

ANALYSIS OF BEEF CATTLE SUPPLY AND EVALUATION OF COMMERCIAL VIABILITY OF LOCATIONS FOR PROCESSING FACILITIES IN QUEENSLAND

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Executive Summary

This is an independent study commissioned by the Queensland Department of Agriculture and Fisheries (DAF) to investigate the Queensland beef supply chain and provide current information on key issues with the potential to impact the future growth of the industry.

Beef Cattle Supply

The supply of slaughter cattle to Queensland processors is forecast to be of the order of 3,450,000 head (including dairy cattle) in 2017-2018. This number is affected in the short term by such factors as high cattle prices, export beef prices, live export and interstate flows. This study presents a model which forecasts the expected increase in the beef herd and slaughter cattle supply assuming average seasonal climatic and market conditions throughout the forecast period.

The model shows the total herd and slaughter cattle supply reaching the long term average of 12,000,000 and 3,745,000 respectively in 2020-2021.

Slaughter Cattle Origin by LGA

This report details the expected turnoff of slaughter cattle from each Queensland Local Government Area (LGA). Movements of cattle to slaughter from each Queensland LGA have been provided by DAF using data extracted from the CSIRO TraNSIT model for cattle movements between 2007 and 2011. This data is representative of a period before the drought, record slaughter and live export growth experienced from 2012, and more representative of a period of consistent herd growth.

The final figure excludes cattle from processor owned feedlots and so represents turnoff of commercially available slaughter cattle from each LGA.

Beef Slaughter Capacity

An estimate of Queensland beef processing capacity was obtained from publicly available sources including company websites and industry publications. The total daily capacity of all Queensland beef processors is estimated to be nominally 18,000 head of adult cattle. Based on a five day operating week, this produces a reference monthly capacity of 390,000 head. Note that this reference or guideline figure is the subject of some variability as individual processors may operate at more or less than their nominated maximum daily throughput for various reasons.

Most processors have the option of operating on part or all of a weekend day. This provides significant short term capacity flexibility albeit at increased operating cost due to penalty rates.

Comparing the historical monthly slaughter throughput of all Queensland beef abattoirs from January 2000 to July 2017, with the reference five day per week monthly capacity of all Queensland abattoirs of approximately 390,000 head, shows that this capacity is only exceeded seven times in the 211 months of data. A more conservative five day figure of 370,000 head per month is only exceeded 14 times in the 211 months of data.

Additionally, the herd re-building forecast suggests that slaughter volumes in 2022-2023 will be of the order of 4,000,000 head per annum. This is lower than 2014 and 2015 volumes and consistent with a peak monthly throughput of 385,000 head based on typical seasonality variations.

Given the infrequency of these high demand periods, and the flexibility of many plants to operate part or full weekend days during peak periods, it is unlikely that a greenfield investment would be justified based solely on insufficient capacity. Additionally, incremental upgrades of existing abattoir locations could achieve increases in capacity at a much lower cost per unit of throughput than a new greenfield abattoir.

Assessment of Locations for a New Abattoir

A three stage process was proposed to demonstrate assessment of the commercial viability of potential abattoir locations. The stages were:

1. High level (screening) assessment.
2. Indicative operating cost model assessment.
3. Indicative preliminary financial assessment including sensitivity analysis.

High Level Assessment

The high level (screening) assessment involved consideration of 27 Queensland locations identified through representation from local councils, individual producers and businesses. Attributes of each location were compared against minimum requirements for a successful or viable abattoir location. Attributes considered included:

1. Nearby slaughter cattle turnoff,
2. Labour availability,
3. Availability of water, power and thermal fuel,
4. Location with respect to the road system, and
5. Access to industrial infrastructure.

The high level (screening) assessment identified eleven locations for the indicative operating cost model assessment. The locations are:

1. Charleville
2. Charters Towers
3. Cloncurry
4. Emerald
5. Goondiwindi
6. Hughenden
7. Innisfail
8. Longreach
9. Moranbah
10. Mt Isa
11. Roma

Indicative Operating Cost Model Assessment

An indicative operating cost model was used to compare the relative 'location related' costs of these locations compared with those of existing abattoirs. The model estimates the supply chain and operating cost differentials (producer's property to finished goods market) for slaughter cattle from each local government area (LGA), to each existing abattoir location, and to each of the abattoir locations selected in the high level assessment.

Relative costs considered were:

1. Cattle transport cost
2. Carcase shrink
3. Potential loss of Meat Standards Australia (MSA) premium
4. Tick clearance
5. Finished goods transport cost to export port or Brisbane distribution centres.
6. Remote area operating cost premium (e.g. construction costs, delivery of consumables, etc.)

Where a selected abattoir location produces a lower overall supply chain cost for cattle from a particular LGA than any of the existing abattoirs, the annual slaughter turnoff from that LGA and the estimated supply chain cost savings are attributed to that new abattoir location. The "attributed" cattle numbers and cost savings from each selected abattoir location are summed across all Queensland LGAs to determine the total expected cattle supply and supply chain cost savings for each new location. From this, the relative financial viability of each new abattoir location can be assessed.

The locations which were considered to be useful examples and show geographical variation across the State were:

1. Roma,
2. Emerald,
3. Goondiwindi.

Indicative Preliminary Financial Analysis

A preliminary financial analysis of the three selected locations is shown in Table 1 below. It is based on a single shift weekday, chill boning operation typical of an export facility. Operating parameters including nominal throughput, expected direct employment and estimated capital cost are included. Note that the analysis for Emerald includes a possible future supply chain cost reduction (\$20 per head in FG freight) from the proposed future CQ Inland Port, and so does not represent current estimated supply chain costs.

Note that a cost credit is included under the line item "Reduced Cattle Transport Cost". A new abattoir at a particular location provides nearby producers with reduced cattle transport costs versus existing, more distant processors. This enables that new abattoir to offer a reduced cattle

price and still better the “farm gate” offer (net of transport and shrink costs) of the more remote processor. This reduced cattle transport cost would be “taken” by the new processor.

Revenue and Cost Category	Est. Op Revenue and Costs (A\$-2017 million per Annum)			
	Roma		Goondiwindi	Emerald
Nominal Annual Throughput (Head)	170,000	100,000	100,000	100,000
Direct Employee (typical)	336	223	223	223
Capital Cost (A\$-2017 millions)	103	97	97	100
Revenue	<u>293</u>	<u>173</u>	<u>173</u>	<u>173</u>
Primals and Trim	263.1	154.8	154.8	154.8
Offals	14.1	8.3	8.3	8.3
Render Products	9.4	5.5	5.5	5.5
Hides	6.7	3.9	3.9	3.9
Cattle Purchase	<u>224</u>	<u>132</u>	<u>134</u>	<u>133</u>
Standard price	230.6	135.6	135.6	135.6
Reduced Cattle Transport Cost	-6.4	-3.8	-1.9	-2.5
Operating Costs	<u>51</u>	<u>33</u>	<u>32</u>	<u>33</u>
Labour	23.7	15.9	15.9	15.9
Utilities	4.6	2.6	2.6	2.6
Packaging (cartons and wraps)	7.5	4.3	4.3	4.3
Consumables	1.6	0.9	0.9	0.9
Repairs and Maintenance/Equipment	4.0	3.0	3.0	3.0
Miscellaneous Production	1.8	1.0	1.0	1.0
Miscellaneous Overheads	2.0	1.5	1.5	1.5
Finished Goods Freight	6.0	3.5	2.5	4.1
EBITDA (A\$-2017 millions)	<u>18.2</u>	<u>7.9</u>	<u>7.0</u>	<u>6.1</u>
EBITDA per head (A\$-2017)	107	79	70	61
Depreciation (Building and equipment)	6.1	6.1	6.0	6.1
Interest/Equity Return	9.8	9.1	8.8	9.1
Earnings incl.depreciation, interest & return on equity	<u>2.3</u>	<u>-7.3</u>	<u>-7.7</u>	<u>-9.2</u>

Table 1: Earnings Estimate

Note that the final earning is net of depreciation and interest or return on equity for working capital and capital costs. As such, these results represent excess or shortfall earnings.

While Roma’s throughput is expected to be 170,000 head per annum, the expected earnings at 100,000 head per annum are presented to allow comparison with Goondiwindi and Emerald on the same throughput basis.

Of the locations considered, only Roma shows positive excess earnings under average or expected supply and market conditions. Emerald and Goondiwindi show a reduced earnings result due to:

1. Reduced economy of scale (higher operating cost per head at the reduced 100,000 head pa)
2. Disproportionately higher depreciation allowance and interest/equity return due to a higher capital cost per unit of throughput at a lower capacity facility in these locations
3. Roma has an added advantage of cattle transport cost savings of \$3.8 million per annum, compared to \$2.5 and \$1.9 million per annum at Emerald and Goondiwindi, respectively.

Sensitivity to Supply and Demand Variability

A sensitivity analysis was also conducted based on historical best and worst case market and supply conditions. Note that 'expected' indicates average typical supply and market conditions where 'worst' represents the challenging operating and market conditions of 2016 and 'best' represents the optimal conditions of 2014. The best and worst conditions might be expected to occur once in ten to fifteen years. The results for Roma are shown below in Table 2 .

Roma Sensitivity Analysis	Worst	Expected	Best
Throughput (Head per Annum)	159,387	170,000	196,790
Cattle Cost (A\$ per kg HSCW)	4.94	4.54	2.97
Finished Goods Price (A\$ per kg HSCW)	5.32	5.77	5.21
Margin-Cattle to FG Price (A\$ / kg HSCW)	0.38	1.24	2.23
Average HSCW (kg)	294	299	287
Category	Est. Op Revenue and Costs (A\$-2017 million per Annum)		
	Worst	Expected	Best
Revenue	249	293	295
Cattle Purchase	225	224	161
Operating Costs	49	51	57
EBITDA (A\$-2017 millions)	-24.6	18.2	76.5
EBITDA per head (A\$-2017)	-154	107	389
Depreciation	6	6	6
Interest/Equity Return	10	10	10
Earnings incl.depreciation, interest & return on equity	-40.5	2.3	60.6

Table 2: Roma Earnings Sensitivity

The sensitivity analysis shows the potential variation that can occur across the range of likely supply and market conditions. Even locations with a large supply chain cost 'advantaged' cattle supply are likely to be subject to poor financial performance at various times in the long term cattle supply and market cycle. In addition to the impact of margin (differential between cattle and finished goods pricing), the effect of variable throughput with fixed operating, depreciation and financing costs is also significant.

The location feasibility assessment process described in this study demonstrates a methodology based on an assumed operating model and input parameters. A far more rigorous business case would be required to properly assess the feasibility of a proposed abattoir with an outcome compelling enough for a private sector investor to fully fund the new enterprise. This willingness to commit funds is the ultimate indicator of likely success.

Value Add and Non-Traditional Supply Chain

While mainstream abattoirs produce commodity type products with minimal value adding, and market these products through traditional supply chains, a range of specialist or value add product opportunities exist, and various new and emerging non-traditional supply chains are available. The viability of these specialist products and new supply chains can be significantly influenced by the locations of the abattoir relative to supporting logistical infrastructure such as airports, rail, road, distribution centres, further processing centres and the final customer.

While these specialist products and new supply chains are options for any proposed new abattoir, it is preferable that the new abattoir achieves a commercial competitive advantage over existing processors in order to receive a financial advantage.

Service kill and e-commerce or direct supply to institutional or food service customers are product or supply chain options able to be utilised by a regional inland processor without any significant commercial or logistical disadvantage. Other options such as organic, Retail Ready and Value Added Manufacturing, export chilled and domestic e-commerce direct supply present a cost and logistical disadvantage to a regional inland processor versus existing coastal and south eastern processors.

Employment

Direct employment in the beef processing industry varies significantly over time due to the normal seasonal variations in cattle supply within a year and the climatic variations in cattle supply across multiple years.

Average direct employment in Queensland beef abattoirs is of the order of 9,500 (based on the period January 2000 to July 2017). Over a single year, employment can vary from an average low of 9,200 to an average high of 10,900, a difference of approximately 1,700. Due to climatic conditions, employment across multiple years is even more variable ranging from a low of approximately 8,200 to a high of 12,200, a difference of approximately 4,000. Based on a detailed operational manning assessment of a conventional chill boning domestic and export beef abattoir, average direct full time employee numbers would be approximately 340 for a 170,000 head per annum operation like Roma, or 220 for a 100,000 head per annum operation like Emerald or Goondiwindi.