



# Buloke Intensive Livestock Investment Guide

Volume 4 - 2016  
**Lot Feeding**





## TABLE OF CONTENTS

Buloke and lot feeding: overview	3
Site and infrastructure requirements	5
Securing a Position in the Supply Chain:	7
Day to Day Management	10
Case Study 1: Peter Bish's Lamb Enterprise	12
Case Study 2: Hypothetical Cattle Feedlot	14
Finance	14
Map of buloke	15
Statutory requirements	16
Planning checklist	17
Further information	19
Bibliography	19

### TYPES OF COMMERCIAL BREEDS

Sheep: Virtually all breeds of sheep produced in Australia are suitable for meat production of various qualities, although there is a considerable difference between sheep bred for wool and those bred for meat. Cross breeding can increase lamb productivity.

Sheep: Crossbred stock for prime lamb include breeds such as Merino, Dorset, Suffolk, Texel, Coopworth, Border Leicester, Dorper, Corriedale and the relatively new Australian White.

Beef: Most temperate climate (*Bos taurus*) breeds and crossbreeds, such as Angus, Hereford, Shorthorn, Limousin, Simmental and Wagyu are used in feedlots in Southern Australian States.

### GROWING SYSTEMS

Containment pens/ yards

Outdoor or indoor fixed pens/yards

Outdoor or indoor fixed pens/yards

### DESCRIPTION

Lambs are finished in outdoor containment pens on a ration designed to achieve growth rate targets, or as a management strategy, such as drought feeding, security during lambing, or resting paddocks.

Lambs are grown or finished in confined spaces, on prepared rations, to meet market specifications or supply continuity.

Cattle are grown or finished in confined spaces, on prepared rations, to meet market specifications.

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## **BULOKE AND LOT FEEDING: OVERVIEW**

**Buloke Shire Council is actively seeking to attract investment in intensive lot fed sheep and cattle production, and related business activities, to the Shire.**

Lot feeding is the practice of housing animals in a confined area and providing all nutritional requirements in the form of rations. It allows operators greater control over the quality and timing of supply than is possible with grass finishing, which is subject to seasonal conditions. The feedlot operator can also tailor feeding regimes to produce beef and lamb targeted to particular markets, for example the highly marbled Japanese long-fed beef market (usually fed for more than 200 days) or the short-fed domestic beef market (usually fed for 70 to 150 days).

### **Sheep Lot Feeding**

Lot feeding enables producers to achieve consistent supply of quality lamb to meet market specifications for weight and fat score. It also provides an opportunity to sustain production during times of low pasture availability or achieve rapid growth when feed prices are low. Six to ten weeks (40 to 70 days) is the period of time for lot feeding sheep when the objective is finishing stock for market. As a secondary function, lot feeding is used as part of general farm management, particularly to maintain stock during drought and to keep stock off establishing pastures at the break of the season. In Victoria, sheep lot feeding tends to be opportunistic, or determined by market conditions. The number and scale of lot feeding operations therefore fluctuates from year to year.

Lot feeding has the potential to offer a profitable enterprise in its own right: finishing fat lambs for market. Sheep can be sent to a dedicated (off-farm), or contained on-farm in temporary or permanent pens. At times of low feed grain prices, and relatively high lamb prices, lot feeding becomes an attractive option if farmers are prepared to devote time setting up a feedlot. Wool producers can also benefit from management advantages by using a feedlot to reduce grazing pressure and protect the ground from erosion caused by a loss of vegetative cover.

The main benefits of lamb lot feeding are:

- Animals can be delivered to suit a particular market's specification for weight and quality.
- Continuity of supply can be improved (finishing lambs at times of the year that are traditionally non-seasonal).
- Seasonal variations clearly have an impact on lamb prices for the domestic market, so if producers can deliver when there is a shortage they can take advantage of higher prices.
- Lot feeding allows farmers to establish more attractive supply chain arrangements and premium markets away from the traditional sale yard methods (which still account for the majority of prime lamb sales).
- A management tool to help control feed availability, limit soil erosion and seed contamination, improve pastures, and improve stock condition. Keeping stock off pasture for four-six weeks allows it to become well established at the break of the season and stubble can be more easily maintained. These benefits may also be achieved by a broader strategy of sheep 'containment' (in semi-intensive pens and paddocks) without the infrastructure needed in a formal feedlot.

### **Cattle Lot Feeding**

Most beef cattle in Victoria are kept on managed pastures, but around 10% of the beef cattle herd is grown out in feedlots. This is a lower proportion than in Queensland and New South Wales. There are approximately 50 specialised beef cattle feedlots in Victoria, of which about half are accredited under the National Feedlot Accreditation Scheme.

Victorian feedlots are predominantly geared to produce grain-fed beef for the domestic market, with shorter feeding regimes and higher turnover rates compared to feedlots in Queensland and New South Wales. There are some foreign investors who have expressed interest in lot feeding cattle in Victoria for live export, but the merits of this approach are highly doubtful with the potential for stock to lose condition during the journey

and negate the benefits of lot feeding. Australian cattle are not lot fed for whole-of-life nor even for the majority of time (being raised on pasture, typically between 85% and 90% of their lives). Most feedlots purchase feeder cattle from these farmers, with some feedlot operators owning their own pastoral operations, and finish the cattle on grain rations.

To be sold as grain-fed beef to the domestic market cattle must be fed a predominately grain-based diet for at least 60 days for heifers or 70 days for steers, and the overall average is 80 days in the feedlot. Cattle for export beef must spend a minimum of 100 days on grain rations. The Australian Lot Feeders' Association (ALFA) suggests that cattle spend between 50 and 120 days on average in a feedlot in Australia, the shortest period in the world. Lotfeeders purchase feeder cattle from backgrounders and other pastoral cattle farmers (including owned or contracted grower operations) that have weaned and grown cattle.

Like sheep lot feeding, but not to the same extent, the number of beef cattle feedlot enterprises can fluctuate from year to year. This is because, again like sheep lot feeding, beef lotfeeders can operate opportunistically; only keeping feedlots in operation when market and operating conditions are favourable. The opportunistic nature of beef feedlotting is less than sheep lot feeding for two main reasons:

- The physical infrastructure for cattle feedlots is more extensive and costly than sheep containment areas, and
- There can be substantial premiums for grain-fed beef produced to market specifications, while this is not the case for lamb.

When the prices for feeder cattle are too high, feeder cattle availability is low, over-the-hook prices are low or downstream demand is weak, and accreditation costs become a significant proportion of operational expenses, lotfeeders may close feedlots temporarily or permanently.

Strong demand for premium-grade grain-fed beef, both domestically and overseas, has led to a significant expansion of lot feeding in some regions over the past 30 years. Feedlotting tends to be a low-margin activity, with cattle and feed costs accounting for around 68% and 25%, respectively, of revenue earned. Because cattle and feed are bulky and expensive to transport, feedlots tend to be located close to grain-producing regions with ready access to cattle. There are around 450 accredited beef cattle feedlots across Australia. While beef feedlotting can be opportunistic and responsive to changes in seasonal conditions and grain prices, the demand for grain-fed beef has been the main driver of investment in feedlot capacity since the early 1980s, especially in export markets. By 1995 the preference for grain-fed beef had led to a change in Australian production systems, with almost 40% of all Australian beef exported to Japan being grain-fed, compared with only 10% a few years earlier, in 1988.

These developments have contributed to growth in the feedlot sector outpacing growth in the broader beef cattle industry, with turn-off via feedlots increasing from around 8% in 1992 to 28% in 2013–14. There has been some rationalisation in the beef feedlot sector in recent years, with growth in feedlotting mainly in larger capacity facilities. In 2014 around half of total Australian capacity was in feedlots that could carry more than 10,000 head, while there has been an absolute decrease over the past decade in facilities that can carry less than 1,000 head.

### **Why Buloke Shire?**

Buloke Shire, in north-central Victoria, is well suited to both sheep and cattle lot feeding investments:

- The Shire offers sound and healthy livestock country.
- There is existing feedlot expertise in the region.
- The area is a centre for feed grain production, and offers fodder crop flexibility (barley, wheat, pulses and lucerne).
- The Wimmera Mallee Pipeline provides water security to enable finishing of lambs and cattle without reliance on the performance of dryland pastures.
- The area has affordable land entry costs (somewhat offset by freight costs)



Although Buloke Shire's agricultural activities are dominated by broadacre grain production, it has been a base for sheep, cattle and pig farming since the early days of European settlement. Production of wool, mutton and prime lamb, in particular, was common for many decades in complement to grain operations. The major beef operation in the Shire is a feedlot near Charlton, while sheep feedlotting in the Shire at present is mostly a seasonal or opportunistic, rather than permanent, activity. The Shire is well placed to access multi-species, lamb, and/or beef processing plants across the broader region. For example, abattoirs are located in Stawell, Kyneton, Echuca, Tatiara, Melbourne, Bacchus Marsh, Warrnambool, Ararat, Swan Hill and Colac.

**Buloke's climate, grain growing farming base, and the ability to provide sufficient distances between feedlots, waste disposal areas and dwellings make it a great location for both lamb and beef lot feeding.**

Buloke's communities are supportive of lot feeding operations, understanding that they complement grain growing and existing extensive livestock farming in the Shire, they make an important contribution to the economy, they add to local diversity, and they provide local jobs. Land prices for both dedicated feedlot ventures and feedlots with a grazing or cropping component, could be expected to be around \$2,500 per hectare (or \$1,000 per acre) with very few sales of properties less than 80 hectares.

There is no minimum stocking level for a feedlot and there are some small and informal stock containment activities, although serious enterprises seek to have sufficient scale for the feed and logistics cost-efficiencies needed to achieve profitability. The size of the feedlot will usually be determined by whether the infrastructure is permanent, and whether the feedlot is a dedicated enterprise or a component of mixed farming activities. If it is the latter, the size may be determined by what can be handled by one person or a family.

If entering this industry is of interest, please contact James Goldsmith, Economic Development Officer at Buloke Shire Council who can answer many of your queries and provide further information and specific contacts in the sheep and cattle industries.

## **SITE AND INFRASTRUCTURE REQUIREMENTS**

**The following notes relate to suggested land and infrastructure for lot feeding operations. Farmers and investors may be able to work around deficiencies in many of the preferred natural or installed assets, through design, innovation or making trade-offs.**

Unsurprisingly feedlots are located in areas that are in close proximity to sheep or cattle, grain supplies and water.

Feedlots have the potential to pollute groundwater through the leaching of nutrients and pathogens from feedlot pads, effluent ponds and manure and irrigation reuse areas. The protection of groundwater can be achieved by good site selection, feedlot design and management.

### **Cattle Feedlots**

Selecting a cattle feedlot site requires the potential location to be tested through a series of modelling steps, and an example of how this modelling is applied is presented in Case Study 2 later in this document. The critical factors include:

- Distance to houses, urban areas and other sensitive uses.
- Topography and any exposure to floods
- Water supply
- Soil types
- Groundwater and water supply characteristics.

The site selected must also have access to sufficient areas for waste disposal and/or waste re-use.

Final cattle weights after lot feeding range from about 400 kilograms to 750 kilograms liveweight. A 'standard cattle unit' (SCU) is used to compare all feedlots on a comparable basis. An SCU has a liveweight turnoff of 600 kilograms.

A feedlot with fewer than 50 head of cattle is exempt from most of the planning and design requirements provided that it complies with the following approval measures:

- The feedlot is outside a declared special water supply catchment.
- It is above the 1 in 100 years flood level.
- It is not in an active flood plain.
- No part of the feedlot is closer than 300 metres to a farmhouse on an adjoining property.
- There is a minimum set back of 200 metres from a watercourse, groundwater recharge area, bore or spring.
- There is a minimum set back of 800 metres from the full level of a water storage used for the supply of potable water, or the take-off or bore for the supply of potable water.
- There is a minimum set back of 200 metres from any road
- Pen density does not exceed one head of cattle per 20 m<sup>2</sup> (pen density is the pen area divided by the number of cattle)
- The feedlot pens will have a uniform slope of not less than 2% and not greater than 6%.

A cattle feedlot with more than 50 head should comply with objectives, accepted standards and (where needed) approved measures, across eight key elements:

- Location and site
- Design and construction
- Odour
- Noise
- Waste storage, treatment and use
- Traffic and parking
- Landscaping
- Operations and management.

In designing a cattle feedlot there are several available feeding systems to consider, which vary according to the desired size and intensity of the feedlot. Possible feeding systems include self-feeders containing dry grain mix and separate roughage, an open trough system with all-in feed mixes (grains, roughage and additives), and pellets. Feed rations need to be tailored to meet achieve desired growth rates. The proportions of protein, energy, minerals and roughage are major contributors to potential growth rates of lot-fed animals. Common components of a feed ration include cereal grains, grain legumes, hay and silage, minerals and buffers. Each yard is up to 6,000 square metres in size; not a set area per animal, but enough space for all cattle to exhibit natural behaviour in terms of movement and interaction.

Intensification results in a need for an increase level of management of both livestock and the business, requiring both specialised skills and improved monitoring strategies particularly of the livestock.

### **Lamb Feedlots**

Modern lamb feedlots do not have the consistent design and layout approach that is used with cattle feedlots. Design guidelines vary widely and the level of research for sheep feedlots is limited. The design will vary depending on whether the objective is to finish lambs out of season or to finish lambs all year round for a specific market. Typical components of a lamb feedlot are:

- Pen areas
- Lamb Handling spaces (receiving, induction and dispatch)
- Shearing Shed
- Feed Storage, Preparation and Distribution Systems

- Water Supply System
- Runoff Control Systems
- Manure Cleaning, Storage and Spreading Systems

The pen area required for a feedlot is determined by the total number of lambs multiplied by the stocking density. A 2009 study for the Wimmera Mallee Pipeline, assumed that 5 square metres per standard lamb unit (SLU) is an appropriate stocking density. Pen sizes vary depending on the size and operation of the feedlot; larger feedlots usually have larger pens that can accommodate 1,000 to 1,200 SLU's per pen.

If no land is required for effluent irrigation or manure utilisation, the area of land required for the lamb feedlot are the pen areas and associated facilities which could include access roads, lanes, drains, sediment basin, evaporation pond, manure stockpile area, lamb handling facilities, shearing shed and feed storage and preparation (mixing or milling) areas. The area required for the associated facilities for cattle feedlots is 2 to 3 times the pen area. Provision of a total lamb feedlot area which is 3 times the area of the pens is a conservative provision.

#### Site and Infrastructure Needs for Lamb Feedlots

	5,000 standard lamb units	20,000 standard lamb units	50,000 standard lamb units
Pen areas (hectares)	2.5	10	25
Feedlot area (hectares)	7.5	30	75
Annual water demand (megalitres/year)	9	36.5	90
Peak water demand (megalitres/day)	0.04	0.18	0.44

Annual water demand is based on 5 litres/head/day and peak demand is 9 litres/head/day

SOURCE: FSA Consulting (2008) Wimmera Mallee Pipeline Project Lamb Feedlot Site Suitability Study for DPI

The CSIRO Model Code of Practice suggests the following minimum space requirements for sheep in feedlots:

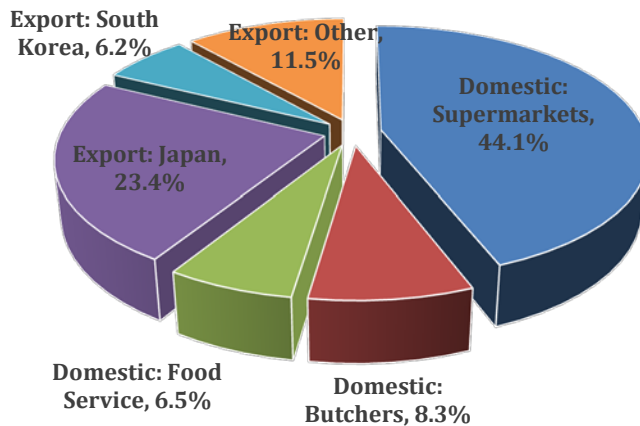
- Indoor feedlot pen with more than 30 sheep: 0.5 square metres per head
- Outdoor feedlots
  - o Lambs up to 41 kilograms 1.0 square metres per head
  - o Adult sheep 1.3 square metres per head
  - o Heavy wether (fat score 5) 1.5 square metres per head square metres per head
  - o Ewe with lamb(s) 1.8 square metres per head.
  - o Overall 6,000 SLU per hectare (smaller feedlots have 250 - 500 SLU's per pen).
  - o Pens must also provide sufficient space at feed and water troughs.

#### SECURING A POSITION IN THE SUPPLY CHAIN

Knowing who the feedlot will supply is critical, and securing a contract, or another clear channel to market, should be clarified as a first step by any intending investor.

For a beef or sheep feedlot operator the next link in the supply chain is an abattoir, but potential market channels include processors, wholesalers, butchers, retailers, food service businesses, and export destinations. Unlike other intensive livestock production, the supply chain is not as closely controlled by the processing companies, and individual producers and groups (or networks) of producers often develop and service their own markets. In fact, most feedlot operators choose between domestic or export markets as their supply chain focus, but not both. In the case of lot fed beef, about 60% goes to domestic markets, and spends a shorter period in the feedlot (averaging 80 days).

## Lot Fed Beef Markets: Total \$3.9 billion



There are 24 licensed abattoirs supervised by PrimeSafe, with a further 17 licensed abattoirs supervised by the Australian Quarantine and Inspection Service, in Victoria. Five are located in metropolitan Melbourne, while the rest are spread across rural and regional centres including Cobram, Warrnambool, Bairnsdale and Colac.

Opportunities for sales to meat processors on the spot market have fallen substantially due to greater volumes of meat being sold to vertically integrated processors. As major producers and processing companies take ownership of the supply chain, the ability to control the entire production process not only saves on costs, but also allows for greater quality control of the final product. This trend is expected to continue as costs are reduced by economies of scale. For meat processors that are not vertically integrated, it is likely that direct relationships with farmers will be established, further minimising spot market sales of beef and lamb.

The majority of beef feedlotting businesses supply their own cattle for lot feeding, and tend to be small to medium family owned operations. These operations have a market share of almost 75%, which suggests that the biggest feedlot companies (namely JBS Australia, Teyes Australia, Mort and Co, Australian Country Choice Holdings, and Bindaree Beef) have a combined market share of just over 25%.

JBS Australia Pty Limited, a subsidiary of the Brazilian company JBS SA, is the largest feedlot operator in Australia. The company is the world's largest beef, leather and lamb producer, and the second-largest chicken producer. JBS SA entered the Australian market in 2007 with the acquisition of Australian Meat Holdings. Subsequent acquisitions in Australia include Tasman Group (2008), Tatiara Meat Company (2010), Rockdale Beef (2010), Primo Group (2014) and a majority shareholding in Andrews Meat (2014). JBS Australia operates five feedlots and it is one of the few companies to have feedlots operating parallel to an adjacent abattoir (at two locations).

Teyes Australia Pty Ltd is the second largest feedlotting company, through a joint venture with Cargill Corporation. The joint venture commenced in September 2011, when the companies merged their Australian cattle feeding and beef processing businesses. The joint venture is the second-largest meat processor and exporter in Australia. The joint venture operates three cattle feedlots and six beef-processing plants. The feedlots are able to turnover more than 230,000 head annually:

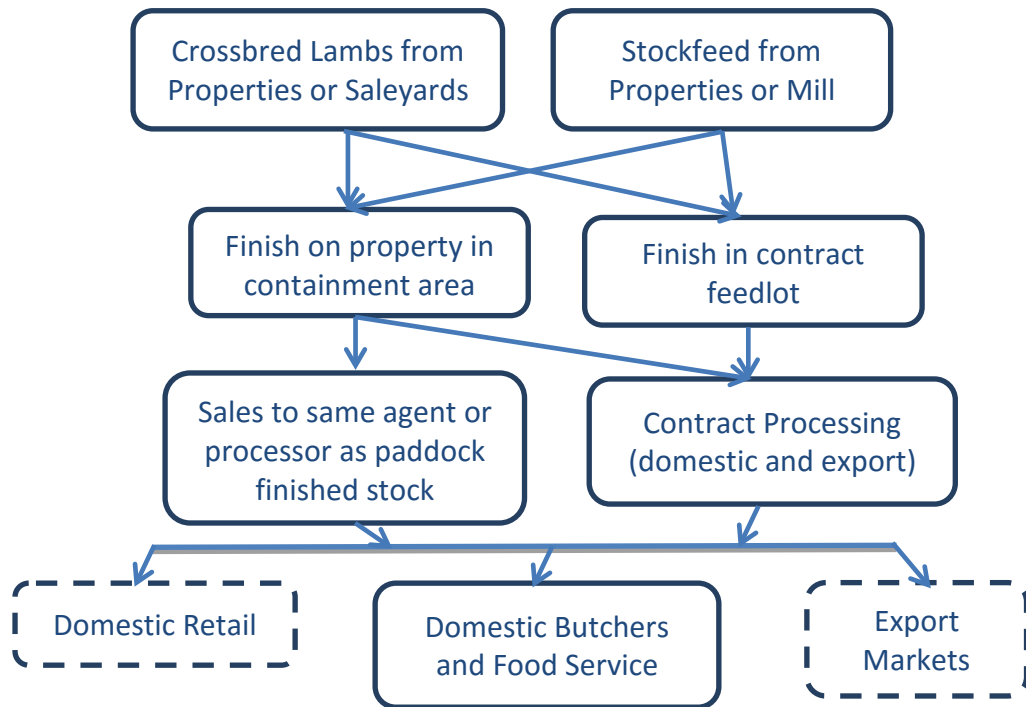
- Condamine feedlot in Queensland's Darling Downs farming region with a capacity of 30,000 head of cattle and an annual cattle turnover of approximately 90,000 head.
- Jindalee feedlot in NSW, with a 17,000 head capacity.
- Charlton feedlot in Buloke Shire, with a capacity of 20,000 head.

Indicative lamb and beef feedlot industry supply chains for Buloke Shire are presented in Figure 1.

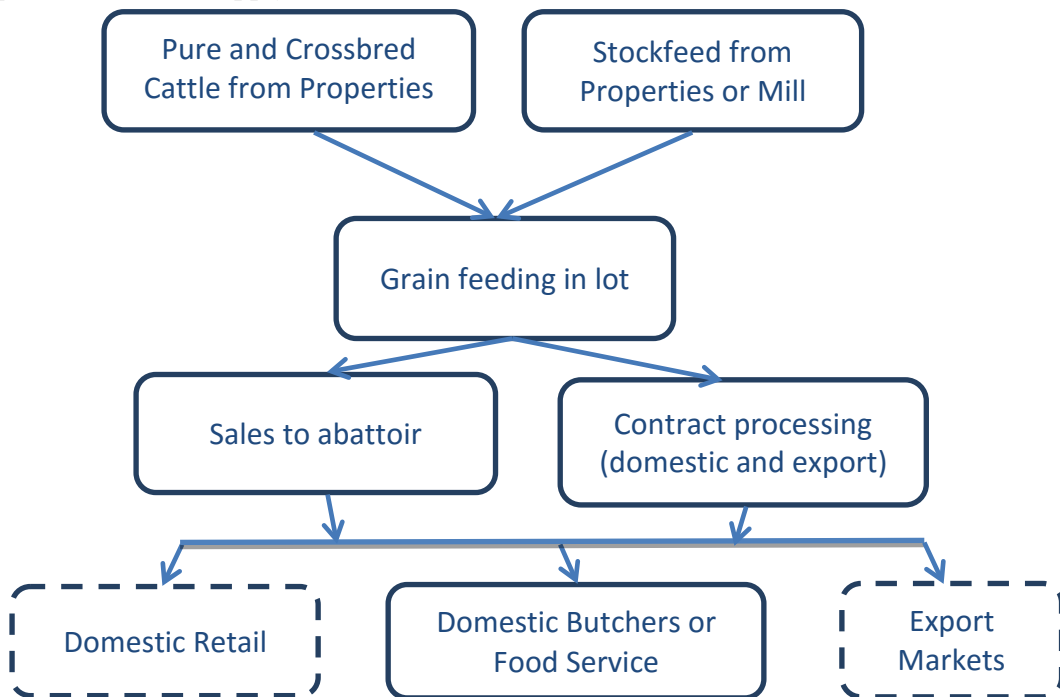


**Figure 1: Indicative Supply Chains**

**Sample Lot Fed Lamb Supply Chains**



**Sample Lot Fed Beef Supply Chains**



## DAY TO DAY MANAGEMENT



### Feeding

Common components in a beef feedlot ration are grain legumes, cereal grains, hay and silage, minerals and buffers. Examples of cattle lot feeding systems include:

- Self-feeders with dry grain mixes and separate roughage
- All-in mixes containing grains, roughage and additives, often fed using an open trough or bunk system
- Pellets.

For sheep, rations typically comprise a mix of barley, oaten hay, oats and lupins, although other cereal grains and feedstuffs are used dependent on price and energy content. Sheep being introduced to an intensive feeding system must be given time to adjust both to the new dietary regime and the use of troughs. As a guide, Agriculture Victoria suggests conversion to a grain-based diet can be achieved by gradually replacing roughage over a period of 7–14 days. Where sheep are being introduced to a diet containing more than 60% cereal grain, the roughage should be gradually withdrawn over a minimum of 3 weeks.

Adequate trough space should be provided. If food is offered at set feeding times, up to 20 cm of trough space per sheep is needed, to allow all sheep to stand and feed at the same time and to reduce adverse feeding competition. If feed is available throughout the day, the trough space can be substantially reduced. Close monitoring, and identification and treatment of shy feeders should remain one of the manager's major concerns throughout the feedlotting period and especially during the introduction of sheep to new types of feeds.

### Staff and Labour

About 65% of beef feedlots do not employ any additional staff, relying only on owner operators. Corporate beef feedlots employ stockmen and women who supervise cattle each day. These staff are specifically trained in animal welfare, husbandry and handling along with quickly identifying any animals that may appear sick so that they can be isolated from other animals and treated as soon as possible. Feedlots also employ qualified veterinarians to oversee their animal health programs. As feedlot cattle are also protected from floods, fire, droughts and wild animals; mortality levels are lower than in extensive grazing systems. Some larger feedlots, which have in-house feed mills, also employ nutritionists and feedmill operators.

A seasonal, or containment area, sheep feedlot may not require additional labour. Staff requirements for permanent sheep feedlots are typically 1 full-time staff for every 9,000 – 10,000 sheep.



### Biosecurity

Sites, which are initially identified as suitable, may have planning restrictions due to zoning provisions or overlays (related to the environment or heritage). These provisions can be checked in advance with help from Council staff, or will be advised during the planning permit process.

Feedlot 'separation' distances can be calculated by the formula  $D = S\sqrt{N}$ , where

- D = separation distance (minimum)
- N = feedlot capacity in standard cattle units (SCU) or lamb units (SLU)
- S = composite site factor.

The composite site factor addresses site-to-site and time-to-time variations in locations through five sub-factors:  $S = S^1 \times S^2 \times S^3 \times S^4 \times S^5$ , where

- $S^1$  is the design and management factor
- $S^2$  is the receptor type factor
- $S^3$  is the topography factor
- $S^4$  is the vegetation cover factor
- $S^5$  is the wind direction factor.

The National Guidelines for Beef Feedlots (MLA) and the Wimmera Mallee Pipeline Lamb Feedlot Site Suitability Study (DPI) provide advice on measuring the factors in this formula.

### Access

Feedlot construction and operational activities will increase the amount of traffic and alter the time of peak movements. Care is necessary to ensure the changes do not cause a nuisance. Sealed bitumen road access is preferred for servicing permanent feedlots. If the nearest sealed road is not VicRoads controlled, the development costs for access to the site may be reduced. However, Council roads may also require some access expenditure from the farmer. *Note: Buloke roads have no restrictions on B-doubles.*

### Water

Access to Wimmera Mallee pipeline water needs to be calculated to allow for stock to drink and for wash down purposes. Both cattle and sheep stock must have access to water at all times. The water requirements for a 450 kilograms steer ranges from 70–100 litres per day in hot dry conditions, and there must be at least three days water supply in storage that can be distributed using a non-electrical means (such as gravity fed water from an overhead tank). Sheep in feedlots may drink up to 6 litres per day during hot weather. If nipple drinkers are used in pens, one drinking nipple should be provided for every 15–30 sheep (and sheep may need to be trained for a few days to use nipple drinkers), with a minimum of two per pen. One watering bowl is required for each 60 sheep.

### Power

Access to single phase power is adequate, although three phase power is ideal for large operations with electronic systems. Power availability must be checked with Powercor by the farmer to ensure there is sufficient capacity at each installation.



## CASE STUDY 1: LAMB FINISHING ENTERPRISE

This case study is based on a real life lamb finishing enterprise which offers a service for lot finishing of lambs for local farmers. The farm is located in a broadacre cropping area of Northern Victoria where the farmer has constructed a series of sheep containment yards over an area of 2 hectares.

*“There is a lot that we could do better and we’re learning all the time. But overall, running and feeding lambs to a cost limit and getting them out to market – it’s a great opportunity”.*

The farmer runs a semi-permanent sheep finishing system on an existing grain farm. The entire property is 1,100 hectares with 400 hectares cropped to barley and also grazing 600 Dorper ewes. The manager also owns and operates a contract harvesting business.

The lamb finishing enterprise can hold stocks of up to 6,000 lambs. They finish their own stock and the rest are under contract finishing arrangements. Feed (which includes special formulated pellets, barley, and straw) costs \$321 per tonne, and the enterprise uses about 6 tonnes per day. Lambs are finished in the 20-24-kilogram range (dressed weight). The finishing enterprise turns over 15,000 to 20,000 lambs per year, with 3 to 4 cycles of 4-8 weeks each, per year, and the daily weight gain target is 200 grams plus per head. The system runs between 200 to 300 lambs to a pen and has up to 25 pens operating on the site. “In hindsight we could have had a better plan from the start, with laneways, but we just used a system of trial and error, with add-ons as the number of stock increased”, the farmer recalled.



Lambs that are finished are processed at either Hardwicks, Woolworths, Frew, Stawell or Australian Lamb Company, Colac. The majority of lambs go to the domestic market (90%), with 10% exported. Staffing includes 1 person full time, 1 regular part-time person and 1 casual in the livestock operations.

The manager believes the target of 6,000 stocking level is achievable and could even go higher depending on the lamb price. He said that “when the price exceeds \$5 per kilogram, growers will be prepared to put lambs in a finishing farm; below this level and they won’t”.

He warns that “not everyone can do it (lamb finishing). Running and feeding lambs to a cost and getting them out; it’s all opportunity”.

## CASE STUDY 2: HYPOTHETICAL CATTLE FEEDLOT<sup>1</sup>

Chinese based company Sun Loc Corporation is interested in establishing a cattle feedlot in Buloke Shire and has investigated several sites where its proposed 15,000 head operation could be located.

*With a stable supply chain, including secure forward contracts for food service customers in Asia, Sun Loc has concluded that a beef lot feeding operation in Buloke is a sound investment, subject to recruiting a local manager and support team.*

Sun Loc briefed an agricultural consultant, early in 2016, to undertake research into the viability of the Buloke based feedlot. The assumptions included:

- Fat score 2 yearlings can be purchased for \$1.40 per kilogram, or \$434 per head at an average liveweight of 310 kilograms.
- The steers are to be lot fed for 70 days, for an average weight gain of 1.3 kilograms per day to enable a finished weight of 400 kilograms (fat score 3) steers.
- The average weight per steer in the feedlot during the 70 days period will, therefore, be 356 kilograms, requiring a daily feed ration of 10.68 kilograms (3% of 356 kilograms) or 748 kilograms per steer in total. Estimated cost of feed rations is \$200 per tonne.
- The finished steers will be sold directly to an abattoir.

Sun Loc's agricultural consultant calculates the budget per head as follows:

Costs	\$
Purchase of store steer (310 kg @ \$1.40)	\$434.00
Feed costs (748 kg @ \$200 per tonne)	\$149.60
Freight: Farm/saleyard to feedlot	\$5.00
Health: Vaccines, drenches	\$6.50
Mortality rate provision (1%)	\$4.34
Fuel and maintenance	\$3.73
Labour	\$12.00
Freight: Feedlot to abattoir	\$10.00
Transaction levy	\$3.50
Equipment usage/depreciation	\$4.53
<b>Total</b>	<b>\$633.20</b>

The consultant reported to Sun Loc that the breakeven point for steers of 400 kilograms would be \$1.58 per kilogram (ie \$633.20 divided by 400). On the assumption that an average dress weight is 56%, the carcass would be 224 kilograms, and the over-the-hooks breakeven price would need to be \$2.83 per kilogram.

A Director of Sun Loc confirmed that the Company will be able to secure forward contracts with food service distributors in Asia for at least \$3.00 per kilogram, dressed weight, implying a minimum operating profit of \$38.80 per head. The consultant used this feedback to provide a budget for a single batch throughput at the feedlot operation. Note, this budget does not include provision for establishment costs such as planning and statutory compliance costs.

### INCOME

Sales (head)	15,000
Sales value	\$10,080,000
<b>Total Income</b>	<b>\$10,080,000</b>
Cost of Sales	

<sup>1</sup> Data and assumptions for this case study have been largely sourced from NSW Department of Primary Industries lotfeeding examples, 2016



Stock purchases	\$6,510,000
Freight	\$225,000
<b>Gross Profit</b>	<b>\$3,345,000</b>
<b>Operating Costs</b>	
Feed	\$2,244,000
Labour	\$180,000
Animal health	\$97,500
Fuel and maintenance	\$55,950
Levies	\$52,500
Depreciation	\$67,950
Contingencies	\$65,100
<b>Total Expenses</b>	<b>\$2,763,000</b>
<b>Net Profit (before tax)</b>	<b>\$582,000</b>

## FINANCE

### Land and Buildings

The costs of entry to beef cattle feedlotting are high. Capital investment is quite large, and a feedlot is a fixed asset with no alternative use. Conversely, sheep feedlots tend to be inexpensive. Those involving temporary containment areas can be both cheap and flexible, while a fixed outdoor sheep feedlot is also less capital intensive than for beef.

An indicative capital development budget for a beef feedlot in Buloke Shire is:

- Planning, registrations, accreditations: \$0.1 million
- Land acquisition (500 hectares): \$1.25 million
- Infrastructure and construction: \$6.0 million
- Machinery and equipment: \$2.0 million
- **Total Intensive Feedlot (10,000 head): \$9.35 million**

### Operating Costs and Returns

Case Study 2 has presented an example for calculating the operating profitability of a feedlot operation.

# MAP OF BULOKE



Please note: The map below will be updated as the regional intensive livestock planning map is developed over the second half of 2016 and early 2017

**NATIONAL MAP**  
Australian Government

Data Catalogue Now Viewing Search

- Water Pipelines
  - Water Pipelines
- Canal Lines
  - Canal Lines
- Powerlines
  - Powerlines
- Local Government Area Boundaries (Property) 1:25,000 - Vicmap Admin
  - Single symbol
- Roads
  - All Roads
    - Vehicular Track
    - Minor Road
    - Dual Carriageway
    - Dual Carriageway
    - Secondary Road
    - Principal Road
    - Dual Carriageway
    - Major Road Network

Map details: LAT 35.790°S LON 142.828°E Scale 10 km

## STATUTORY REQUIREMENTS

### Planning Permits issued by Local Council

The Model Codes of Practice for the Welfare of Animals include codes referring to cattle and sheep, and these codes (developed and reviewed by representatives of the Australian and state/territory governments in consultation with stakeholders) provide a guide to relevant legislation.

It makes good business sense to engage a specialist consultant to work through the process of planning and building for a permanent feedlot enterprise as there are a myriad of rules and regulations that need to be followed, although unnecessary for a very small cattle feedlot (less than 50 head) or a seasonal sheep containment feedlot.

A lay person can do this, however experience shows that it usually takes considerably longer and mistakes made during the process end up adding to the cost of the project by at least ten percent compared to engaging a consultant in the first place.

Planning permits must be applied for if you are planning to create an intensive livestock enterprise in a farming zone.

The planning permit process takes about 3 months provided there are no objections to the proposal. The plan must be advertised publicly for 28 days in local papers to allow people to object to the proposal. If there are objections this can create large extensions to the timelines.

If there are no objections and the plan meets all conditions required for this industry a permit will be issued once ratified by Council.

### Building Permits

It may also be sensible to engage a specialist consultant to work through any building processes for a commercial feedlot enterprise as there are a myriad of rules and regulations that need to be followed.

Building permits cannot be issued until a planning permit has been issued.

Building permits are less onerous than planning permits in that they do not have the capacity for public comment. Provided the building permit adheres to the regulations for buildings and meets all statutory requirements, a permit will automatically be granted.

## PLANNING CHECKLIST

The first step in planning involves identification of any land use or zoning issues from Council, other agencies responsible for feedlot licensing and approval, water licensing, soil conservation and vegetation clearing. Consultation with the relevant agencies, ideally through a pre-lodgement, on-site meeting, helps to determine if the site is suitable, and the major issues to be addressed in an application. These issues are listed below in a checklist.

The next step is to gather and compile the information. Submission of application forms and supporting information, advertising the development and formal assessment, will follow.

ISSUE	Check
<b>Applicant contact details</b>	
<b>Plans and maps</b>	
Cadastral map showing property boundaries and ownership	
Locality plan	
Topographic map	
Local environment plan or planning scheme context	
Aerial photograph	
<b>FEEDLOT DESIGN AND OPERATIONAL INFORMATION</b>	
<b>Proposal Outline</b>	
Operational Scale	
Cattle/sheep live weights and standard cattle units/standard lamb units	
Stocking densities	
Feedlot class/classification	
Construction and proposed staging of development	
<b>Property Plan</b>	
Feedlot site within property showing Existing buildings and infrastructure	
Access roads	
Drainage lines	
Waste utilisation areas	
<b>Feedlot Plan</b>	
Feedlot pens size, layout and location	
Cattle/sheep movement and drafting lanes	
Feed stations	
Handling yards	
Manure stockpiles and other composting pads/areas	
Feed and silage bunks, and feed mill if relevant	
<b>Plan of Controlled Drainage Area</b>	
Diversion banks	
Pen drainage	
Catchment and main drains	
Sedimentation system and holding pond(s)	
<b>Plan of Waste Utilisation Area</b>	
Manure reuse area	
Effluent reuse area	
Watercourses	
<b>Traffic</b>	
Traffic volumes	
Access routes and times	
<b>Water Supply</b>	
Source and legal access	
Water quality	

Adequacy of supply and contingency measures	
<b>Carcass Disposal</b>	
Normal mortalities	
Mass disposal contingency arrangements	
<b>EXISTING ENVIRONMENT</b>	
<b>Climate</b>	
Rainfall (historic records and storm incidence)	
Evaporation	
Temperature	
Wind data	
<b>Geology</b>	
<b>Landform</b>	
<b>Surface Water</b>	
Catchment hydrology	
Surface water quality	
Flood susceptibility	
<b>Soils</b>	
Soil samples across the site	
Chemical properties	
Physical properties	
Land capability	
<b>Vegetation</b>	
Existing vegetation	
Proposed clearing/vegetation impacts of development	
<b>Groundwater</b>	
Hydrogeological assessment	
Groundwater data	
Salinity hazard areas	
<b>Buffer Distances</b>	
<b>WASTE MANAGEMENT</b>	
<b>Manure</b>	
Cleaning procedures and frequency	
Location of manure stockpile	
Design and construction of manure stockpile	
Stockpile drainage	
Stockpile management	
Manure utilisation plan	
Spreading method	
<b>Liquid Waste</b>	
Catch and main drains; flow rates and capacity	
Sedimentation system capacity	
Holding ponds capacity	
Liquid waste utilisation and application	
<b>Odour Noise and Dust</b>	
Odour generation, impact and control	
Dust generation, impact and control	
Noise generation, impact and control	
<b>Animal Welfare Statement</b>	
<b>Flora and Fauna Impact</b>	
<b>Archaeological and Heritage Impact</b>	

Adapted from the National Guidelines for Beef Cattle Feedlots, 3<sup>rd</sup> Edition, 2012, Meat and Livestock Australia



## FURTHER INFORMATION

	<p><b>National guidelines for beef cattle feedlots in Australia</b>  <a href="https://futurebeef.com.au/wp-content/uploads/National-guidelines-for-beef-cattle-feedlots-in-Australia-third-edition.pdf">https://futurebeef.com.au/wp-content/uploads/National-guidelines-for-beef-cattle-feedlots-in-Australia-third-edition.pdf</a></p>	
	<p><b>Model code of practice for the welfare of animals – Cattle</b>  <a href="http://www.publish.csiro.au/Books/download.cfm?ID=4831">http://www.publish.csiro.au/Books/download.cfm?ID=4831</a></p>	
	<p><b>Meat and Livestock Australia</b>  <a href="http://www.mla.com.au/">http://www.mla.com.au/</a></p>	
	<p><b>Australian Lot Feeders Association</b>  <a href="http://feedlots.com.au/">http://feedlots.com.au/</a></p>	
	<p><b>Beef CRC Legacy Website</b>  <a href="http://www.beefcrc.com/">http://www.beefcrc.com/</a></p>	
	<p><b>Ag-Victoria: Code of Accepted Farming Practices for the Welfare of Sheep</b>  <a href="http://agriculture.vic.gov.au/__data/assets/pdf_file/0018/260154/sheep_welfare_code_revision_2.pdf">http://agriculture.vic.gov.au/__data/assets/pdf_file/0018/260154/sheep_welfare_code_revision_2.pdf</a></p>	
	<p><b>Ag-Vic: Feedlotting Lambs</b>  <a href="http://agriculture.vic.gov.au/agriculture/livestock/sheep/feeding-and-nutrition/feedlotting-lambs">http://agriculture.vic.gov.au/agriculture/livestock/sheep/feeding-and-nutrition/feedlotting-lambs</a></p>	
	<p><b>MLA – Producers Guide To Feed for Finishing Lambs</b>  <a href="http://www.mla.com.au/CustomControls/PaymentGateway/ViewFile.aspx?cUPCQ3cKdWuskxdusJ48YslebathJ6tU10CjXWDjG9vSFs+IU6AQVVdX8gtCGotQ3EYMKKAfsht7d1Tnt3BqiA==">http://www.mla.com.au/CustomControls/PaymentGateway/ViewFile.aspx?cUPCQ3cKdWuskxdusJ48YslebathJ6tU10CjXWDjG9vSFs+IU6AQVVdX8gtCGotQ3EYMKKAfsht7d1Tnt3BqiA==</a></p>	

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