

# Managing drought and fodder risks with loose housing system

Richard & Emma Coombes, Manilla NSW – December 2023



## Overview

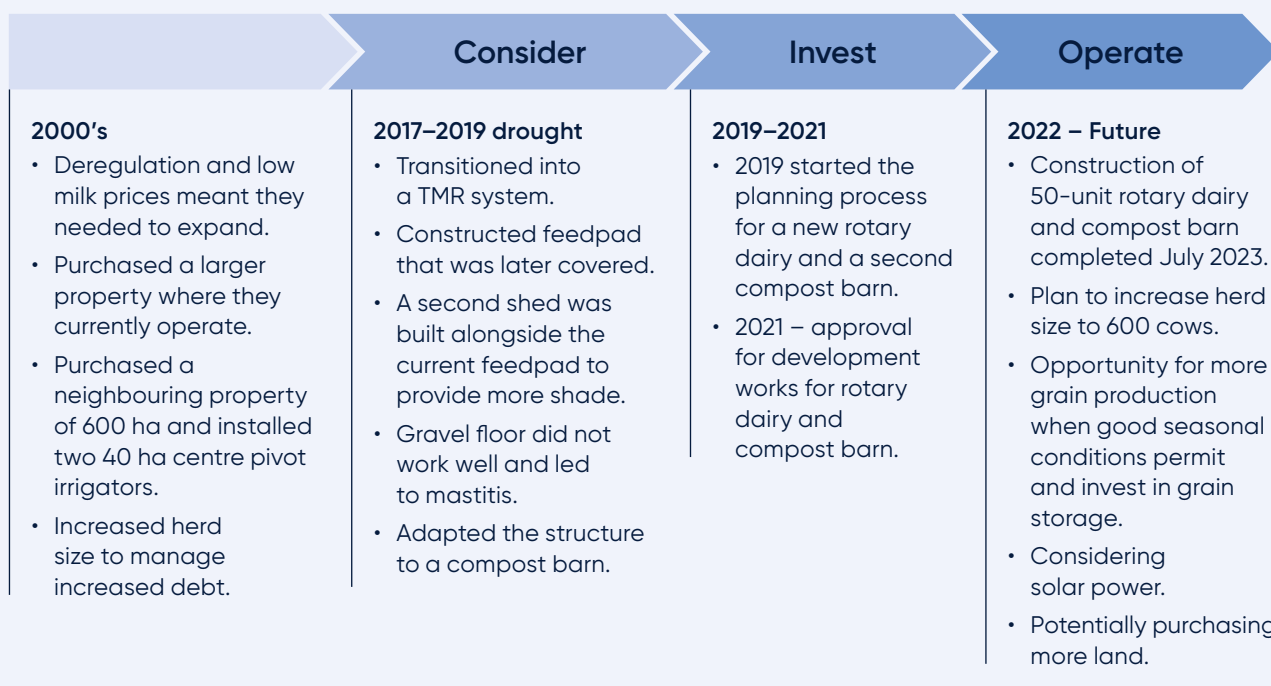
Richard and Emma Coombes dairy intensification journey is an evolving adaptation to manage climate (drought and wet conditions) and production (fodder quality) risks.

The incremental changes made to their grazing-based farm purchased in 2002 milking 200 cows, to a zero-grazing, loose housing system with a compost bedded pack facility milking 570 cows in 2022 is testament to their willingness to experiment and trial different feeding system options. Even though the transition to total mixed ration (TMR) was largely unplanned, Richard and Emma have grown into dairy intensification and acknowledge that the new loose housing facility have improved risk management in their business. They attribute their ability to better handle climate risks, particularly drought, to

this transition. The capacity to build a bank of feed has notably reduced their exposure to the feed market during times of drought and elevated feed prices.

The Coombes firmly believe that the move to an intensive housed system has been the right move for them. This shift has allowed them to mitigate the risks linked to climate change (wet and drought conditions) and fodder while positioning themselves favourably for continued growth and succession in the evolving landscape of dairy farming in northern inland NSW.

## Timeline



## History

The Coombes family purchased the current dairy farm, consisting of 120 ha in 2002. The herd of 200 cows was milked through a 16 aside herringbone dairy which was later upgraded to a 24 aside herringbone dairy. The pasture-based grazing system was supplemented with a partial mixed ration (PMR) with cows peaking in the spring months when pasture was readily available.

The herd calved all year round and continues to do so. After the very wet season in 2016, seasonal conditions deteriorated as drought persisted from 2017 to 2019. Through this period, pasture production was negligible. They relied on purchased feed to supplement the cows. It was at this point that the Coombes realised that they need to put some infrastructure in place to feed the cows more effectively and reduce feed waste.

## Farm Profile

	2020/21	2021/22	2022/23	2022/23 TMR Farms <sup>1</sup>
Farm area (ha)	655	708	708	656
Irrigation (ha)	250	276	276	403
Herd size	522	541	570	836
Milk production (litres)	4,214,017	4,530,565	4,750,454	7,103,000
Milk solids/cow	588	596	584	626
Proportion homegrown feed	44%	66%	69%	45%
Labour (FTE's Incl. imputed labour)	8.2	8.4	8.9	9.4
kg MS/FTE	37,570	38,622	37,641	57,078

<sup>1</sup> Average of 14 NSW and Victorian Total Mixed Ration (TMR) farms. (Source: Economics of Total Mixed Ration dairy feeding systems – where are the risks?).

FTE = full-time equivalent or standardised for working 2,400 hours per year

## Consider phase

### Transitioning to TMR

One of the main triggers for transitioning from a grazing system to a TMR system was in response to drought. Running out of irrigation water for pastures left them reliant on purchasing fodder to feed the cows. Purchased fodder was expensive and of low quality, so they started dealing with local crop farmers who had access to groundwater and were willing to grow fodder for them at a fixed price and with better quality characteristics. What they found was that when they fed the cows quality feed in a confined space milk production increased significantly. The herd went from peaking on grass at 28 litres, to peaking in the shed at 34 litres. This convinced them to consider a permanent non-grazing system.

The process of transitioning to TMR system was largely unplanned – they realised they could improve productivity and drought resilience by moving away from the pasture-based system, but they had no clear idea of what the end point looked like. Richard made the comment that “we did it the hard way, as we didn’t fully commit to the intensification process...we grew into it”.

To reduce feed waste, the Coombes’ built a concrete feedpad, with a gravel base for the cows to feed from. They later covered the feedpad to provide shade for the cows and extended the gravel base, that was dry scraped daily. A second shed was built alongside the feedpad to provide more shade.

However, the gravel floors under the shade shed did not work well and led to mastitis. The new structure was adapted to operate as a loose housing facility with a compost bedded pack. This increased cow comfort and reduced mastitis outbreaks.

### Being convinced that TMR was the way forward for their business

During the consider phase, the Coombes were convinced that expanding the loose housing facility with a compost bedded pack was the way to go. They had gained experience from their phased development of the covered feedpad and adapting it to a loose housing facility and were confident that a second purpose-built loose housing facility would meet their requirements.

## Invest phase

In 2019 they began the process of seeking council approval for the development of the loose housing facility and the new dairy. The process was very slow and required a fair amount of time and resources. They contracted a planning consultant to complete the initial audits and paperwork required to lodge a building application to the local council. An effluent system designer was contracted to design an effluent system and an effluent management plan. Approval was granted in 2021. The invest phase required liaising with council, contractors, planners and banks. Emma played the role of both financial manager and project manager through this phase while Richard was focused on day-to-day operations. This was a protracted phase with plenty of challenges and many pause points and delays.

## Operate phase

The system change, from pasture to TMR, has seen a transition from moving cows to and from paddocks, and shifting fences, to dry-scraping concrete alleys and scarifying facilities. The operate phase involved a focus on managing effluent and manure. Dry scraped manure is spread on paddocks using a manure spreader and this is done all year round. Approximately 10 B-double loads of hardwood saw dust are brought in each year to top up the bedding in the shed.

The installation of an Allflex cow monitoring system gave them greater control over breeding and managing the reproductive performance of the herd. The expanded land base and fodder production program has created busy periods through the year, yet it has allowed them to build 18 months of feed inventory ahead of the herd. With all feed stored and fed back to the cows there has been a greater focus on feed quality, storage and feeding of rations.

As the herd grew, more labour was employed, and this requires more focus on managing staff and staffing issues. The new 50 unit, Daviesway Rotary dairy has improved milking efficiency and has allowed them to drop one labour unit at milking time compared to the old herringbone dairy. The new dairy has cup-removers and an auto-teat sprayer. Cell count runs at below 100,000 for most of the year.

## Business performance

Income, costs, profit and returns	2020/21	2021/22	2022/23	2022/23 TMR Farms <sup>1</sup>
Milk price (\$/kg MS)	10.85	10.49	12.48	10.10
Gross farm income (\$/kg MS)	11.26	10.91	12.91	11.65
Feed cost (incl. inventory change) (\$/kg MS)	3.26	5.01	5.91	5.55
Employed labour cost (\$/kg MS)	1.25	1.83	1.83	1.43
Cost of production incl. inventory change (\$/kg MS)	8.60	10.57	11.21	9.84
Earnings before interest and tax (\$/kg MS)	3.68	1.60	2.45	2.16
Return on total assets	9.0%	3.5%	5.2%	7.5%

All dollars have been converted to 2022/23 dollar values.

<sup>1</sup> Average of 14 Victorian and NSW Total Mixed Ration (TMR) farms. (Source: Economics of Total Mixed Ration dairy feeding system – where are the risks?).

## A business review

### Challenges

Managing the original housing was a challenge, as the gravel floor was difficult to keep clean and hygienic and cow comfort was not ideal. Mastitis outbreaks were a common occurrence. The compost bedding, which consists of hardwood sawdust, is aerated twice a day and “the cows thrive on it”. Cow comfort has improved significantly, and clinical cases of mastitis have reduced.

A lengthy consider phase for council approvals resulted in delays. Conflicting information about what was required in the application and the level of detail required in the environmental impact statement drew out the time and resources in the approval process. Issues with coordinating and aligning the timing of council and bank (for the loan) caused challenges with the scheduling construction. The delayed council approval meant delays in the bank’s loan approval process, which meant missed opportunities to schedule construction work with the contractors.

The delays resulted in missed opportunities in relation to:

- The cost of building materials (the cost of building materials increased significantly through the period of delay).
- Taking advantage of improved productivity while milk prices were strong.
- The loss of production because of slow milking times and cows having to stand on concrete for long periods of time.
- Staff working long hours in the old herringbone dairy.

Emma and Richard have a good track record of retaining staff. When a team member leaves, the process of finding a suitable replacement tends to be prolonged. They are interested in employing migrant workers and have invested in housing to provide accommodation for staff.

### Risks

The Coombes are convinced that the move to an intensive housed system has been the right move for them. They have been able to manage the risks associated with climate change and drought. The Coombes see their region as appropriate for a housed system as they can grow high water-use-efficient crops with their available irrigation water. The purchase of additional land to grow fodder crops and expand their feed base has reduced their reliance on off-farm sources of feed. They can build their feed inventory in good seasons and use it when times are dry (currently 18 months of stored feed ahead of them). They are close to a large grain growing region where they can access and contract the quantity of grain they require. By securing their feed base, they are confident they can meet their herd expansion goals (600 cows) without over-exposing the business to risk.

Public perception for the way cows are permanently housed is a concern shared by Emma, despite the system clearly demonstrating benefits when it comes to cow health, comfort and wellbeing. Cows are less exposed to cold and wet weather in the winter and are less prone to heat stress in hot weather. Improved cow comfort is evident in the improvement in milk production. Cows spend less time standing in the dairy and walking to paddocks and more time eating and lying down ruminating on the comfortable bedding.

## Where to from here?

Richard and Emma have recently completed the succession planning process with Richard's parents and have taken over the dairy business. They are confident the new facilities, expanded fodder production base and growing herd will create further opportunities down the track. They expect cow productivity to continue to improve as they refine their TMR system and continue to focus on cow comfort and the quality of the feed they produce and store.

Farm characteristics	
Effective farm size (ha)	708
Milking area (ha)	0 – all cut and carry
Pasture/cropping areas (ha)	<ul style="list-style-type: none"><li>• 400 ha of cropping</li><li>• Summer – corn   winter – cereals. Ensiled in bunkers. Aim for 18 months of stored feed</li></ul>
Annual rainfall (mm)	692 mm
Irrigation	888 ML General Security   5.5 t DM/ML
Dairy type	50-unit rotary
Feed system & infrastructure	<ul style="list-style-type: none"><li>• Loose housing (compost bedded pack).</li><li>• TMR 365 days of the year</li></ul>
Labour	8.8 FTE (incl imputed labour)   37,641 kg MS/FTE
Herd and milk production	
Milking cow numbers	<ul style="list-style-type: none"><li>• The farm milked 570 cows in 2022/23</li><li>• Calving all year round</li></ul>
Breed	Friesian with average live weight of 600 kg
Milk production (milk sold)	<ul style="list-style-type: none"><li>• 4,750,454 litres in 2022/23</li><li>• 8,334 L/cow, 584 kg MS/cow in 2022/23</li></ul>

### For further information

Visit Dairy Australia webpage dedicated to **Intensive Farm Systems Economics**

Visit [www.dairyaustralia.com.au](http://www.dairyaustralia.com.au) and search 'National Guidelines Dairy Feedpads and Contained Housing'

### Acknowledgement

Thank you to Richard and Emma Coombes for agreeing to share their insights and experience.