems to meet challenge of climate change.
- Inform farmers about choice – choice of processors; choice of farming systems.
- Government training programs need to focus on people who are interested, willing and employable.
- Support to develop share farm/equity partnership template that is fair and equitable. Needs to incorporate water ownership and risk assignment.
- Government strategy on land-use planning linked to water deliverability.

#### Opportunity

- Cheap land in the Murray region.
- Access to water markets and water infrastructure.
- Entry pathways – share farm or equity partnerships (exit pathways).
- Technology. Drones and phones. As long as returns can be shown.
- Research
  - Genetics
  - Pasture and irrigation technologies
- Strategic infrastructure
- Freight and transport strategy



# FUTURE FOCUS

DAIRY INDUSTRY STRATEGY - MURRAY REGION 2019

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