final report

Project code: A.SCT.0064

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Date submitted: January 2011

PUBLISHED BY
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Western Australian supply chain feasibility study

Meat & Livestock Australia acknowledges the matching funds provided by the Australian Government and contributions from the Australian Meat Processor Corporation to support the research and development detailed in this publication.

Executive summary

Supply Chain Value Analysis and Performance Benchmarking for the Western Australian Beef Supply Chains has been discussed at the WA Beef Council in conjunction with DAFWA and MLA to enhance industry profitability. Activities that highlight the economic and associated forces limiting profitability in Western Australia can assist in prioritising margin improvement opportunities and subsequent implementation initiatives.

The purpose of this feasibility study was to determine the viability and likely success of a supply chain analysis and enhancement project and any considerations to be addressed if such a project were to go ahead.

A number of factors will be important for success of a subsequent project. Each of these was investigated with the following outcomes:

1) Willing participants across the supply chain were identified:
   a) A representative group from across each sector of the W.A. beef industry from producer through to end market were interviewed with everyone agreeing to be involved in a broader supply chain improvement project.
   b) No one from the Northern Ag. Region was involved but a range of potential participants has been listed for contact after commencement of the project.
   c) This group forms the foundation of a collaborative network that would involve all sections of the supply chain.
2) Data availability required to model and prioritise development initiatives was committed to:
   a) Each of the companies approached indicated some willingness to share data as part of the project
   b) Data is available that enables existing commercial forces and production constraints to be quantified in order to identify value opportunities along the supply chain
   c) The level of data required to develop time series modelling of seasonal pricing forces may not be available. Data quality would not be confirmed until data assembly were well underway. The majority of the proposed outcomes require 2)a) data only and will not be hindered if this data is limited.
3) Industry collaboration with MLA, Department of Agriculture & Food WA (DAFWA) and participants in the W.A. beef supply chain was confirmed:
   a) Meetings held with the WA Beef Council and DAFWA highlighted the various initiatives across the group and the willingness to work in collaboration.
   b) All agreed a coordinated approach between projects will be important to prevent duplication of work. Just as importantly, the various skill sets and resources across the parties will enable a greater chance of success.

Project Outcomes:

The findings from this feasibility study were presented to MLA, DAFWA and the W.A. Beef Council at their January 2011 meeting. The recommendation to proceed with a Stage 2 project was agreed unanimously by the Council. A high level action plan for Stage 2 is detailed below and will be presented to the Council at their next meeting.

Contents

1 Findings

This feasibility study highlighted opportunities for supply chain collaboration through better understanding of the economic and environmental limitations of the production and marketing systems in Western Australia.

It confirmed there are gaps in understanding between segments of the supply chain that encourage finger pointing across the fence. This limits collaboration to develop opportunities and is contributing to stalled industry profit growth.

Gaps in understanding do impact on management decisions within existing processes. But the study highlighted that gaps will become more significant as initiatives outside the current industry practice are initiated. The small size of the W.A. beef market makes changes in one supply chain quite sensitive to changes in others. This limits the ability to focus on one narrow supply chain initiative to a successful outcome without considering market dynamics from other supply chains. Mixed with this complexity is the need to proceed quickly to maintain current positive industry engagement through delivery of results.

An iterative development pathway has been proposed as the best method to address the many variables within the industry. Support and collaboration across all sectors of the industry is important to long term success. This iterative approach enables immediate engagement of industry in commercial initiatives that run in parallel to the Stage 2 project but integrating so both activities feed and inform each other progressively.

2 Recommendations

The findings from this feasibility study were presented to MLA, DAFWA and the W.A. Beef Council at their January 2011 meeting. The recommendation to proceed with a Stage 2 project using an iterative development pathway was agreed unanimously by the Council. A high level action plan for Stage 2 is detailed below including five key recommendations that will be presented to the Council at their next meeting.

2.1 Implementation of a structured development process

The first step is to define a process for assessing initiatives. This process filters, assesses and prioritises the viability of various improvement initiatives. Once this is finalised the development pathway will follow the steps below:

1. The initial challenge is identifying 3-4 key initiatives to integrate with this project;
2. Engage commercial participants in the initiative (A broad group of participant's has been identified during this feasibility study);
3. Apply the assessment process to each proposed initiative in conjunction with industry participants.
4. Identify development activities for each worthy initiative. This will include:
    a. Activities that address practical challenges or limiting factors that are preventing a successful outcome; AND
    b. Data required to progressively inform the process. This data will inform part of the larger Stage 2 project, along with data from the other initiatives.

5. Progressively integrate learning's from this initiative with relevant learning's from other initiatives.
6. Assess the progress of the initiative over the short term

2.2 Identify 3-4 project initiatives to be progressed

A range of initiatives to improve industry profit have been mentioned in various forums and reports. Three to four of the best opportunities will be selected to review using the process described in 2.1 above with a view towards implementation after pressure testing.

The W.A. Beef Council has begun an initiative to determine viability of an EU export market for W.A. beef. It is proposed that this activity plus 2-3 others be selected for integration with this Stage 2 project.

Potential initiatives have been identified out of this feasibility study below:

- Southern Feedlotter backgrounding investigation
- Northern Ag Backgrounding Investigation
    - Investigate current backgrounding operations that use genetics and management practices enabling supply to southern markets.
    - Investigate the ability to increase production or seasonal supply complimentary to southern supply to support 12 month supply
- Live cattle exports opportunities
    - Understand the potential for Live cattle exports from W.A. over the next 5 years
    - Growth and diversification of the exports and resultant impact on existing live export channels as well as on meat supply chains

Other potential initiatives should be reviewed with the collaborative group at the commencement of the stage 2 project before agreeing the short list of initiatives to progress.

2.3 Develop an integrated collaborative approach

Conduct an integrated approach on the ground between commercial participants, DAFWA Beef extension officers, MLA and Greenleaf.

- All participants bring a range of resources and skill sets that are complimentary. It is essential there is coordination of the activities included within this Stage 2 project with other activities being conducted in W.A.
- The first step to align resources and activities is proposed as a brainstorming and planning workshop between DAFWA, MLA and Greenleaf in March-April. A summary of the activity plans arising from this workshop will be presented at the next WA Beef Council meeting.

2.4 Integrate activities with Producer Groups

The production sector is the most diverse sector of the industry due to the wide range of production constraints across the state. Coordination of any development initiatives will require significant communication with; and buy in from producer groups.

A range of activities are already underway with a number of groups across the state. This provides a great conduit to obtain and feedback information through this project. The production sector appears quite engaged and this project provides an opportunity to support continued engagement.

Integration of Stage 2 activities and outcomes with the producer sector should be coordinated through DAFWA.

2.5 Utilise WA Beef Council communication strategy to integrate outcomes to wider industry

Industry participants (especially producer groups) will be investing time and information into this and other projects. Current industry enthusiasm in the WA improvement process will only be maintained over time if real changes are being made. The importance of communication as an agent for changing industry perceptions and cultures was highlighted at the January Beef Council meeting by the communications team.

As gaps in understanding are addressed that challenge status quo, the method for communicating progress will be critical. Given project activities will not involve the entire industry, communication of isolated success stories that effect change across the wider industry will be important.

The communication of this projects objectives, industry activities and outcomes need to be discussed with the WA Beef Council to ensure activities support and feed into the Councils communication strategy in a supportive way.

3 Appendix to W.A. Beef industry feasibility study

Objectives of Economic Modelling for the W.A. Beef Industry Background

Supply Chain Value Analysis and Performance Benchmarking for the Western Australian Beef Supply Chains has been discussed. The purpose of this value chain modelling work would be to more clearly understand the economic and associated forces that limit profitability of beef value chains in Western Australia.
Prior to commencing any modelling work, a feasibility project is being proposed to identify the types of data that are available to conduct a detailed value chain modelling and whether the objectives of modelling activities could be achieved.

Purpose
This appendix outlines the type of activities that could be conducted as a second stage project if an initial feasibility study were successful.

Understanding barriers to change in W.A. Beef
Given the complex and long standing challenges experienced in Western Australia, any development initiatives will be challenged by a wide and interrelated series of supply chain interactions that are holding the industry in its current state.

The primary components of an effective value chain include:

1. Material flows
2. Information flows
3. Quality of relationships
4. Flexibility and openness to innovative approaches including the capacity to adapt to and manage change
5.

We know these components are not effective to varying degrees in Western Australia which has resulted in underperforming value chains.
A number of methodologies have been used to assess and make improvements to various meat industry supply chains including:

- *Dynamic Alignment* methodologies based on behavioural segmentation that leads to delivering value to customers more effectively and efficiently
- Other *Value Chain Analysis Methods* that assess how well all activities within the supply chain add value or not to a tight group of end customers

These methodologies are effective and should be used as part of the “tool box” of capabilities. However, the Western Australian situation is more complex than a typical value chain analysis which is one reason why any single approach will not be sufficient to address the industry’s challenges.

Competing value chains are operating across W.A., driven by various physical, seasonal and market constraints that affect market stability. These underlying forces have stalled development of the four components above and have prevented establishment of core, stable value chains that underpin the industry’s profitability.
As stated in previous reports, market forces will drive profitability. These forces are exerted to an extent by the infrastructure that supports the industry. But essentially, the wide range of factors reduces down to three primary drivers. Cost of production, seasonality (supply and demand) and subsequently price will govern profitability in each sector of the supply chain.

Identifying underlying forces

Identifying these underlying economic, physical and environmental forces and understanding the strength of their influence on value chain development is important in identifying the best initiatives to undertake.

The **Figure 1** below is a generic scenario used to explain the types of market forces that have the industry in its current state. These forces need to be better understood and quantified to assess what flexibility the industry supply chains have in adjusting to achieve ongoing stability.

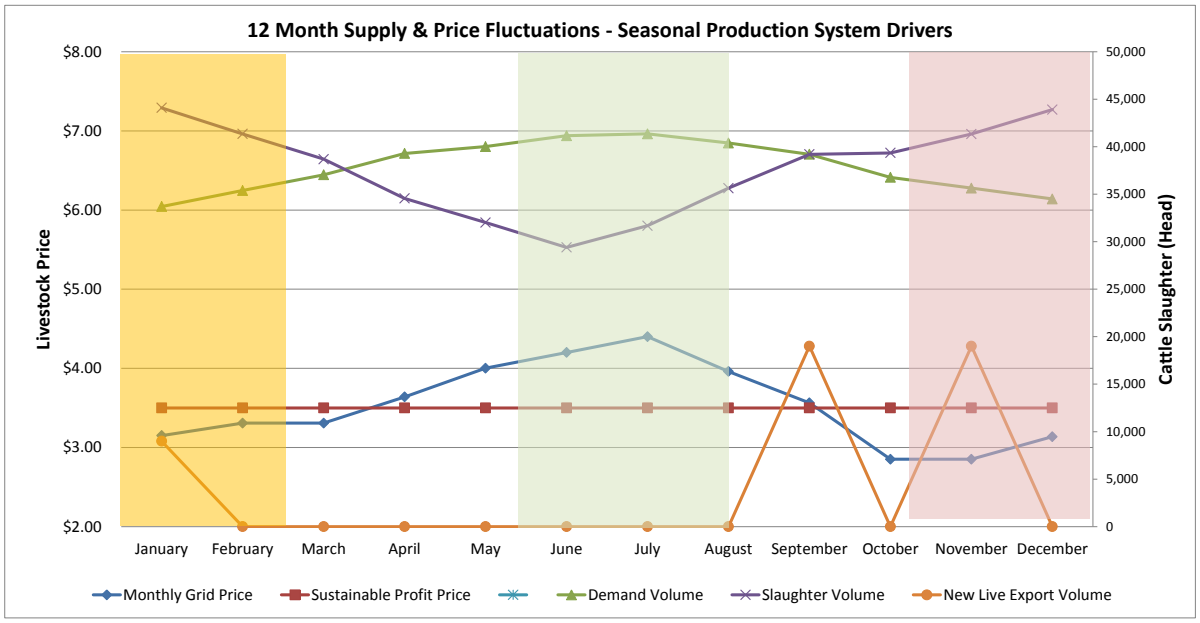

Figure 1: Example of supply and demand forces used to determine price elasticity and sustainable profitability

1. The top green line represents the market demand for a particular type of livestock across a period of time.
2. The top purple line represents industries physical ability to produce those types of livestock. More volume of a certain type of animal can be produced in the first four months than in the second four months.
3. The lower blue line represents the price paid for livestock across the year. It represents the fierce pull between paying enough to get cattle and not costing too much money that it exceed costs of closing the plant or reducing processing numbers.
4. The flat red line represents the price that is required to maintain a sustainable profit. Given this is a scenario only the flat line could represent either the producers or the processors livestock price required to make a margin.

Another set of lines could be overlaid representing gross company profit (producer and processor) considering volume, price and cost by month across the period. The concerning point in this scenario is that when livestock are readily available the processor doesn't have as great a demand. Livestock price is poor so the producer loses money but the processor does not make money due to low margins on poor sales demand. At times when livestock price is high, some producers make money but the majority do not have cattle to sell. Processors make even less money due to high cost of goods, and high fixed costs due to lack of supply volume. Cumulatively this results in loss of profits for everyone.

Note the impact of new live export requirement for Turkey and other higher quality markets from Southern W.A. The impact of these new export demands has a further impact on the current W.A. situation. If managed well these new markets may be able to assist in stabilising the WA market. If they are ignored while developing market initiatives that compete for livestock, the chance of even short term success may be unlikely.

Although the above scenario is not the entire industry picture, it gives a useful insight into the supply and demand forces that prevent sustainable profits. The questions are how strong these forces are, how limiting are the physical constraints that prevent change; and where the negative forces are weakest, what sorts of relationships can be enhanced or developed along the supply chain to create and sustain increased value.

Proposed activities

There has been discussion around development and population of software tools to assist in understanding the drivers that limit the effectiveness of W.A. supply chains to create sustainable value. However, it is considered that a much deeper level of understanding can be gained about the existing supply chain interactions and the conflicting economic drivers. Identifying, quantifying and mapping these interactions, would assist in developing improvement initiatives in the following ways:

- Benchmark current production and profit performance against other states
- Consider seasonal interactions and opportunities to optimise existing value chain interactions
- Identify weak supply chain interactions that prevent capture of the value generated
- Model market, production and other economic constraints to determine the magnitude of change required to extract sustainable value increases
- Identify the thresholds or tipping points affecting current industry stability to assist in development of the four value chain components above and enhance future value chain initiatives

This project involves collaborating with MLA, Department of Agriculture & Food WA (DAFWA) and participants in the W.A. beef supply chain to determine likely profit improvements in each industry sector if recommendations included in the previous WA Beef Industry StockTake report were implemented.

The first stage of the project (subject of this paper) deals specifically with analysis of supply chain data. The focus is on use of historical time series market data to quantify price elasticity's along the supply chain to determine the strength of market forces. Detailed price and cost comparisons between scenarios will be integrated. This creates a solid benchmarking capability between different supply chains within and outside Western Australia.

Project development methodology

A range of factors limit the achievement of target opportunities for the WA beef industry. The initial work in Stage 2 will be to populate a matrix of limiting factors, Target opportunities or industry outcomes, and the relationships between them as depicted in **Figure 2** below.

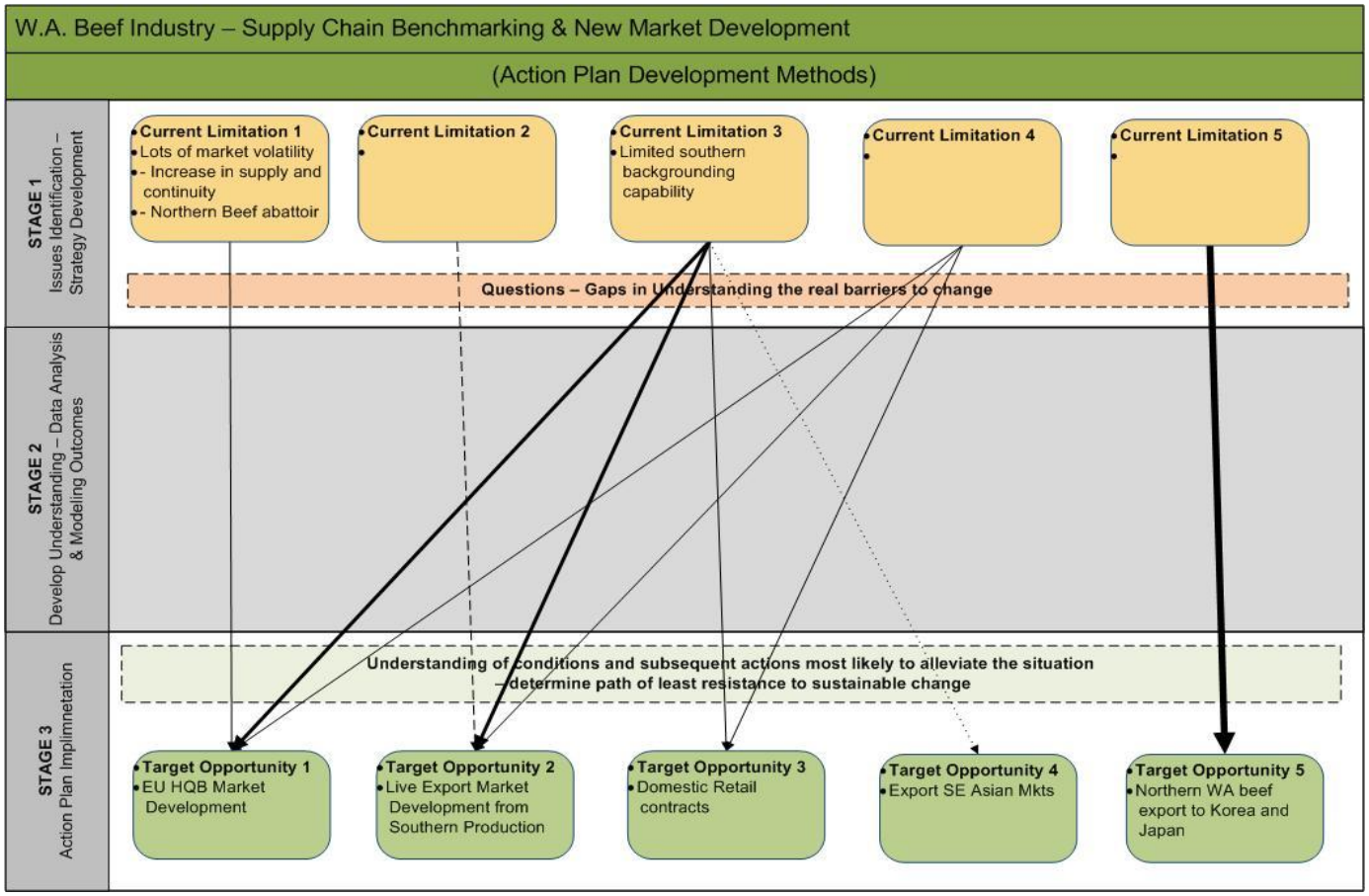

Figure 2: Mapping of Industries limiting factors and relationship to Target outcomes

A table of interactions and outcomes, along with data requirements has been included in section **Error! Reference source not found.** on page **Error! Bookmark not defined.**.

Key Initiatives to support collaboration:

The interaction of current limiting factors will be mapped and quantified for each of the key initiatives or projects. As depicted in **Figure 3**.

Purpose of these initiatives:

1. Step before integrated modelling enables direction to narrower more specific set of data
2. More specific and narrow focus enables faster understanding in a smaller segment of the chain but ignores some noise from the larger supply chain
3. Helps develop specific collaborative working relationships along the chain for a smaller more constrained supply

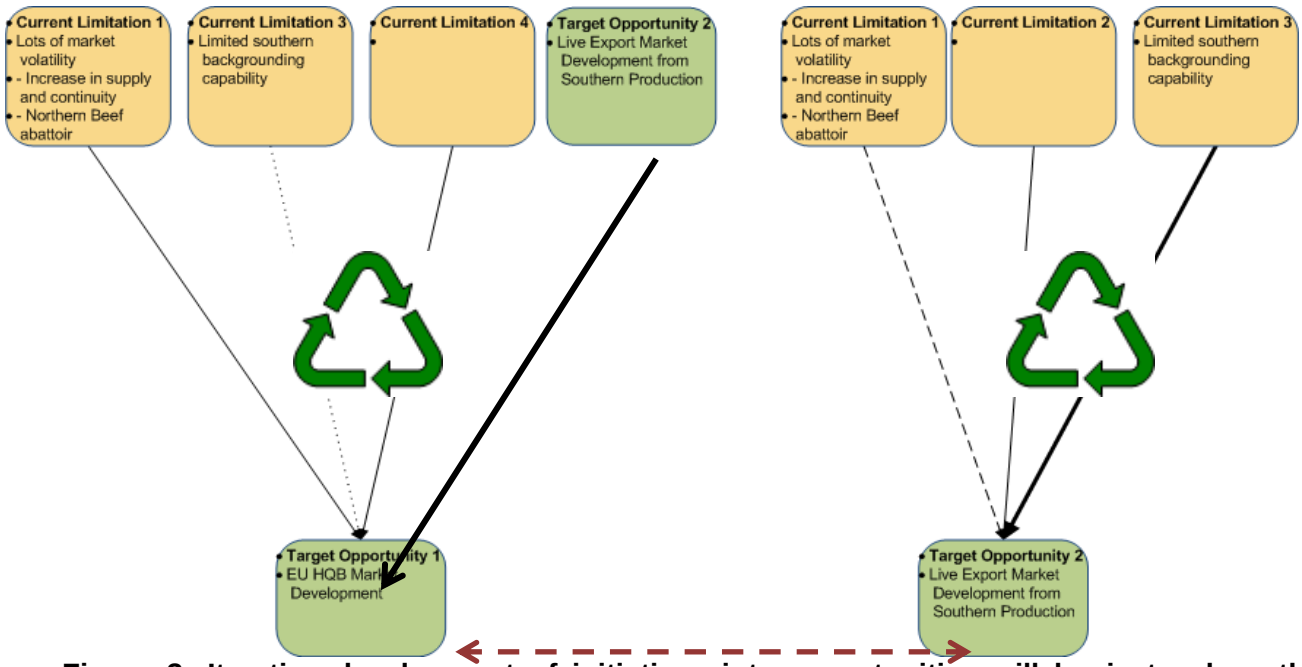

Figure 3: Iterative development of initiatives into opportunities will begin to show the interaction of some opportunities as inhibitors of other opportunities.

Detailed activities

Greenleaf are proposing to work in conjunction with MLA, DAFWA and with enterprises within each section of the WA beef supply chain to quantify and compare production constraints with other states. The learning's on production constraints along the chain and the resulting data can then be used to measure price elasticity for each supply chain sector. The model once developed can then estimate resultant enterprise profits if some of the recommendations in the WA Stock Take report were implemented.

This project will model which activities represent the greatest opportunity for WA government and the industry to invest in. Sorting and prioritising proposed interventions is possible with robust data analysis and is an important outcome of this project. Where possible, return on investment for various interventions would be estimated.

Outcomes of this work can also be used to support other MLA and DAFWA initiatives in WA and assist in determining the return on investment that might be expected for some of those related activities.

Types of industry questions to be addressed in the modelling work

Answering some questions would help understand the economic barriers and identify possible interventions to improve the situation. The types of questions to be answered in this project (subject to available data) would be as follows:

- What price increase do producers need over live export to begin supplying feedlots for processing specifications?
- What does an increase in feedlot capacity utilisation do to feedlot profitability and does this lead to a reduction in cost of feedlot cattle to the processor?
- How competitive would WA processors be against Eastern states if they had year round supply of feedlot cattle at optimum feedlot performance?
- What forward price would processors need to offer for feedlots to put cattle on feed for 120 day contracts?

- What price premiums could a processor achieve if they developed an export market and what improvement in profit would this be for their business?
- What operational cost reduction is expected of processors if they received more consistent year round supply of cattle and what could they afford to pay for more consistent supply? Is this price increase competitive with live export market demand?
- What price point is required to draw central/northern WA cattle to southern feedlots for 120 day grain fed contracts?
    - Consider transport and other costs
    - Consider cattle quality etc.
- What impact does increase in processed beef exports have on live cattle prices (for both domestic beef and live cattle exports)?
- How cost competitive is the entire beef processing supply chain in WA compared with other states? Will changes to the states infrastructure help to maintain competitiveness?

Scenarios that would be considered in the mapping activities

A range of industry dynamics within the WA beef industry appear to be preventing profitable supply channels from being established and maintained as they have been in the other states. The fact that feedlot utilisation is at ~25-45% compared to 70% in eastern states (quote), Processing volumes are highly seasonal with less than optimal throughput for half the year (quote), lucrative export beef markets are insignificant and domestic supermarket share is at 80% compared with 60% in Eastern states indicates some of the industry' structural differences that are challenging the WA beef industry from establishment of profitable and sustainable supply chains.

The most recent Beef Stock Take Report investigation was undertaken at a relatively high level with broad solutions to various problems identified. While these recommendations seem quite logical to implement, the lack of certainty or risk for individual commercial entities to invest in their section of the supply chain may be too great at this stage to proceed. Unstable trading relationships between supply chain sectors may also be preventing additional investment. While interventions of some sort are clearly warranted, it will be critical to avoid implementing initiatives that may actually exacerbate the WA industry's problems.

Type of data available

More detailed review of certain aspects of the problem is possible if cost, price and volume data are available. This would help in providing more clarity for industry on possible intervention strategies. Supply and demand forces and product price elasticity's will be better understood if robust data sets can be obtained.

Once this has been done, modelling the impact of implementing key industry recommendations can be quantified for each sector of the supply chain. Having a better understanding of what pricing dynamics exist and the interactions across different types of supply chains would assist greatly in identifying the types of interventions and government support that may be required to effect lasting change.
Focused data analysis is needed to understand the very specific supply and demand interactions as they currently stand. The amount of available data will be determined in the initial investigation stage of the project.

The **Figure 4** below provides an example of the types of considerations that will need to be addressed at each step in the supply chain and how these factors impact up stream and downstream on price and profit.

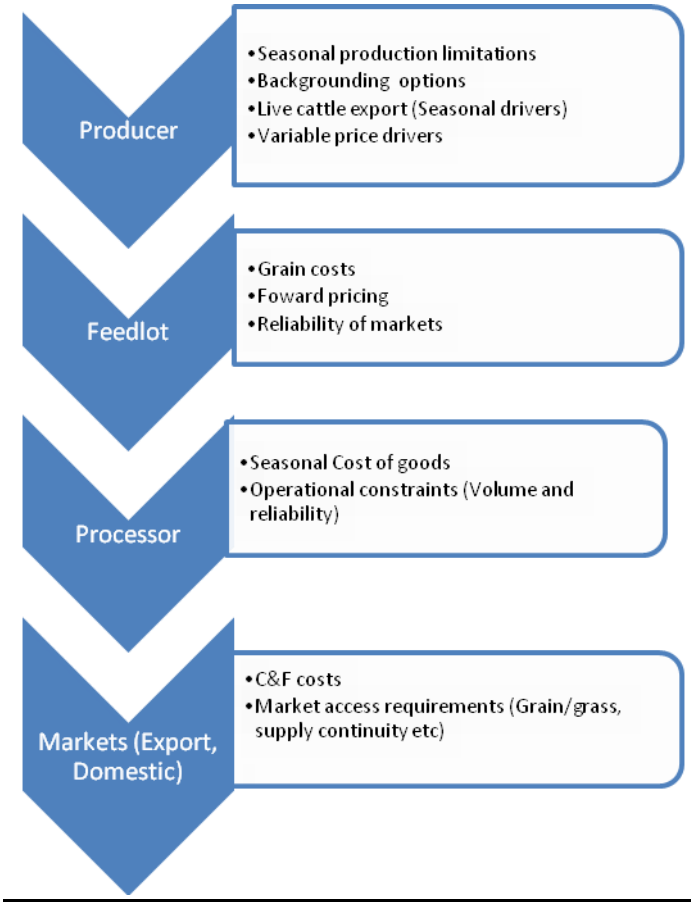

Figure 4: Specific Supply Chain Interactions

Supply and demand interactions demonstrate fragmented supply chain interactions

A number of recommendations presented to the Beef Stock Take committee initially appear to provide solutions for enhancing competitiveness of the beef industry in the global arena. Part of the work proposed in this project is to map the interactions and resultant supply and demand forces between each sector of the supply chain. These market forces appear to conflict with each other on a seasonal basis and some of the proposed recommendations appear to exacerbate the difficult profit situation. For example, construction of feedlots to provide year round continuity of supply should help limit "dumping" of livestock at times when livestock demand is low. However, feedlot capacity utilisation has been at 25-50% over the past 6 years. Increasing capacity could therefore exacerbate the problem for lot feeders that need to have higher stocking rates to ensure profitability and cost competitiveness. An exception may be if new feedlots were positioned to give processors access to cattle currently destined for live export. Price points, economies of scale and economic competition would need to be considered carefully before confirming this as a viable solution.

WA processors are reported to currently experience inconsistent monthly processing numbers with less than optimum throughput for six months of the year.

Live export is an important part of the state's beef economy. Without live export, producers would suffer significant losses in profit. However, live export requires limited inputs and current demand is high so prices are more lucrative and less risky than producing to processor

specifications. This exacerbates the processing sector's ability to establish stable supply for more lucrative export markets.

Developing a time series model that reflects the various price sensitivities within each sector (based on access to historical data) would allow price threshold/breakeven analysis to be conducted. This would estimate the comparative pricing levels required to effect change in the particular market or supply chain sector. For example, the most dysfunctional interaction between supply chain sectors (relative to trade relationships in other states) is that of the Producer through Feedlot to Processor (exporter). Producers only view feedlots as seasonal supplement to grass-fed production. Lot feeding is short (~85 days) and highly seasonal based on available grass and calving season. Processors can't get access to year round supply of short to medium fed cattle to build lucrative export markets. Feedlots don't have confidence in the processors financial stability to put cattle on feed for longer contracts as it would be too risky. Based on estimated profit breakevens it is possible to investigate the potential impact of various industry recommendations on WA beef profitability. For example:

- What impact will government subsidising of new feedlots and processing in central WA have on market forces and establishment of other sustainable beef markets?
- In what order should the previously recommended interventions be prioritised and which sectors of the industry should be expected to gain the most from these interventions?

Following these investigations, interactions with other industry participants (MLA, WA Government, Industry organisations) are then possible to help develop and facilitate improvements.