ADVANCING INTENSIVE AGRICULTURAL OPPORTUNITIES IN THE LODDON MALLEE

Position and Issues Paper



August 2016

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Overview

The Advancing Intensive Agricultural Opportunities in the Loddon Mallee project, covering the local government areas of Buloke, Greater Bendigo, Loddon, Campaspe, Central Goldfields and Gannawarra, is intended to assist in developing strategic planning capability and directions in the region to capture the opportunities offered by intensive livestock production, and to provide security of investment, while protecting the environment, and community needs.

The Advancing Intensive Agricultural Opportunities in the Loddon Mallee project was supported by the Victorian Government.

Profiles and Opportunities

- Investment in intensive livestock production provides clear economic development opportunities for municipalities in the Loddon Mallee, but they are opportunities with complexities:
  - Environmental impacts
  - Commercial sustainability
  - Increasing opposition from some sections of communities
  - Impacts on other land uses
  - Regulations affecting farming practices
  - Regulations affecting planning approvals.

  Some of these complexities tend to favour Loddon Mallee locations, such as:
  - Animal welfare concerns can be readily addressed on large broadacre locations, not possible in closely settled regions or those under pressure from new urban development.
  - Biosecurity controls can be designed into new intensive livestock operations
  - Flexibility in feed rations
  - Relatively close access to labour markets, transport and contractors (compared with western New South Wales and south-western Queensland)
  - Accessible processing and outbound supply chain options.

- Intensive livestock in this project covers:
  - Poultry production of all types
  - Pig production of all types
  - Beef lot feeding
  - Sheep lot feeding.

  Dairying, which is overwhelmingly pasture based throughout the region, is not included, although there may be some developments in intensively housed dairy operations in the future.

- Major industry issues are:
  - Developing in areas which offer security of investment (including protection from urban encroachment and other sensitive land uses)
  - Developing in areas where planning, biosecurity and community concerns can all be met.
  - Preparing environmental management plans (and ensuring these plans are implemented and maintained)
  - Operating in areas which offer protection from backyarders and rogue operators

- Pigs

  There is renewed interest in pig industry development in the Loddon Mallee local government areas, and the opportunities for further investment are expected to increase over the next five to ten years.

There will be opportunities for investment in pig farming from expansion of the major corporates and a need for them to have a strong presence in southern parts of Australia. New opportunities for the Loddon Mallee are likely to be in:

- Increased free range and organic production. These are no longer niche marketing features in the industry, nor in the consciousness of consumers.
- Bio-secure shedded production with increasing economies of scale by median to large corporate supply chains. This may involve some contracted farms as well as corporate owned operations.

- Meat Poultry

  The rate of regionalisation of Australia's poultry industry is escalating considerably. Growth in free range and shedded production of chicken meat are both strong and current opportunities. Large sections of the region are well suited to meeting most of the industry's requirements: Biosecurity, water security, climate, proximity to feed supplies, production expertise and track record.

  The limiting factor of proximity to the contractor's processing plant is of importance (and the transport implications), but appears to be less significant than the other combined attributes of the region.

  The scale at which a free range meat poultry operation (chicken and other poultry species) becomes an intensive livestock operation (rather than an informal or low key extensive operation) can be contentious, creating uncertainties with planning approvals as well as enhanced biosecurity risks.

- Table Eggs

  The expansion in free range product in the table egg industry has brought an increased focus to new growing districts, and the Loddon Mallee is an area where growers have the opportunity to take up contracts with egg processing companies and/or to develop new small to medium operations. As is the case with free range meat birds, the scale at which a free range layer operation becomes an intensive livestock operation (rather than an informal or low key extensive operation) can be contentious, creating uncertainties with planning approvals as well as enhanced biosecurity risks.

- Lot Feeding

  Lot feeding of lambs has a relatively low priority on the industry's agenda at present. Although the benefits of lot feeding have been promoted for more than a decade, it is largely used by broadacre growers as an opportunistic alternative, and supplement, to paddock finishing of stock. Only a couple of business operators are pursuing lot feeding of lambs as a stand-alone business opportunity in its own right. To implement serious sheep lot feeding businesses, the opportunistic factors must be balanced with the need to provide consistent lamb products to meet market needs throughout the year (even if not always offering the most opportune pricing).

  Opportunities for beef feedlots in the Loddon Mallee could flow from expected increasing export demand for Australian grain-fed beef. Markets in developing Asian countries will expand as personal incomes continue to rise and possibly facilitated by Australian free trade agreements. Projected ongoing depreciation of the Australian dollar could also help to drive new beef feedlot interest and investment in the Loddon Mallee.

Mapping System

- Northern Poultry Cluster Website will host the 'tailored' version of NationalMap for use in exploring potential intensive livestock sites. It will enable users to explore a wide range of relevant features that could influence a decision to locate intensive livestock activities across the Loddon Mallee local government areas. Most features which can be loaded on the map are 'open source' (or in the public domain). Features which are accessible only to password protected users (via csv files) are specific locations of existing intensive livestock producers, and businesses in the supply chain, and indicative buffer and biosecurity zones around these enterprises. The CSIRO and Commonwealth Government ongoing commitment to NationalMap mean that the system will have access to new geospatial data whenever additional open source information becomes available and is added to the NationalMap data list.

1. INTRODUCTION

Intensive animal industries are becoming an increasingly significant component of the Loddon Mallee economy. Intensive livestock production can offer both new investment and diversification opportunities for dryland growers in the Loddon Mallee.

The Advancing Intensive Agricultural Opportunities in the Loddon Mallee project, covering the local government areas of Buloke, Greater Bendigo, Loddon, Campaspe, Central Goldfields and Gannawarra, was structured to assist in developing strategic planning capability and directions in the region to capture the opportunities offered by intensive livestock production, and to provide security of investment, while protecting the environment, and community needs.

The purpose of the project was:

"To identify areas suitable for intensive animal husbandry within the six participating Loddon Mallee councils based on attributes including land characteristics, bio security, infrastructure and proximity to supply chains".

The Loddon Mallee region, in this project, included:

- City of Greater Bendigo
- Shire of Buloke
- Shire of Campaspe
- Shire of Central Goldfields
- Shire of Gannawarra
- Shire of Loddon

Sub-objectives, which follow from this primary purpose were:

i. To develop a geospatial tool showing the identified areas suitable for intensive livestock in the participating six local government areas of the Loddon Mallee region.
ii. To assess strategic planning options to strengthen support for intensive animal husbandry within the six councils.

This position and issues paper presents details of:

- The status and trends for the poultry meat, table eggs, pig, sheep and cattle feedlot intensive livestock industries relevant to Loddon Mallee region
- Opportunities for further intensive livestock commercial development
- Perspectives for each of the six local government areas
- Scope of the geospatial mapping system and the factors being mapped.

The Advancing Intensive Agricultural Opportunities in the Loddon Mallee project was supported by the Victorian Government.

2. PIG PRODUCTION

2.1 PIG INDUSTRY PROFILE

Australian pig-meat production is currently 374,000 tonnes, derived from slaughtering of 4.96 million pigs. There are pig farms in all Australian States, but they are predominantly located along the eastern seaboard of Queensland (26%), Victoria (24%), New South Wales (23%), and South Australia (15%) and in the southwest corner of Western Australia (11%).

The Australian pig industry has developed from a 'sideline' industry to grain and/or dairy production to become significant in its own right. The gross value of the pig meat industry was $934 million in 2013[1] and $1,251.1 million in 2015-16[2], having increased at an average annual rate of 2.8% over the 14 years 2002 to 2016.

Opportunities for pig production are re-emerging after considerable re-structuring of the industry over the past 20 years. The number of pig farming establishments in Australia has been in decline for six decades, from nearly 50,000 in 1960 to 1,909 in 2012[3], and just 701 in 2016[4]. So, at a time when industry revenue has been increasing by 2.8% per annum, the number of pig farming operations has been falling by 7.3% per annum on average.

The number of breeding sows has however been relatively stable, indicating that piggery size has steadily increased and is now at an average of about 170 pigs. The 1980s and early 1990s were periods of consolidation for the pig meat industry. It was also the period that marked the end of the era of no frozen pork product importation. In the years since that time, exports have fallen, the number of pig producers has reduced, there has been considerable consolidation among processors, and importation of pig meat has risen dramatically. Over the past five years imports of bacon, ham and other smallgoods rose at a rate of 23% per annum.

Until the 2000s, few growers had a contract arrangement with a pork processor. Most were independent growers with an established breeding herd (although in practice most of these supplied pigs to a single processor on a regular basis), and their pig production enterprises were usually a complementary activity to other farming enterprises. Industry restructuring (through acquisitions, mergers and rationalisation), the introduction of a phase-out period for sows in stalls, and import competition have all contributed to reductions in both the number of growers and the proportion of independent growers.

The pig industry has become dominated by major processing companies. These organisations represent about 5% of all operators in the industry, but account for about 60% of industry production. 'Corporate pig farms' tend to have more than 500 sows. Some vertically integrated firms, such as George Weston Foods, also operate in ham, bacon and smallgoods manufacturing. About 30% of farms are contract growers and the remaining 65% of producers are small producers (generally less than 100 sows) who produce pigs in addition to other primary production, such as grain growing.

Over the past five years (to 2015-16), pig farming revenue has increased at an average annual rate of 5.8% from:

- Increased domestic consumption (following considerable media promotion and positioning of pork as a healthy meat)
- Reduced import competition, aided by the depreciation of the Australian dollar.

[1] ABS Value of Agricultural Commodities Produced, 2013
[2] IBISWorld Industry Report 2016
[3] Australian Pork Ltd Annual Report
[4] IBISWorld Pig Farming Industry Report, 2016

Since the legalisation of pork product imports Australian growers have concentrated on porker production. Although somewhat interchangeable, commercially raised pigs are classified as either porkers or baconers. Porkers are those used for fresh pork, and baconers are used for processing into bacon, ham and smallgoods. In the past five years, the percentage of porkers in the industry increased from an estimated 47.3% of raised pigs to 61.2%, while the percentage of baconers fell by the reciprocal percentages (ie from 52.7% to 38.8%).

Production for the fresh market has been aided by the promotion of fresh pork consumption by Australian Pork Limited (the industry peak body formed from the legacy of Australian Pork Corporation, Pig Research and Development Corporation, and Pork Council of Australia). There has also been a trend towards the production of leaner pigs to satisfy consumers' health concerns, which appears to have translated to higher domestic consumption rates. Per capita consumption of pork increased over the five years to 2013-14 from an estimated 24.7 kilograms to 25.7 kilograms, and this is expected to further increase to 26.8 kilograms by 2018-19.

Pigs are increasingly being distinguished by the production system. The conventional method of production has been shedded pigs in pens. There is a trend towards free-range pigs, unhindered by cages or stalls. There has also been an increase in organic pigs that have free access to pasture and clean, dry housing, have organic feed and bedding, and are not treated with antibiotics or chemicals. There are also 'bred free-range' (where sows and piglets are free ranged) and pasture-produced pigs (where weaners and pigs spend time in open paddocks). These alternative methods of production reflect consumer perceptions of taste and quality, and consumer concerns over food safety and animal welfare.

Unlike the poultry industry, Australia's pig industry is not open to imported genetically improved pig varieties, and the vast majority of commercial stock is derived from three main breeds and cross-breeds: Large White, Landrace and Duroc. The Australian industry prides itself on its disease-free status and in future, growers are expected to promote health attributes of pork, food safety and animal welfare.

2.2 PIG PRODUCTION IN LODDON MALLEE

Victoria's Loddon Mallee region has been a base for pig farming for many decades. The climate, access to feed supplies, and relative access to processors and markets all favour the broadacre environments of the Loddon Mallee. Despite these factors, the Victoria's share of Australian pig farms has declined over more than a decade. The corporatisation of pig production presents opportunities to reverse this trend, as the vertically integrated operators look to achieve economies of scale by consolidation.

There were more than 300 growers involved in breeding and raising pigs at the start of the twenty-first century (in 2001) but this number had reduced to an estimated 80-90 in 2016. There are several businesses and facilities in, or accessible to, the district for value-adding beyond the farm gate. Major processing plants are in Melbourne, Echuca, Murray Bridge, Corowa and Port Wakefield. There are also further-processing facilities (smallgoods and ready to eat meals manufacturers) such as Moira Mac's Poultry and Fine Foods in Bendigo, and Don KR Smallgoods in Castlemaine.

A 2001 assessment[5] for Buloke and adjacent shires found that, at that time, only 13% of the growers had a contract arrangement with a vertically integrated processor (to feed and raise pigs to a defined specification), and the remaining 87% were independent growers with an established breeding herd (although in practice most of these supplied pigs to a single processor on a regular basis). Further, pig production was usually a complementary activity to other farming enterprises:

- 83% produced pigs as a minor, complementary agricultural enterprise
- 17% produced pigs as the sole or major agricultural enterprise.

[5] Street Ryan, Opportunity Study for a Regional Pig Processing Plant: Buloke, Northern Grampians and Yarriambiack 2001

The trends and dynamics in the pig industry have changed considerably since 2001, in terms of number of growers, supply chain structures and production systems. Industry restructuring (through acquisitions, mergers and rationalisation), the introduction of a phase-out period for non-stall sows[6], and import competition have all contributed to the reduction in the number of growers, and the proportion of independent growers.

Australia imports processed pig meat from Denmark, Canada, New Zealand and the United States and this has opened the industry to the influences of global production, competition, exchange rates, feed prices and trade policies. Imports of processed pig meat account for about 30% of total domestic pig meat consumption and two-thirds of processed pig meat consumption in Australia.

The pig industry is now highly vertically integrated. Vertically integrated supply chains represent about 5% of all operators in the industry, but account for about 60% of industry production[7]. 'Corporate pig farms' tend to have more than 500 sows. Some vertically integrated firms, such as George Weston Foods, also operate in ham, bacon and smallgoods manufacturing. About 30% of farms are contract growers and the remaining 65% of producers are small producers (less than 100 sows) that produce pigs in addition to other primary production, such as grain growing or dairying.

The three main functional supply chains are:

- Vertically integrated processors operations (fresh meat processors and processors/smallgoods manufacturers), which contract to growers.
- Independent growers selling to meat processors, specialty retailers (butchers) and food service outlets.
- Opportunistic or 'spot sales' to processors.

The predominant market for farmed pigs is domestic vertically integrated meat processors. Vertically integrated companies in meat processing and marketing, like Rivalea and Pastoral Pork, and/or meat and smallgoods processing operations, like George Weston Foods (which encompasses KR Castlemaine and Don Smallgoods), are responsible for a large proportion of Australian pig production. JBS Australia has also recently entered the Australian pig industry to a substantial level, through the acquisition of Primo Smallgoods (also owner of the Hans Group), encompassing the Port Wakefield processing plant.

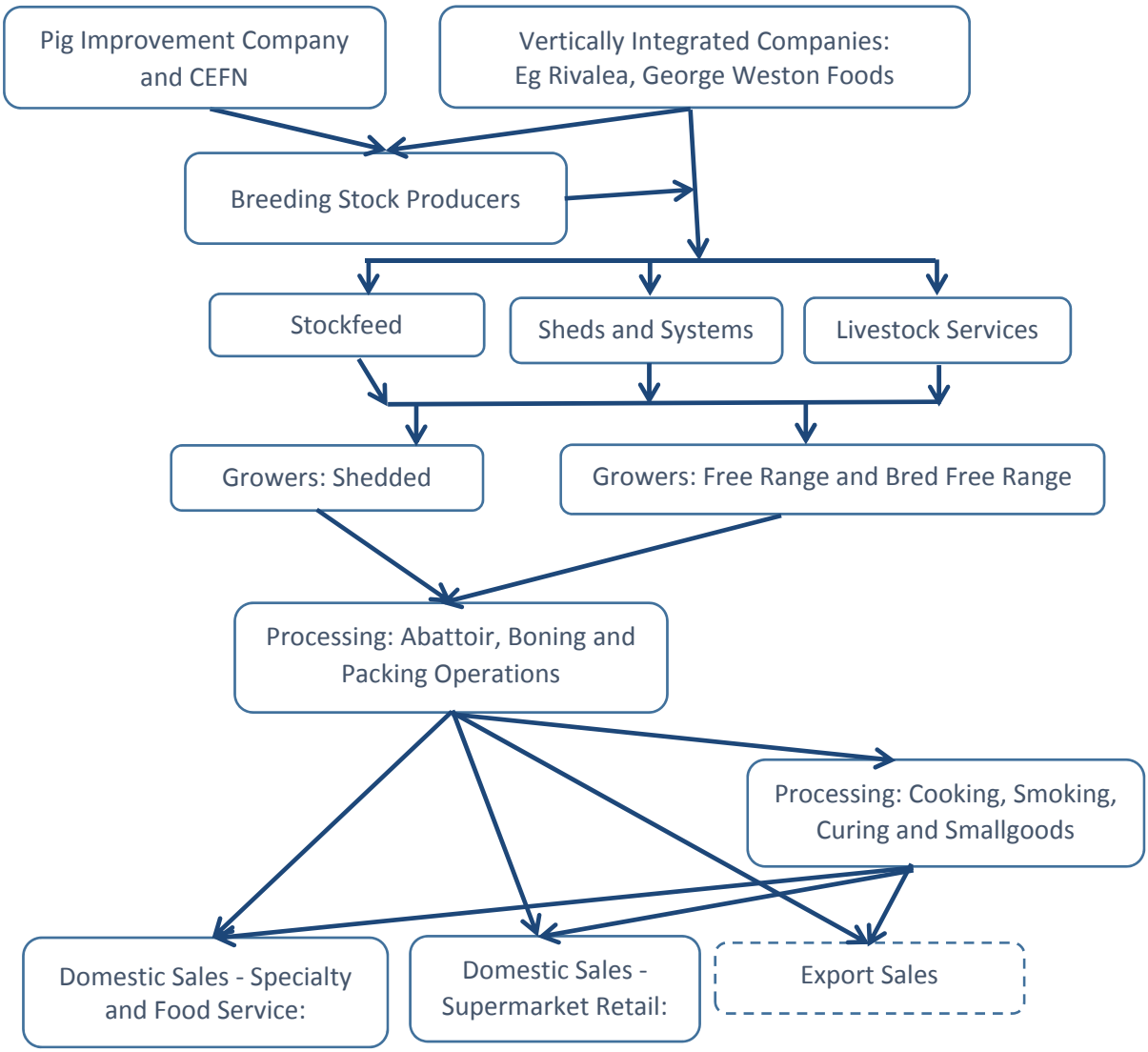
Meat processors and butchers account for the second-largest market. Growth in this market has been slower than vertically integrated meat processors as they are less competitive, and the number of growers supplying this segment has declined. However, as fresh domestic pork meat sales grow, butchers are likely to increase purchasing of pigs, especially those that are differentiated on the basis of regional branding and/or free-range and other perceived quality attributes. As well, butchers are likely to innovate with value added pork products and speciality lines to differentiate from supermarkets.

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 become more common, further limiting spot market sales of pork.

An indicative pig industry supply chain for Loddon Mallee enterprises is presented in Figure 2.1. The dotted lines indicate no presence in the region and the solid lines indicate a presence in the region, revealing that all links in the supply chain are represented in the region.

[6] Elimination of stalls for sows in sheds has been scheduled for 2017, but most Australian producers are eliminating the practice sooner.
[7] IBISWorld 2014

Figure 2.1 Loddon Mallee Sample Pig Industry Supply Chains



2.3 CURRENT MAJOR BUSINESSES IN THE REGIONAL SUPPLY CHAINS

Food Investments Pty Ltd is an Australian subsidiary of Associated British Foods, and it is involved in the pig industry through another wholly owned subsidiary George Weston Foods (GWF). GWF is a diversified food processing company with interests in flour milling, baked goods, flour, milled goods, animal feed and smallgoods. The smallgoods businesses are KR Castlemaine and Don KR. KR Castlemaine has three piggeries in South Australia and two in the Loddon Mallee region, at Girgarre (Campaspe Shire) and Bears Lagoon (Loddon Shire). The two properties in the region house up to 35,000 pigs and feed mills to produce 15,000 tonnes annually. The Girgarre property is a breeder farm and the Bears Lagoon site is the grow-out operation for KR Castlemaine. There is no longer a pig abattoir in Castlemaine, where the facilities are now entirely smallgoods and value adding focused. In this supply chain the pigs are processed at Big River Pork in Murray Bridge, South Australia.

CEFN Pty Ltd is a Queensland-based business has diversified interests in pig breeding, share farming and commercial building construction. CEFN also provides genetic improvement through artificial insemination services for competing piggeries. The company has about 4,000 sows across three breeding sites near Clifton in Queensland, with 4,000 sows in commercial production. CEFN supplies genetically improved stock to growers in the Pyramid Hill/Yarrawalla area of Loddon Mallee, including the Kia-Ora Piggery.

Hamsdale Australia Pty Ltd, through Rivalea (Australia) Pty Ltd, is Australia's largest pig producer. Rivalea (formerly known as QAF Meats) also has 80% equity in Diamond Valley Pork Pty Ltd, which operates as an abattoir and boning business in Melbourne and, since it contracts out about 50% of total production, and has several contract pig growers in the Loddon Mallee region. Rivalea has a major corporate farm in the region, at Huntly, and another close to the region, at Gre Gre near St Arnaud.

Suppliers to the regional pig production industry include:

- Stockfeed
  - Ridley Agriproducts, St Arnaud and Bendigo
  - Reid Stockfeeds, Colbinabbin
  - Coprice
  - Bunge/Rivalea, Corowa (sell commercially as well as product for Rivalea corporate growers)
- Systems and Equipment
  - Redpath Ideal, Bendigo
  - Jacksons, Murray Bridge
  - Mike Anderson, Bordertown

2.4 FURTHER OPPORTUNITIES

There is renewed interest in pig industry development in the Loddon Mallee local government areas, and the opportunities for further investment are expected to increase over the next five to ten years.

Less intensive production environments and other product differentiation has become a distinct opportunity through free-range (and to a lesser extent, organic) production systems and, potentially, through antibiotic free product. Australian producers are increasingly concentrating on higher value porkers (mostly for fresh markets) with a considerable reduction in the production of baconers (smallgoods markets), and the market preference for free range is growing rapidly. Porkers now make up 61.2% of Australian production (up from 47.3% over a period of seven years, to 2015-16) and baconers only 38.8%. However, even the smallgoods manufacturers will promote more premium free range products over the next few years. The major corporates in the Australian smallgoods market are:

- George Weston Foods (Don, KR Castlemaine and private label brands)
- JBS Australia (Primo and Hans brands)
- Bertocchi
- D'Orsogna.

There will be opportunities for investment in pig farming from expansion of the major corporates and a need for them to have a strong presence in southern parts of Australia. New opportunities for the Loddon Mallee are likely to be in:

- Increased free range and organic production. These are no longer niche marketing features in the industry, nor in the consciousness of consumers.
- Bio-secure shedded production with increasing economies of scale by median to large corporate supply chains. This may involve some contracted farms as well as corporate owned operations.

All the Loddon Mallee region municipalities (except Central Goldfields) are 'traditional' pig production areas, where independent growers have had a long history of involvement. The number of growers has reduced considerably in the past twenty years, but production volume has increased. The region remains well suited to pig production (with increased water security and greater prioritisation of bio-security, this suitability has increased) and is central to the operations of integrated companies Rivalea and George Weston Foods, and the emerging Pastoral Pork and JBS Australia.

Stockfeed rations for the pig industry are already manufactured in the region, but could be expanded as part of integrated supply chains requiring in-house supply, or independent manufacturing of all-natural stockfeed (utilising local grains, free from added growth hormones and free from antibiotics).

Technical, veterinary advice and shedding and systems supply are well represented in the region, within local businesses, and could further expand in areas such as biowaste utilisation and management, climate control systems, tailored layouts/designs for free range systems, and feed systems.

3. POULTRY MEAT PRODUCTION

3.1 POULTRY MEAT INDUSTRY PROFILE

Chicken is Australia's most consumed meat, and per capita consumption has grown to 47 kilograms per annum. The volume of chicken produced by the industry has increased at an average annual rate of 3% over recent years. Growing demand for chicken meat has been supported by its cheaper price in comparison with other meats, aided by dramatic improvements in production efficiencies, as well as the perceived health benefits of lean white meat. Poultry farming had a revenue of $491 million in 2015-16 and poultry processing had revenue of $6.6 billion. Victoria ranks second in terms of poultry farming, with 28% of grower farms, but a distant third in processing establishments with 20% of the national total (after New South Wales, 32%, and South Australia, 28%). There are 1,323 poultry farming establishments in Australia, and 265 in Victoria. Poultry meat farming revenue is forecast to grow at an average annual rate of 3.2% to 2020-21, to reach $575.7 million.

The broiler industry has been characterised by restructuring in the past few years; large-scale mergers and acquisitions which have driven productivity levels higher and allowed leaders in the industry to take advantage of economies of scale. Two of the processing industry's largest players, Baiada Poultry and Inghams Enterprises, account for just over 50% of industry revenue. Much of the growth achieved by these enterprises has been through merger and acquisition activity. In July 2009, Baiada acquired the most of the operations of Bartter Holdings[8], which was the second-largest chicken meat processor in the industry. Global players have also entered the industry, with the 2013 acquisition of Inghams Enterprises by United States based TPG Capital, and the entry of international genetic stock supplier Aviagen Ltd.

The poultry meat industry remains protected, due to strict quarantine restrictions preventing importation, to protect the industry from disease. Elite genetic birds are imported and quarantined before re-location to breeder farms.

The majority of businesses in poultry meat farming are individual poultry farmers, producing under contract to major processors. Poultry processors supply chicks, feed, veterinary requirements, operational support and other inputs. Due to these contractual arrangements which are ubiquitous in the industry, profitability is somewhat protected from variability in input costs. There are two larger corporate style businesses which own poultry meat farms in Australia:

- Proten Ltd, an unlisted public company, with 10 broiler farms (and a total of 172 sheds), all in New South Wales. Proten has a supply contract with major processor Baiada.
- Rural Funds Management Ltd, and agricultural fund and asset manager, trading as RFM Poultry, with grower farms in Griffith district of New South Wales and near Lethbridge in Victoria. It is estimated that RFM Poultry produces 30 million broilers per year from 154 sheds across 17 farms. This corporate operation also has a supply contract with Baiada.

Meat chicken growers/farmers typically provide labour, sheds, power, water, and management skills during grow-out of birds from day-old chicks to processing weight. Consolidation by both poultry processors and poultry farmers is driving change within the industry. In the Loddon Mallee region average broiler sheds now accommodate 30,000 birds, and this average is increasing with new developments involving sheds of 100,000 birds. Most farms have 3 to 10 sheds. Grow-out farms sheds are highly mechanised with computer controlled temperature, humidity and air quality systems. Water and feed supply is also mechanised.

[8] An ACCC decision prevented Baiada acquiring all of Bartter's operations, and Victorian facilities in Geelong were acquired by La'Ionica (subsequently acquired by Turi Foods).

The chicken meat, or broiler, industry is experiencing rapidly expanding demand for 'all natural', free range and organic chicken products. The adoption of free range systems imposes new operational and environmental challenges for the industry in terms of biosecurity, production efficiencies, bird genetics (for free range performance) and nutrient management.

Poultry meat farm locations are influenced by both the location, and the contractual relationship with a processor. Processors prefer farms to be within 100 kilometres of the plant, but the rising importance of biosecurity, experienced farm managers, free range environments means that distances of 2 to 3 hours by road can now be negotiable. Other locational factors include feed supplies, water supply, electric power and access to transport and labour. The early development of commercial poultry meat production in Australia occurred at the metropolitan-rural fringe (in regions like Mornington Peninsula in Victoria and the Hills and Macarthur districts of New South Wales), but urban development pressure, biosecurity concerns and the scale of modern commercial operations is restructuring the geographic distribution of the industry. The formation of the Northern Poultry Cluster (covering the Loddon Mallee region) in 2005 anticipated this restructure, and it's implementation is now evident.

3.2 POULTRY MEAT PRODUCTION IN LODDON MALLEE

Four of the major poultry meat companies have a presence (through own farms, contract growers and/or breeder farms) in the Loddon Mallee region: Hazeldene's, Turi Foods, Baiada and Inghams.

The major integrated processor in the Loddon Mallee, Hazeldene's Chicken Farm, with its own breeder and grower farms and contractors across the region, has joined the major companies expanding their market offer through free range and RSPCA approved products, and is extending the number of contract growers located in Loddon Mallee in both free range and shedded operations.

At present, Inghams has a breeding farm in Buloke Shire, with plans to establish further breeding operations.

Small broiler, turkey and game bird processors, Glenloth Game/Free Range, Goldfields Turkeys, and Wangara Game/Bendigo Gourmet Poultry and Game have recently left the industry, creating a gap in the production of niche broilers, turkey, spatchcock, poussin, quail, squab and pheasant for specialty retail and food service markets. Luv-a-Duck is a major producer and processor of ducks, located in Nhill, and with some contract growers in the Loddon Mallee.

3.3 CURRENT MAJOR BUSINESSES IN THE REGIONAL SUPPLY CHAINS

Hazeldene's processing plant is located in Lockwood, and it is the most active company in the region. It has a balance of company owned farms and contracted farms, processes around 600,000 birds per week and employs over 750 staff.

Baiada Poultry Pty Ltd. Baiada became the Australia's largest poultry company after it acquired the majority of Bartter Enterprises in 2009[9]. The company is headquartered in Sydney, and operates the majority of its broiler farms around north-west New South Wales, the Barossa Valley in South Australia, and Sydney's greater west. The company has processing plants in Sydney, Tamworth, Laverton and Adelaide, and processes up to 1.5 million birds per week

[9] The ACCC blocked the complete sale of Barrter to Baiada, and the acquisition was permitted when Turi Foods/La'Ionica became involved in the purchase of some of the Victorian Baiada/Steggles business assets

Inghams Enterprises Pty Ltd, which has recently changed from an Australian owned family company to a subsidiary of United States' private equity company, TPG Capital. Inghams is headquartered in Liverpool in Sydney and it has breeder farms in all States/Territories except the Northern Territory. Processing plants are in New South Wales and the company's only Victorian processing plant in outer south-east Melbourne was destroyed by fire in 2010. Ingham's has an elite bird breeder facility in Charlton, near Loddon Shire.

Turi Foods Pty Ltd is a private Australian company headquartered in Thomastown, Victoria. The company includes the La'Ionica poultry brand. As part of the acquisition of Bartter in 2009, Turi took over the former Steggles processing plant in Geelong, which is now known as Golden Farms. Turi processes around 750,000 birds per week.

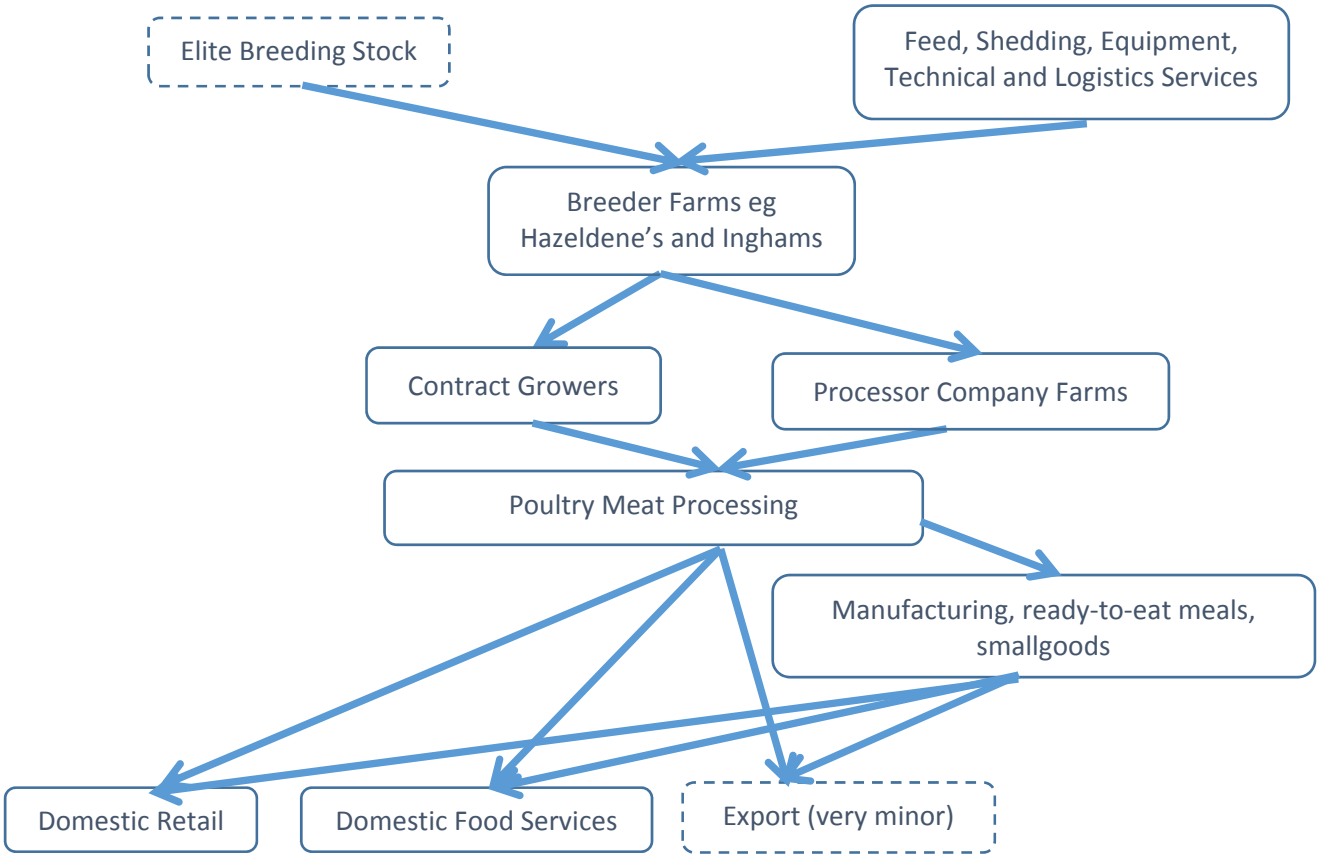
Other (non-broiler) poultry meat production companies with a presence in the region are:

- Luv-a-Duck, located in Nhill to the west of the Loddon Mallee. Luv-a-Duck is one of two major processors in Australia (Pepes in New South Wales is the second), and processes 80-90,000 birds per week. Luv-a-Duck has 30 contracted growers and 7 breeder farms. There are no company owned grower farms.
- Rainbow Valley Turkeys, a supplier of turkey genetics/breeding stock, based in St Arnaud. This company is owned by Baiada. Goldfields Turkeys, also located in St Arnaud was a significant turkey processor but ceased operations late in 2013.

The meat poultry industry is more vertically integrated (through ownership of several links in the supply chain or supply contracts, or both) than other agribusiness sectors (in which growers and processors tend to operate with a level of independence).

Indicative broiler/meat poultry industry supply chains for the Loddon Mallee are presented in Figure 3.1. Note, the dotted lines indicate no presence in the region and the solid lines indicate a presence in the region, revealing that all links in the supply chain are represented in the region.

Figure 3.1: Meat Poultry Sample Industry Supply Chains in Loddon Mallee



3.4 FURTHER OPPORTUNITIES

The rate of regionalisation of Australia's poultry industry is escalating considerably. Adoption of poultry meat as Australia's most consumed meat and the fact that Australia remains closed to fresh poultry product imports, have ensured that poultry meat farming is expanding. Regional development opportunities also stem from the geographical restructuring of the industry. Poultry production is under extreme pressure in its original heartlands on the fringes of major metropolitan areas (such as the Mornington Peninsula near Melbourne and the Macarthur district in the south-west and the Hills district in the north-west of Sydney). Poultry farming and market gardens were traditionally intensive agricultural industries that located in the urban-rural fringes of major cities, providing an effective use of higher value land and close proximity to markets. This concentration is now dispersing and investment is shifting to more distant rural areas which offer:

- Greater security for the substantial investment that is required in modern poultry production (without pressure from urban development/urban encroachment).
- Bio-security (including adequate buffer distances to adjacent properties and other land-uses, lower exposure to disease risks, and interactions with other industries).
- Proximity to stock feed (predominantly grain) which is the major operating cost in poultry production.
- Access to broadacre growers who have the expertise and motivation to consider diversification into poultry production as an additional enterprise which can complement and add to the sustainability of their overall farming activities.

The Loddon Mallee region offers potential to accommodate both new and expanding poultry businesses, with the business investment protected by statutory planning and bio-security controls. Poultry is not an industry which can be readily developed in precincts of similar producers. Indeed, although poultry production is intensive, it is most sustainable in a broadacre environment. Access to feed supplies, water and power complete the industry's major needs.

The opportunities are somewhat offset, broadly, by the fact that Australian poultry industry sectors are not only moving away from metropolitan-rural fringe locations, but are also moving further north in eastern Australia, with the 'centre of production' now approximately located in northern New South Wales. This trend is partly due to the connections of the major businesses in the sector, but also due to the greater year-round grain production capacity in the northern climates.

Australia's meat poultry industry is more vertically integrated (through ownership of several links in the supply chain or supply contracts, or both) than other agribusiness sectors (in which growers and processors tend to operate with a level of independence).

Growth in free range production for chicken meat is a particularly strong and current opportunity to enable Loddon Mallee growers to diversify cropping and other livestock enterprises by adding a contracted breeding or grow-out production activity. The majority of the region is now well suited to meeting most of the industry's requirements: Biosecurity, water security, suitable climate, proximity to feed supplies and production expertise and track record.

The limiting factor of proximity to the contractor's processing plant is of importance (and the transport implications), but appears to be less significant than the other combined attributes of the region.

The scale at which a free range meat poultry operation (chicken and other poultry species) becomes an intensive livestock operation (rather than an informal or low key extensive operation) can be contentious, creating uncertainties with planning approvals as well as enhanced biosecurity risks.

4. TABLE EGG INDUSTRY

4.1 TABLE EGG INDUSTRY PROFILE

The table egg industry has been transformed in the past 60 years, effectively from dominance by backyard production to a highly organised and integrated agribusiness sector. More recently, demand for table eggs has been rising rapidly, and the shift in demand towards free range product has reduced the domination of major companies (and their integrated supply chains), and created a network of small to medium operators in the industry. Greater per capita consumption is a result of new health messages regarding eggs and new recognition of eggs as a natural functional food (superseding a perception that eggs were high in cholesterol), eggs usage has been boosted by the plethora of cooking shows in the media, and by the inclusion of eggs in fast food and conventional restaurant menus. Per capita egg consumption has rebounded from a low of around 120 eggs per person per year to more than 220 eggs per person per year. The total estimated domestic production of table eggs for 2016 is 450 million dozen.

The recent growth in consumption of table eggs has been rapid, while growth in free range eggs has been spectacular. In 2007 the domestic retail grocery value[10] of egg sales was $329.4 million and 96.3 million dozen were sold, of which 18.4% by volume (or 17.7 million dozen) were free range and 27.7% by value (or $91.1 million)[11]. By 2015, the retail grocery value of egg sales had more than doubled, to $742.3 million (or 161 million dozen), of which free range had more than quadrupled to $369.7 million by value (50.1%) and 39.5% by value (or 63.3 million dozen)[12].

The outlook for the industry is expected to see growth supported by increased demand for value-added egg products and a further small rise in per capita consumption. Farm gate prices will continue to benefit from the growing share of higher value free-range eggs demanded by consumers, at the expenses of cage eggs. Over the next five years the industry's revenue is forecast to grow by an average 2.4% per annum to reach $856 million in 2020-21.

There are five types of layer production system currently used in Australia:

- Caged Layers. In traditional cage (or battery) environments, chickens are kept undercover in small cages. This system of production is the lowest cost method of egg production, although legislative changes have stipulated larger cages, which has imposed additional costs to some growers and has forced some sheds and producers to leave the industry. Demand for cage eggs is declining as a share of industry volume and revenue, but it is still the major source of product (especially when food service and manufacturing consumption is considered, in addition to retail supermarkets).
- Free Range. Free range environments allow birds to roam freely over an outdoor environment during daylight hours. Free range farms are typically smaller than cage farms and are more labour intensive. However, free range systems can potentially produce price premiums. As with meat poultry, adoption of free range systems introduces new operational and environmental challenges for the industry in terms of biosecurity, production efficiencies, bird genetics (for free range performance) and nutrient management.
- Barn Laid. In barn laid systems hens are free to roam, but are confined to an area under cover, and high bird densities. Demand for barn laid eggs and their price premium has been moderating as consumers are unsure about the welfare differences between barn and caged hens.
- Organic eggs. Organic egg production systems require organic feed (no chemicals, growth stimulants or antibiotics), with hens usually raised in free range environments which must also be organically certified (having no chemical use or residues).

[10] Retail supermarket, or grocery, sales contribute 36.2% of total sales of table eggs in Australia
[11] Retail World Australian Grocery Guide 2007
[12] Retail World Annual Report 2015

- Specialty eggs. Most eggs in Australia are produced from chickens. Eggs from other poultry species (such as ducks and quail) represent a very minor part of the market and are regarded as a delicacy or a special ingredient for baking.

There are about 330 commercial table egg farms in Australia (excluding some of the micro and emerging free range operators), of which 96 are in Victoria. The commercial poultry strains used in Victoria include the Hy-Line Brown, Isa Brown, and Lohmann hens (the last being used as a targeted free range breed). Each of these strains lay 260 to 300 eggs per year. The Hy-Line Brown and Lohmann strains are both available from elite bird supplier Specialised Breeders Australia.

4.2 TABLE EGG PRODUCTION IN LODDON MALLEE

Bendigo was once a major centre for table egg production and still accommodates several small to medium businesses. There are now around 25 table egg establishments in the Loddon Mallee.

Australia's largest producer of genetically improved breeding stock for the table egg industry, Specialised Breeders Australia (formerly Hy-Line Australia) is located in Huntly and is building a new hatchery in Rochester. Specialised Breeders Australia supplies the Hy-Line Brown and Lohmann commercial breeds throughout Australia; more than 70% of the nation's layers are produced from these breeds.

Farm Pride has a large free range company farm at Bear's Lagoon in Loddon Shire, and is constructing a further facility to increase its free range production by 15%.

A medium sized layer business, Loddon Valley Eggs, is also located in Loddon Shire, at Bridgewater.

Kinross Farms, based at Kinglake, has been actively expanding its operations in the Loddon Mallee over recent years, both buying properties for its own farming activities, and establishing grower contracts. Kinross bought many of the sheds operated by former turkey producer, Goldfields Turkeys, and has also established table egg contracts with former Goldfields Turkeys growers. Kinross mainly supplies table eggs to Sunny Queen.

Establishment of a standard for the production of free range eggs (birds having access to open ranging during daylight hours at a density of no more than 10,000 birds per hectare) has provided some certainty to the industry. Although, many producers in the Loddon Mallee see their point of difference lying in much lower densities; 1,500 birds per hectare is considered ideal by many operators. For example, Kean's Free Range in Huntly operates ranging at densities of 2,500 to 5,500 birds per hectare.

Several small operators have commenced free range operations in the region, using temporary, mobile (such as caravans) and purpose built sheds (such as the 'Joel Salatin A-Frame' structure), with flocks as small as a few hundred birds. These small operators often have their own grading and packing lines and their own brands with markets as modest as a few regular farmers' markets through to specialty stores and independent full service supermarkets.

4.3 CURRENT MAJOR BUSINESSES IN THE REGIONAL SUPPLY CHAINS

The major businesses in the Australian table eggs industry are:

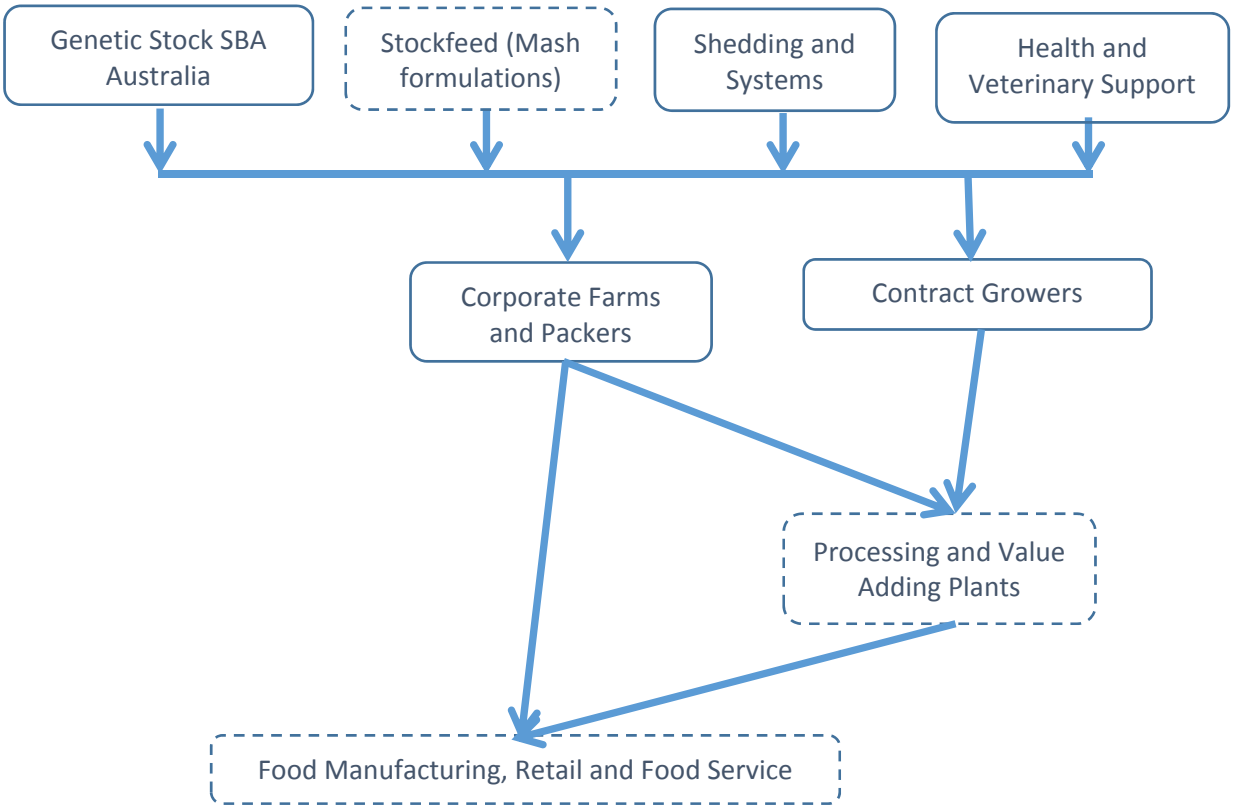
Sunny Queen Pty Ltd, the largest table egg producer in Australia, with a market share around 33% is based near Toowoomba with headquarters in Carole Park (between Brisbane and Ipswich), Queensland, has company farms in Queensland, New South Wales and Victoria. Sunny Queen products cover the full range of egg types; fresh farm cage, natural grain, freedom barn-laid, free range and organic free-range eggs.

Alim Fresh Pty Ltd (trading in the industry as Pace Farm Pty Ltd), with headquarters in Minchinbury, New South Wales is a major producer with 30% market share, over two million layers and 550 employees.

Farm Pride Ltd, based in Keysborough, Victoria, is the only listed public company among the large layer industry businesses. Through recent acquisitions (including Nature's Dozen), this company has lost market share in recent years (now around 11% market share) but is responding with a greater focus on free range production.

An indicative layer industry supply chain for Loddon Mallee is presented in Figure 4.1. Note, the dotted lines indicate no presence in the region and the solid lines indicate a presence in the region.

Figure 4.1 Sample Table Egg/Layer Industry Supply Chains



4.4 FURTHER OPPORTUNITIES

The table egg farming sector operates intensive shed systems with temperature, humidity and air quality controls, a guaranteed water supply and strict nutrition formulations (although a mash formulation is used for layers, whereas pelletised feed is used for broilers). Most of these capital equipment items are required even if the production system is free range. Capital expenditure for shed automation is required in the table egg industry; automated conveyors for egg collection and, often, for manure disposal. These are installed in caged and barn operations and, in the most modern facilities even in free range environments, since birds are housed at night and adverse weather conditions in sheds and lay in nests.

In a broad sense, the Australian table egg layer industry is not only moving away from metropolitan-rural fringe locations, but it is also moving further north in eastern Australia, with the 'centre of production' now approximately located in northern New South Wales. This trend is partly due to the connections of the major businesses in the sector, but also due to the greater year-round grain production capacity in the northern climates.

The expansion in free range product in the table egg industry has brought an increased focus to new growing districts, and the Loddon Mallee is an area where growers have the opportunity to take up contracts with egg processing companies and/or to develop new small to medium operations. As is the case with free range meat birds, the scale at which a free range layer operation becomes an intensive livestock operation (rather than an informal or low key extensive operation) can be contentious, creating uncertainties with planning approvals as well as enhanced biosecurity risks.

Additional to the existing businesses operating in the region, some other table egg companies are interested in contracting growers in the region, to join their supply chains, including:

- Genetic stock company Specialised Breeders Australia, based in Huntly.
- Kinross Farms, located in Kinglake.
- Happy Hens and Egg Marketing Australia, based in Meredith.

5. LOTFEEDING OF SHEEP AND BEEF

5.1 LOTFEEDING INDUSTRY PROFILE

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) facility, 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.

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 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. There has been some rationalisation in the beef feedlot sector in recent years, with growth in feedlotting mainly in larger capacity facilities.

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).

5.2 LOTFEEDING IN LODDON MALLEE

There have been cattle feedlots established in the Loddon Mallee over recent decades, of which the most significant has been the Charlton Feedlot, at one time owned by Coles Ltd, and now by Teys.. A new beef feedlot is the subject of an active planning permit application in Buloke Shire. The Charlton Feedlot has a turnover of 50,000 to 55,000 head per year, using commercial pure breeds. The feedlot uses 200 tonnes per day in stockfeed, which is all mixed on site. One of Charlton's locational strengths for the feedlot is the access to local barley and hay and rice meal from Narrandera. There are three main production conditions controlled at the feedlot; feedstuffs, water, and management of the pen floors, which all impact on animal health.

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, Kyneton, Echuca, Kyneton, Bacchus Marsh, Swan Hill, Ararat, Stawell, Nathalia 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.

5.3 CURRENT MAJOR BUSINESSES IN THE REGIONAL SUPPLY CHAINS

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, Teys 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. 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).

Teys Australia Pty Ltd is the second largest feedlotting company, through a joint venture with Cargill Corporation. 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 can 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.

There are only a couple of business managers in the Loddon Mallee who are conducting lot feeding of lambs as a business enterprise in its own right. The practice of finishing lambs by penning in lots, other forms of containment, or simply supplementary feeding, currently is overwhelmingly informal and opportunistic, in response to broader market, land management, and feed availability factors. The majority of sheep producers who are finishing sheep through supplementary feeding are more correctly described as "containment finishing" than lot feeding, since the infrastructure used is minimal, the finishing procedure is variable, the diets are only loosely designed, and the reasons for containment are often not just related to finishing (they can be also stock and land management related). Finishing in the 20-24 kilograms grid is the target. In the current environment, growers will consider lotfeeding if the farm-gate price for lamb is $5 per kilogram or more. Below this level it is not considered a good investment.

There are no major corporations involved in sheep lotfeeding. Indicative lamb and beef feedlot industry supply chains for Buloke Shire are presented in Figure 5.1.

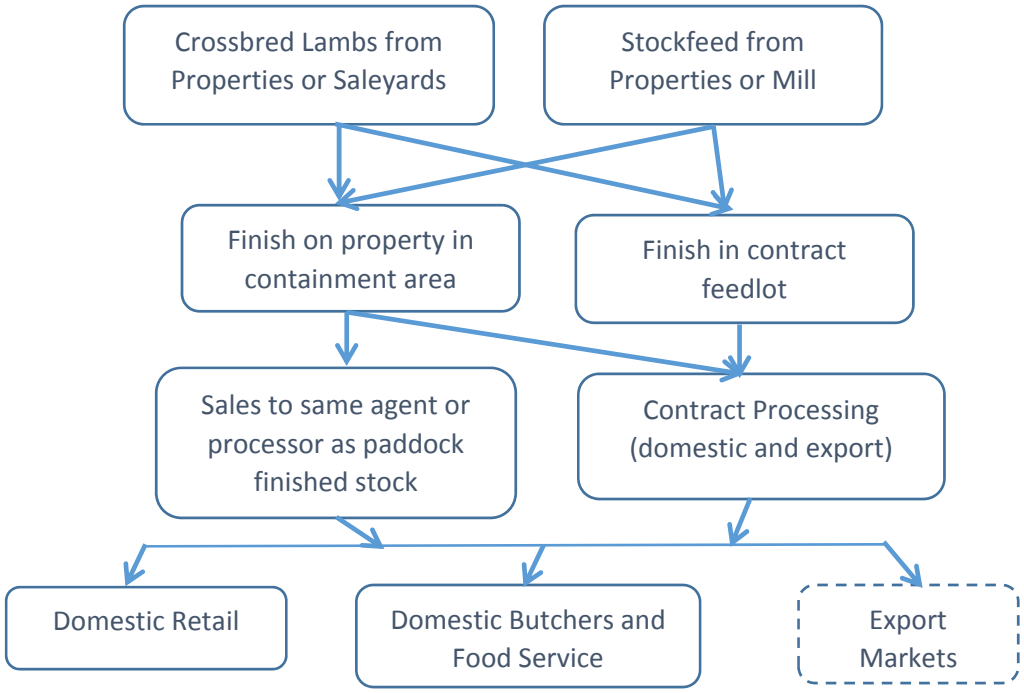
5.4 FURTHER OPPORTUNITIES

Feedback from processors and industry specialists suggests that lot feeding of lambs has a relatively low priority on the industry's agenda at present. Although the benefits of lot feeding have been promoted for more than a decade, it is largely used by broadacre growers as an opportunistic alternative, and supplement, to paddock finishing of stock. Only a couple of business operators are pursuing lot feeding of lambs as a stand-alone business opportunity in its own right. There are others adopting a 'watch and monitor' approach, and have expressed interest in future collaborative participation in lot feeding initiatives.

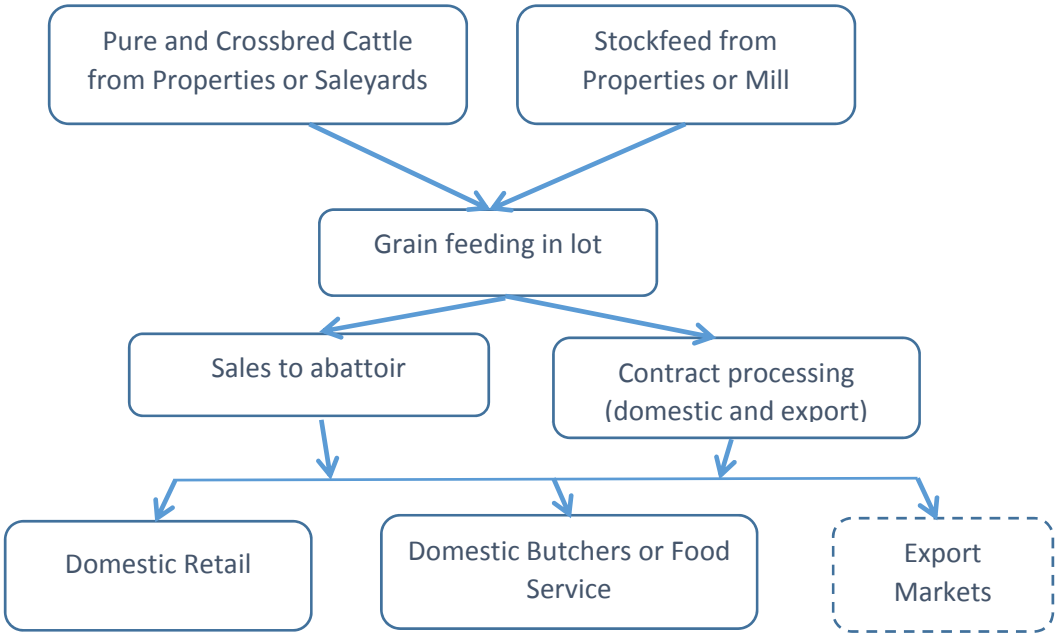
Ongoing research by Birchip Cropping Group (BCG) has reportedly found that there is a strong interest in lot feeding of lambs, but most growers have realised it is a complex activity and that the economics are not necessarily as strong as might be expected. For example, some trials in pens/lots have found that lambs need to be grown to 35 kilograms before transferring them to a lot (or a containment area), with a finishing target weight of 46-47 kilograms (to give a dressed weight of 26-27 kilograms). BCG's trials suggest that, below 35 kilograms, the ruminant stomachs are insufficiently developed to cope with grain rations.

Figure 5.1: Sample Lotfeeding Supply Chains

Sample Lot Fed Lamb Supply Chains



Sample Lot Fed Beef Supply Chains



There can be a case for lambs to be intensively housed from birth. The advantages of this approach are that it:

- Substantially reduces lamb loss (from disease, exposure to weather, predators and poor mothering).
- Enables lamb live weight growth targets to be systematically planned and achieved.
- Does not expose lambs to radical changes in diet (e.g. poor pasture to quality grains), which may have an adverse effect.

However, consumer preferences for free ranging, concerns over animal welfare, and Australia's positioning as a clean and green agricultural producer, are leading to "less intensity", even among long-established intensive animal production sectors. These factors all suggest that whole-of-life lot feeding for lambs is a very distant possibility.

To implement serious sheep lot feeding businesses, the opportunistic factors must be balanced with the need to provide consistent lamb products to meet market needs throughout the year (even if not always offering the most opportune pricing).

Opportunities for beef feedlots in the Loddon Mallee could flow from expected increasing export demand for Australian grain-fed beef. Markets in developing Asian countries will expand as personal incomes continue to rise and possibly facilitated by Australian free trade agreements. Projected ongoing depreciation of the Australian dollar could also help to drive new beef feedlot interest and investment in the Loddon Mallee.

6. LOCAL GOVERNMENT AREA PERSPECTIVES

6.1 CITY OF GREATER BENDIGO

The City of Greater Bendigo is Victoria's third major city (after Melbourne and Geelong). The city covers an area of 3,000 square kilometres and had an estimated resident population of 108,437 persons in 2015. It has been growing at an average annual rate of 1.52% per annum over the past decade[13]. Due to the dominance of Bendigo itself it is common to overlook the small towns that are located around Greater Bendigo such as Heathcote, Elmore, Goornong, Marong, Redesdale, Raywood and Axedale.

Bendigo has reached a population threshold where it has a strong, diverse industry structure which means it has resilience to the fortunes of any one sector. The major employing industries in Greater Bendigo are typical of major Australian provincial cities. They are:

- Health care and social assistance (hospitals is the biggest sector in this industry)
- Retail trade (supermarkets and department stores are the largest sectors)
- Manufacturing (food processing is the largest sector)
- Construction (house construction being the dominant sector)
- Education and training (led by primary and secondary education).

The Council of the City of Greater Bendigo confirms that intensive agricultural industries and rural dependent industries are important to the future of Greater Bendigo. However, environmental impacts of intensive animal industries and the potential for competing land use have made Greater Bendigo a municipality where future intensive livestock activities needs to be both limited and effectively managed. Clearly, Greater Bendigo's size and location (on key transport corridors) will continue to ensure that processing and support services for intensive livestock products will remain as an important component of the Bendigo economy.

There 29 poultry farming establishments in Greater Bendigo and 9 piggeries. The majority of farms are located in the northern and western areas of the city. Most are located in farming zones, although a few are in low density residential and rural conservation zoned areas. Greater Bendigo has been at the forefront in recognising the importance of intensive livestock industries to the city, but has been acutely aware that the same issues affecting these industries in peri-urban locations also now confronts Bendigo, as it grows to become one of Australia's major provincial cities. Pressure from urban development, and urban encroachment into broadacre farming environments is a rapidly accelerating reality. Great Bendigo Council has also understood that the city will still be a major economic beneficiary in the growth of intensive livestock industries even if they locate outside the city's boundaries and in the broader Loddon Mallee region, since Bendigo will inevitably be the base of many of the inbound (veterinary services, sheds, automation, nutritional services, repairs and maintenance, etc) and outbound (processing, packing, value adding and distribution) supply chain partners in intensive livestock.

In its 2013 Intensive Animal Industries 'Analysis and Strategic Framework', Council acknowledges that sustainable intensive agriculture requires protection from incompatible development and urban encroachment. Support from policies which enable proper siting and design of these industries to protect residential amenity and environmental quality is also important.

[13] Australian Bureau of Statistics Regional Population Growth 2015

Greater Bendigo's strategic framework report addressed the issues of siting and design of intensive livestock enterprises to protect investment, urban encroachment, and incompatible development. In this Intensive Animal Industries strategic framework, the City of Greater Bendigo demonstrates that it understands the issues and concerns created by a dynamic relationship between agricultural industries and more sensitive land uses, and notes that *"the main issues of concern are caused in instances where land development (both sensitive and non-sensitive) by-passes the appropriate considerations to effectively manage matters which could result in conflict (such as nuisance, biosecurity or health)".* Council also sensibly points out that there is legislation which can be used to respond to cases where conflict arises, but this constitutes "retrospective management" and is neither an acceptable nor efficient way to provide controls.

The strategic framework recommended that the Greater Bendigo Planning Scheme should include the mechanisms to give certainty to both investing businesses and all other land users by setting clear policies and processes, for balancing competing interests and objectives, up-front.

The recommended change to the Greater Bendigo Planning Scheme is:

> "In appropriate areas of the Farming Zone and Rural Living Zone, increase the minimum lot size for which no planning permit is required to subdivide land or construct a dwelling. This can be achieved by including a specified minimum lot size within the schedule to the zone. The proposed change applies to land parcels within 1,000 metres (measured from the land parcel boundary) of strategically encouraged intensive animal industries. The basis for the geographic area of 'strategically encouraged' will be the Rural Areas Strategy 2009. Within these 'buffer areas' a minimum lot size of 80 ha in the Farming Zone and 30 ha in the Rural Living Zone is recommended. This size has been identified because it will appropriately trigger parcels which are close to existing industries but currently do not need a permit for a dwelling. The sizes will also provide for adequate space for a suitable design response to be achieved which mitigates conflict if a permit is issued".

A new dilemma has arisen in Greater Bendigo in recent years, which will eventually impact on the other Loddon Mallee municipalities as well. This involves the informal development of free range poultry, and possibly piggery farms, in farming zones. The point at which an extensive free range operation needs to be classified as intensive, and therefore in need of the intensive livestock planning procedures to be invoked, is unclear.

While the planning controls and planning process provide an opportunity to ensure initial consideration of correct siting and minimising impacts on sensitive uses and the environment, the ongoing management of intensive livestock operations requires adherence to suitable management regimes and a commitment by the enterprise to comply with good practice. In this regard, Greater Bendigo Council's Economic Development Unit supports the development and practical implementation of quality assurance and environmental management plans/systems (EMP/EMS) for all intensive livestock operations. An EMP has a very similar list of components to a planning application, with the difference that they are continuous considerations rather than pre-establishment considerations. An EMS is best implemented through a whole farm quality assurance system.

Key components of an EMP[14] are:

- Identification and contact details, with a brief description of the meat chicken farm and a commitment that the farm will operate in an environmentally sustainable manner.
- Legal requirements of the farm, including up to date consents, approvals, insurance coverage and/or licences to operate the enterprise.
- Information on the natural resources and amenity issues of the property and surrounding area.
- Description of all the design and management facets of the meat chicken farm.
- Identification of any environmentally vulnerable areas by examining how the location, design and management of the meat chicken farm interact with the environment. Identification of a risk may mean regular monitoring or a change in design and management to minimise the risk.
- Monitoring to measure any environmental impacts, including subjective monitoring of odour, dust and noise, in addition to soil sampling if spent litter is spread on-farm or chemical analysis of spent litter sold off-farm.
- Contingency plans for emergency situations.
- Any environmental training undertaken, or regularly programed, for staff.
- Periodic review of the EMP to update changes in regulatory requirements, operation, environment, design or management.

It is really only the meat poultry sector that has developed protocols and EMPs and systems. Table eggs and piggeries sectors are less structured at present. Although, arguably the level of compliance within the meat poultry sector is not necessarily as high as desirable, even with the protocols in place.

6.2 BULOKE SHIRE

Buloke Shire is the smallest local government area in terms of population among the Loddon Mallee municipalities, and the largest in area. It has an estimated resident population of 5,952 having decreased at an average annual rate of 1.6% over the last ten years. There is no dominant town, and the main townships are Wycheproof, Donald, Charlton, Birchip and Sea Lake, with many smaller villages/towns that have dwindled since the trends in farm aggregation and automation of grain farming (such as Berriwillock, Culgoa, Watchem, Nullawil and Nandaly).

Buloke's economy is dominated by agriculture (mainly dry land cropping and livestock) which generates more than half the value of production and employs around one third of all workers.

Buloke Shire has identified intensive livestock as one of its core economic development opportunities. This is really an extension of the long term strategy to bolster the Shire's broadacre agricultural by attracting new investment in manufacturing and value adding, and diversifying the farming sector with activities that complement grain production. Since the establishment of the Northern Poultry Cluster in 2005, there has been confidence that investment in poultry sectors would extend to Buloke Shire, and the momentum behind intensive livestock, and poultry in particular, has been building over the past 2-3 years. Generally, Buloke communities are quite supportive of poultry and other intensive livestock industries, recognising that they will make a contribution to population stability and new jobs.

[14] Adapted from RIRDC's 2014 National Environmental Management System for the Chicken Meat Industry – Version 2

Buloke Shire has:

- 9 pig farmers who are breeder/growers.
- 5 pig farmers who are growout producers.
- 3 duck growers.
- 6 table egg producers
- 1 poultry breeding stock producer
- 3 broiler growers.
- 1 lamb lot feeding enterprise (with several lamb producers using sheep containment pens as an opportunistic strategy or management tool).

There are several intensive livestock planning applications at varying stages of processing, with Buloke Shire Council at present. If all were to proceed to implementation, there would be more than $60 million in capital investment.

Interviews with these businesses, as part of the 2014 Wimmera Southern Mallee intensive livestock mapping project, revealed that the businesses believe the region offers many locational strengths:

- *Proximity to feed supplies*; rated as a strength/major strength by 83.4% of interviewees (including 71% from the pig sector, 80% from the poultry sectors, and all of the sheep and other sectors).
- *Biosecurity through correct design and buffers*; rated as a strength/major strength by 60.8% of interviewees (including 43% from the pig sector, 60% from the poultry sectors and 83% from the sheep and other sectors).
- *Current industry growth and viability;* rated as a strength/major strength by 70.8% of interviewees (including 91% from the poultry sectors, 86% from the sheep and other sectors, but only 17% from the pig sector).
- *Potential for industry growth and expansion within the Shire*; rated as a strength/major strength by 66.7% of interviewees (including 29% from the pig sector, 82% from the poultry sectors and 83% from the sheep and other sectors).
- *Potential for industry growth and expansion in the region*; rated as a strength/major strength by 68.0% of interviewees (including 43% from the pig sector, and 67% from the sheep and other sectors, but only 40% from the poultry sectors).
- *Availability of local suppliers in equipment and maintenance*; rated as a strength/major strength by 57.2% of interviewees (including 80% from the pig sector, 82% from the poultry sectors and 71% from the sheep and other sectors). However, this factor was also nominated as a weakness by 14%, suggesting there are some specialised equipment supply gaps.

The intensive livestock businesses also rated weaknesses or major weaknesses. The most frequently nominated weaknesses were:

- *Availability of suitably skilled labour*, with 31.8% suggesting it is a weakness or major weakness (and this issue was common to all intensive livestock sectors)
- *Availability of local technical suppliers*, with 18% suggesting it is a weakness.
- *Proximity to processing facilities*; rated as a weakness by 16% (and highest in the pigs sector)

6.3 SHIRE OF CAMPASPE

The Shire of Campaspe is located in north-east of the Loddon Mallee Region. It includes the communities of Echuca, Kyabram, Rochester, Lockington, Gunbower, Rushworth, Stanhope and Tongala. The Shire has a resident population of 36,747 and this has been relatively stable for a decade (the population decreased by 0.01% per annum between 2005 and 2015)[15]. It encompasses a total land area of 4,519 square kilometres. The Shire's main agricultural production activities include dairy and beef cattle, cereal crops, tomatoes, sheep and wool, aquaculture, viticulture, floriculture, fruit and vegetables.

Dairying continues as the most significant livestock industry, and the major agricultural sector, in the Shire. It contributes the majority of the Shire's agricultural output, by value. The economics of dairying are currently under pressure through pricing pressures and difficulties with major processor Murray Goulburn, but the industry has become more automated (advanced feed systems, rotary milking systems, and new robotics) and diversified (through the development of high value co-products such as whey protein derivatives). Climate change and regular droughts have raised doubts on the long term outlook for dairying inland areas relying entirely on irrigation, such as Campaspe, and this could mean intensive production is part of the longer term future. At present dairying in Campaspe and other parts of the Loddon Mallee operates as a pasture based/extensive agricultural industry.

The second strategic 'prosperity' objective in Council's current (2013-17) is that "Primary and secondary agricultural sectors (remain) strong and viable" and the associated strategies to achieve this objective are:

- *Differentiate and promote our primary produce*
- *Advocate for greater certainty in land use and water availability*
- *Within legislation, adopt practices that enable greater flexibility of water and land use*
- *Facilitate agricultural businesses to attract and retain necessary skills*
- *Assist the development of the farming and rural sector*
- *Identify, promote and support new agricultural sectors.*

These strategies do not explicitly nominate intensive livestock enterprises as agricultural sectors to be supported, although they could all enhance prospects for, and investment interest in, intensive livestock production.

[15] Australian Bureau of Statistics, Regional Population Growth, 2015

The Patho Plains was identified as a potentially suitable area for poultry enterprises some years ago, since it is mostly flat and occupied by broadacre farmers. The Patho Plains is valued as an important area for native birds, some of which are endangered. It is a district approximately bounded by Pyramid Hill, Gunbower and Mitiamo; an area of 794 square kilometres of mainly pastoral farmland. It contains several relatively small nature conservation reserves as well as the 38 square kilometres Terrick Terrick National Park.

Pig production is currently the most active intensive livestock sector in Campaspe. Campaspe has 36 piggery operations according to the Victorian Farmers Federation Pig Group, and only one commercial poultry business, the Specialised Breeders Australia new hatchery, under construction, in Rochester. It is understood there are some applications in the pipeline for intensive livestock enterprises.

Campaspe Shire's Municipal Strategic Statement has explicit consideration of intensive livestock production:
"Council acknowledges that by the year 2020, agriculture (in a variety of forms) will remain the economic driving force of the Shire. The Shire of Campaspe lies within one of Australia's most productive and developed agricultural regions. Council acknowledges that high quality agricultural land is a finite resource. The rural areas of Campaspe, particularly within the Shepparton Irrigation Region are generally considered high quality however areas of lesser quality occur. Viable and sustainable agriculture is essential to the future of the Shire and its residents. Agriculture underpins the economy of the Shire and it must be protected".

There are three major land management units within the Shire:

- "Mt Camel Range" in the south which is used for cropping and grazing and increasingly for viticulture;
- "Sedimentary Rises" (eastern and western flanks of Mt Camel Range) which is also mainly used for grazing and cropping;
- "Riverine Plain" in the northern part of Shire, which is used for both dryland and irrigated farming including grazing, cropping and horticulture. This section encompasses the Patho Plains in the north west of the Shire.

The irrigation areas of Campaspe Shire are not suited to intensive livestock and are too closely settled. Approximately half of the Shire is within the declared Goulburn Murray Irrigation District. This irrigated area is generally located in the north and east of the Shire. A small area in the south west of the Shire is within the Campaspe Irrigation District. The type of agriculture practised in the Shire is reflected by the soil type on which it occurs. The irrigated horticultural and dairying areas on the Riverine Plain have the highest agricultural value in the Shire with this area between Kyabram in the east and Lockington in the west. None of the irrigated areas are considered desirable for future intensive livestock usage.

Council's municipal strategic statement nominates the following considerations of relevance:

Key strategic issues:

- Environmental consequences of agricultural practices.
- Protection of agricultural land.
- Locational requirements of intensive animal industries where their impact on surrounding land use are limited.

Objectives:

- To promote appropriate land use and development on agricultural land.
- To identify areas for agricultural expansion.
- To identify areas for intensive animal industries.
- To encourage traditional and emerging agricultural activities that are ecologically sustainable, incorporate best management principles, introduce diversity and productivity improvements, and will assist in the development of value-adding enterprises.

Strategies:

- Restrict the subdivision of agricultural land.
- Establish appropriate buffer areas and performance requirements for intensive activities such as waste water facilities, feed lots, piggeries, dairies, dog breeding, and poultry farms and ensure the appropriate siting and operation of these activities so as to negate off-site negative impacts and give accessibility to required infrastructure.
- Restrict intensive animal husbandry on irrigated land.
- Promote primary and community drainage schemes and the maintenance of natural and constructed drainage systems.

Implementation

- Develop a policy to establish appropriate buffer distances around intensive animal husbandry activities and rural industry.

Businesses in the intensive livestock supply chain in Campaspe include:

- Stockfeed:
    - Ridley has its only ruminant feedmill in the region in Gunbower (Ridley also has monogastric feedmills in the region in Bendigo and St Arnaud)
    - Reid's Stockfeeds, Colbinabbin (monogastric and ruminant feeds)
    - D&M Stockfeeds, Kyabram (focused on dairy, but also manufacture for poultry and pigs)
    - Coprice, Tongala (also focused on dairy, with products for beef and lamb as well, based on products from rice).
- Abattoirs/Processing
    - HW Greenham and Sons Pty Ltd, Tongala (mostly processing cast-for-age dairy cows for export)
    - Riverside Meats, Echuca (a multi-species abattoir for beef, lamb and pork).

6.4 SHIRE OF CENTRAL GOLDFIELDS

Central Goldfields is in the south west of the Loddon Mallee region. The Shire has five towns and several villages which account for 90% of the total population. Maryborough is the dominant town in the Shire and the other larger settlements are all historic goldfields towns: Carisbrook, Dunolly, Talbot, and Bealiba.

Central Goldfields has a population of 12,575[16] and has been experiencing population decline at the average annual rate of 0.07% over the past decade, and is one of 12 Victorian municipalities to record decade long population decline (Buloke and Loddon Shires are two of the others in this category). Arresting population decline is one of the key priorities for Central Goldfields.

[16] Australian Bureau of Statistics Regional Population Growth 2015

Manufacturing has been the major employing industry in Central Goldfields (largely in printing and food manufacturing), followed by retail trade, health care and social assistance, agriculture, and education and training. The combination of Central Goldfields reliance on manufacturing and agriculture, both of which have experienced difficult operating conditions for many years, have led to the Shire being ranked as the most socio-economically disadvantaged municipality in Victoria[17] by the SEIFA indices for several years.

Central Goldfields has considerable experience with poultry industry, and there are four poultry enterprises operating at present; 2 producing broilers and 2 producers table eggs. There are no piggeries or feedlots in the Shire. A poultry processing/value adding business has been based in Maryborough, concentrating on meat from spent hens and spent layers. It has changed ownership over recent years; from Davis Poultry to Broad Poultry Group, to Pindarri Poultry. This company has now ceased operations, and undertakes its processing in Geelong.

Most of Central Goldfields is located within either the Laanecoorie (Loddon River) potable water supply catchment or the Tullaroop potable water supply catchment. The furthest north west of the shire is not located within any catchment area. These catchment areas for potable water supplies are probably unsuited to intensive livestock operations. Another factor which is a potential disincentive to intensive livestock uses is the land tenement history, from the days of the gold rush and subsequent closer settlement, which has left a legacy of small landholdings. These smaller landholding titles create the potential for residential development, which would make it difficult to ensure biosecurity protections and buffer zones for new intensive livestock investments. Wetlands and native vegetation cover add complexities to the intensive livestock opportunities in Central Goldfields.

Council completed a Land Capability Assessment in 2012, in partnership with Mount Alexander Shire. Council has no plans to use an overlay indicating areas that may, or may not, be suitable for intensive livestock investments, partly due to the potential for increasing land valuations which could hinder establishment of intensive farming, and that the overlay would struggle to be dynamic enough to be useful.

6.5 SHIRE OF GANNAWARRA

The Shire of Gannawarra is located in the north of the Loddon Mallee region, bordered by the Murray River. The main townships in the Shire are Kerang and Cohuna, with smaller towns including Koondrook, Quambatook, Leitchville, Benjeroop and Gannawarra. The Shire has an estimated resident population of 10,019 having declined by an average of 1.3% over the past ten years[18].

Agriculture is the key economic driver for Gannawarra Shire, and the major sectors are dairy (predominantly in the north), cropping (mainly in the west) and livestock (spread throughout the Shire). Of these, dairy is the biggest contributor to the economy but has been in decline (in terms of number of establishments) for well over a decade. Council estimates 28% of dairy farms were lost during the drought of the early 2000's. Timber has been a significant industry in the past, but has dramatically declined, with changes to river red gum forest management.

Gannawarra Shire is currently undertaking a broad research and economic development project on the outlook and opportunities for agribusiness and this project will describe the advantages of the area for each agricultural sub-sector, including intensive livestock.

[17] Socio-Economic Indexes for Areas (SEIFA), Australian Bureau of Statistics 2011
[18] Australian Bureau of Statistics Regional Population Growth, 2015

The Shire believes it is developing sound infrastructure to support future intensive livestock development and other agricultural investment. For example:

- Irrigation systems are improving and extending through Goulburn Murray Water, including the Torrumbarry irrigation system, Loddon Valley open channelled system, and the Normanville pipeline (recently enclosed).
- Gas could be available through a hub distribution principle, with depot stations and lines out to users at select locations around the Shire.
- Potable water lines servicing Cohuna and Leitchville (complementing the Class 1 irrigation water in the other systems)
- Three phase power in the dairying areas
- Sealed road access to many agricultural areas suitable for development, with many roads allowing b-double access.

Piggeries are the major intensive livestock sector in the Shire, with about 10 (including one free range operation). The existing farming community has a strong dairy mindset, with some consideration of piggeries development.

Council's economic development focus is on renewable energies, dairying, and value added manufacturing (largely food processing). However, there is also support and interest in corporate agribusiness investments including feedlots, and Council assists in attracting these operations through feasibility assessments. There is already one small beef feedlot (400-500 head) in the Shire.

The Gannawarra economic development strategy explicitly includes intensive livestock, and notes:

"In a climate where the world economy can impact directly on the Gannawarra Shire, Council's focus is to concentrate development on the areas of competitive advantage. Gannawarra has been proactive in the facilitation of large scale solar power projects, in supporting new developments for de-watered land and new irrigation infrastructure. New industrial land subdivisions and marketing of the municipality for new business and living opportunities have also been strongly supported by Council. These initiatives are designed to create new jobs and leverage new investment to assist the local economy. Council is seeking to strengthen the local economy through diversification and by making better use of natural resources. Furthermore, Council seeks to facilitate investment in new agricultural projects such as poultry and feed stocks for energy along with opportunities in corporate agriculture particularly around dairy and livestock. There is a great deal of opportunity for towns to develop to not only suit the future needs of the community, but also to support vibrant retail and manufacturing sectors".

6.6 LODDON SHIRE

Loddon Shire has a resident population of 7,283 and had an average annual rate of decline over the past decade of 0.9%. As with Central Goldfields, arresting population decline is a key priority for Loddon Shire Council. However, the Victorian population projections for 2011-2026 suggest that the Shire could expect a small decline to continue, at the average annual rate of 0.17%. Loddon does not have a dominant urban area and there are five significant towns; Wedderburn, Boort, Pyramid Hill, Inglewood and Bridgewater.

The major employing industries in Loddon Shire are, in order:

- Agriculture, which employs almost 40% of the workforce (sheep, beef, dairy and grain are the main sectors, and there is also some intensive animal production and horticultural products; grapes and olives)
- Manufacturing (largely food processing, and some machinery and equipment)
- Health care and social assistance (hospitals is the biggest sector in this industry)
- Retail trade (supermarkets is the largest sector)
- Education and training (led by primary and secondary education).

Loddon Shire's economy is heavily reliant on agriculture and, to a lesser extent, agricultural product processing/value adding, which continue to be affected by global market conditions, increased climate variability, mechanisation and a shift from 'family enterprises' to corporate entities. Council supports intensive livestock; it is featured as a priority in both the Council Plan and the Economic Development Strategy. However, Council does not consider feedlots to be a particularly 'good fit' for Loddon, and prefer the focus to be on poultry and piggeries. Council believes the recently installed East Loddon pipeline, together with the proposed extension to Wedderburn (at a cost of $84 million), and a Mitiamo pipeline, will enhance intensive livestock opportunities.

Loddon Shire's intensive livestock production sector is expanding. Farming enterprises are dominated by broadacre, dryland cropping systems, with the majority of farms in the range 600 to 800 hectares. This environment is increasingly attractive to intensive livestock production as lot-feeding becomes more established and poultry and piggery operations seek bio-secure locations with good access to both stockfeeds and markets.

The existing investment and employment in intensive livestock includes 36 enterprises and an estimated total production value of over $50 million per annum, and capital investment of more than $100 million. There are other businesses with unutilised intensive animal production facilities, and several sheep producers interested in more structured lot feeding, under the right circumstances.

Loddon Shire receives regular investment enquiry and interest for potential new investment (by both existing broad acre growers and new investors) in piggeries, meat poultry and layers and occasional interest in beef lot feeding. A medium table egg processing company Bridgewater Poultry, or Loddon Valley Eggs, is located in the Shire, processing eggs from its own farms and some contract growers. Hazeldene's Chicken Farm processing plant is located near the boundary of Loddon Shire (with Greater Bendigo) and many of Hazeldene's own farms and contract growers are located in Loddon Shire. These businesses are expected to stimulate further poultry industry growth in Loddon, potentially including the relocation of some growers based in Bendigo who need to shore up future farming investments. Hazeldene's needs to secure more land if it is to retain its policy of 50% company owned grower farms and 50% contract growers.

7. MAPPING SYSTEM

The Northern Poultry Cluster Website will host the 'tailored' version of NationalMap for use in exploring potential intensive livestock sites. It will enable users to explore a wide range of relevant features that could influence a decision to locate intensive livestock activities across the Loddon Mallee local government areas: City of Greater Bendigo and Shires of Buloke, Campaspe, Gannawarra, Central Goldfields and Loddon.

Most features which can be loaded on the map are 'open source' (or in the public domain). Features which are accessible only to password protected users (via csv files) are specific locations of existing intensive livestock producers, and businesses in the supply chain, and indicative buffer and biosecurity zones around these enterprises. The CSIRO and Commonwealth Government ongoing commitment to NationalMap mean that the system will have access to new geospatial data whenever additional open source information becomes available and is added to the NationalMap data list.

Figure 6.1 provides a simple screenshot of a NationalMap extract with some basic factors identified, such as local government boundaries, towns, roads, powerlines, and water pipelines. Other open source factors available to examine intensive livestock potential sites, at August 2016, include:

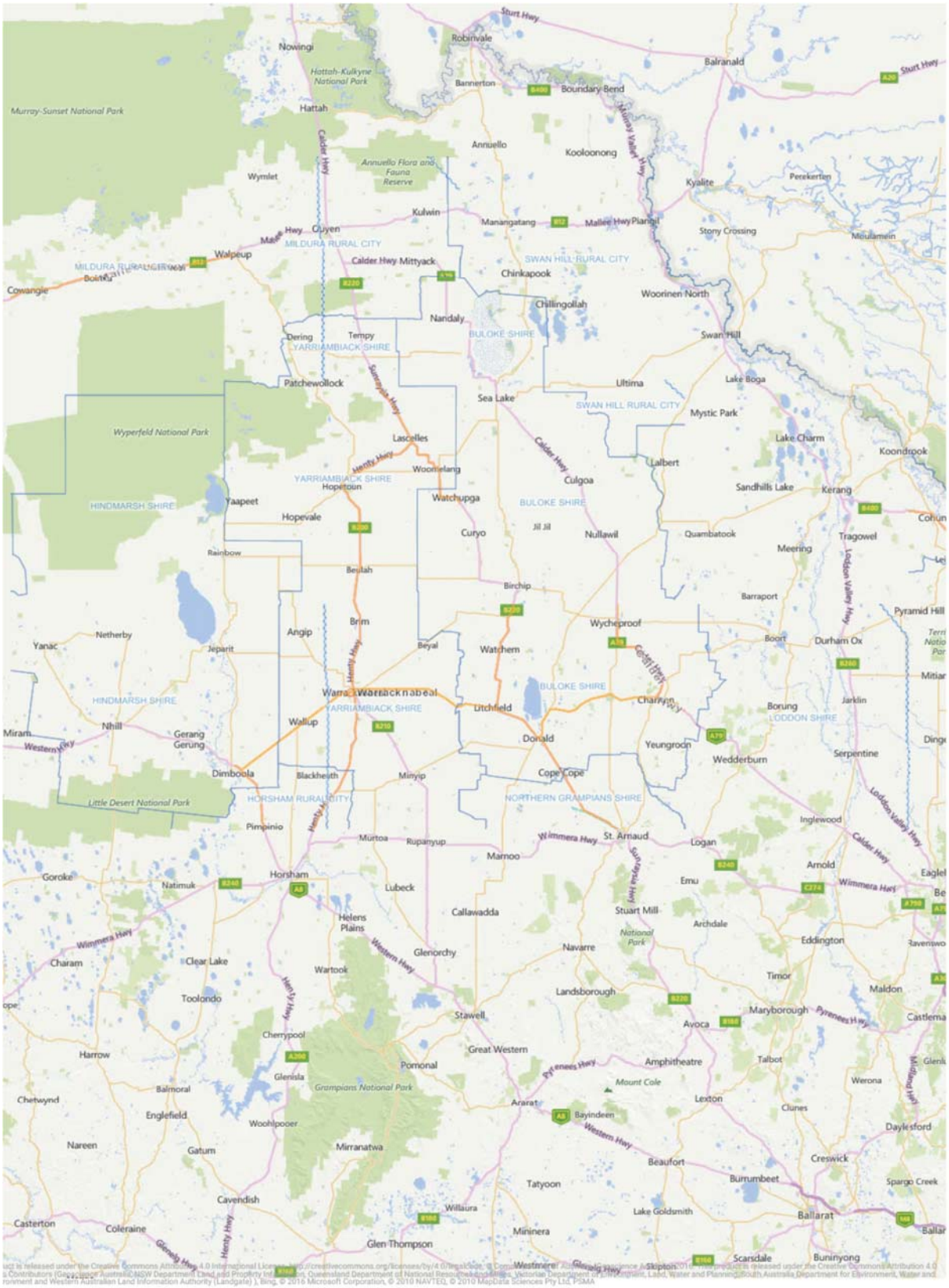
National Data sets, encompassing:

- Communications (such as broadband availability, mobile blackspots)
- Elevation (land slopes, contours, flow grids, etc)
- Environment (heritage areas, conservation management zones, key ecological features, etc)
- Framework (electricity transmission lines and substations, waste management facilities)
- Ground Water
- Habitation (populated places, homesteads, recreation areas)
- Infrastructure
- Soil attributes
- Statistical boundaries
- Surface water
- Terrain
- Transport
- Utilities
- Vegetation

Victorian Data sets, encompassing:

- Administrative boundaries
- Victorian soil types
- Biology features
- Cadastre and land description
- Facilities and structures
- Geological and geophysical
- Spatial data
- Transport
- Utilities

Figure 6.1 NationalMap Screenshot



The Department, Data61 and Geoscience Australia ("We") make no representations or warranties regarding the accuracy or completeness of any content or the product in connection with the NationalMap. We disclaim all responsibility and all liability (including without limitation, liability in negligence, for errors or omissions) for all expenses, loss, damage and costs which you might incur as a result of the information displayed on the NationalMap and your use of it. The NationalMap must not be used for navigation or precise spatial analysis.

It is understood that many intensive livestock enterprises can be identified by their Australian Business Register (ABR) locations. Each Council has access to their own LGAs ABR locations, and mapping feature is now available in ABR Explorer. ABR Explorer users are now able to access an integrated mapping function to use geocoded ABR address information. Map functionality in ABR Explorer is linked to the NationalMap External Link, providing a flexible resource to conduct area-specific analysis. The major limitation in using this function to help update and monitor intensive livestock operations is that the ABR address is frequently not the same as the property location. The ABR address can be a separate office location, and accountant's office, or one site in a multi-site operation. Nevertheless, the ABR Explorer link to NationalMap gives an added capability to the intensive livestock mapping system.

The specific locations of 60-70 of the intensive livestock operations in the Loddon Mallee municipalities have been identified in the project to date, and is expected that Councils will assist in helping to identify the remaining enterprises. The extent to which mapping of existing operators is available beyond key users, needs discussion. Some operators and processors would have objections to the locations of growers being plotted on an open mapping system, where there is the prospect that it could be accessed by anyone with the potential to release shed locations to individuals or organisations with competitive, environmental or animal welfare agendas.