UNIVERSITY OF SOUTHERN QUEENSLAND

Murray Darling Basin Regional Economic Diversification Program

Supply Chain Analysis St George to Inglewood:

Horticultural infrastructure and product flows

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Executive Summary

This report looks at the horticultural supply chains in the Murray Darling Basin from St George in the west through to Inglewood in the east. The report identifies logistics and infrastructure that support horticultural supply chain as well as identifying other agricultural supply chains and infrastructure in the region.

There are a number of horticultural crops that have been previously grown in the region but due to environmental or economic reasons have ceased production. The horticultural crops that are currently grown include grapes for both table and wine usage, onions, pumpkins, olives, lavender and stone fruit. There are a number of crops that are currently being developed in the area and these include limes, mandarins, garlic and blue berries.

The current horticultural crops are limited in volume mainly due to the number of growers, there are about 8 growers of table grapes and the balance are growing single horticultural crops such as garlic. The majority of horticultural growers are located in the St George area with a small number in and around Inglewood.

The infrastructure in the horticulture supply chain is limited mainly to farm coolroom storage facilities. This allows for 24 to 48 hour consolidation of table grapes before the requirement to have road transport to move to market. The use of road freight is essential for the movement of produce to market in a timely manner. The use of refrigerated trailers as temporary storage is also required, particularly in the table grape sector. The other agricultural supply chains in the region do have logistical infrastructure in place but it is discrete to each supply chain and does not lend itself to improvements in the horticultural supply chain.

The value adding facilities in the region for horticulture are limited to the olive and lavender industries. There is one grower in each of these industries and they have vertically integrated through growing, processing and distribution to domestic markets. The size and capacity of these value adding facilities has been developed to meet their own farm production. A number of other value adding

facilities, that are suitable for horticultural products, are located east of the project area at Stanthorpe and north east in and around Toowoomba.

There are a number of efficiency challenges in the MDB horticultural supply chain including limited volume, number of operators and redundancy capacity. The main driver is "time", the need to get the perishable produce to the retail sector quickly to provide maximum shelf life. The solutions to improving efficiencies in the horticultural supply chain include enabling growers to collaborate and share infrastructure; increase volumes of current crops; and increase diversity of crops – with a focus on crops that utilise similar infrastructure but at different harvest times.

1. Introduction

This report is part of Activity 4 of the Queensland Murray Darling Basin Regional Economic Diversification Program commissioned by the Queensland Government. The program aims to establish new, high value, profitable and resilient horticulture value chains in the Queensland Murray Darling Basin.

This report discusses the horticultural supply chains currently utilised, the logistical infrastructure located in the project region and the ability for horticulture to use the other agricultural logistics and infrastructure. The four objectives are:

Objective 1 Process flow map of current horticultural supply chains

Objective 2 Identification of constraints and restrictions in the supply chain and the changes required to improve efficiencies

Objective 3 Outline for opportunities for expansion through existing infrastructure

Objective 4 Identify opportunities and collaborations for supply chain efficiencies

Desktop research and discussion with industry was undertaken to gather the following information:

- Horticultural crops that have been grown as commercial crops in the project area.
- Identify the horticulture growers and geographically locations.
- Determine the current logistical infrastructure such as registered public weighbridges, from desktop research.
- Understand the requirements for the transportation of different fruit and vegetables, including their compatibilities to be transported together.
- Examine the different types of agricultural supply chains in operation in the area.
- Identify the value adding / processing facilities that are in the project area.

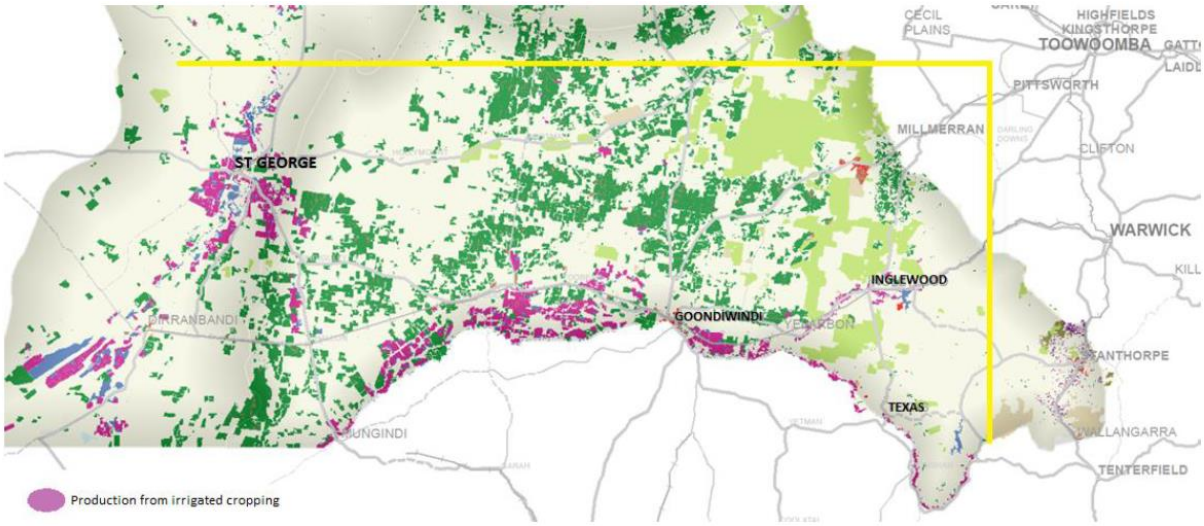
This report first identifies the current horticulture industries by regions, the supply chains, infrastructure and value adding resources. Concluding with a discussion about the opportunities for horticulture to expand, and improve supply chain operations.

2. Background: Horticulture and supply chains

The MDB region and crops

The geographic area of research in southern Queensland encompasses the areas west of Stanthorpe through to St George. The Queensland New South Wales border is the southern boundary with the northern boundary below a line drawn from Toowoomba in the east through to the top of the St George irrigation area in the west.

Figure 1 Queensland Murray Darling Basin Economic Diversification Project Region



Source Queensland Murray Darling Committee Activity 2 Resource

Figure 1 shows the irrigation areas that are encompassed by this project. The area investigated covers two local governments, the Shire of Balonne and Goondiwindi Regional Council. The map in Appendix 1 shows the location of these 2 local government bodies. Appendix 2 shows the local government metrics of each of Balonne Shire and Goondiwindi Regional Council.

There are five main agricultural supply chains in the project region:

- Cotton lint supply chain. This supply chain is concerned with the movement of the baled lint from the cotton gins located in the region to the landside export facilities.
- Cottonseed supply chain. Depending on the season, this supply chain has two different destinations. If there is a dry season, then the majority of cottonseed will move to domestic consumers such as feedlots and also for drought feeding of livestock. If the environment conditions are favourable, then cottonseed is likely to move to export in containers and bulk shipments, to the US and China.
- Grain supply chain. The grain supply chain includes coarse grains, oilseeds, birdseeds and pulses. There are two destinations for grain, domestic and

export. Consumptive markets, both domestic and export include, human consumption, animal consumption and industrial use, for example ethanol production.

- Horticultural supply chain. The horticultural supply chains currently in the region are for domestic supply only. This includes moving the produce direct to resellers, using consolidators and also through central markets such as the Brisbane Markets at Rocklea.
- Beef supply chain. This supply chain is categorised by moving livestock from the farms in the project area through to the feedlots and abattoir processors. This is handling live cattle only in the project area.

There are a number of commercially grown crops within the region. These can be categorised into vegetables, fruits and other, as listed in Table 1.

Table 1: Commercial grown horticultural crops

Vegetable crops	**Fruit crops**	**Other**
Current or recent grown crops		
Garlic	Cantaloupe (rockmelon)	Lavender
Onion	Grapes(table and wine)	
Pumpkin	Olives	
Garlic (new)	Stone fruit	
Previously grown crops		
Broccoli	Citrus	Tobacco
Cabbage	Watermelons	Peanuts
Capsicum		
Carrot		
Chinese Cabbage		

Source: information from (Deuter, Zull, & Taylor, 2015)

Table 1 shows a number of horticultural crops that have been grown in the project area that are not grown today.

Horticultural production – issues and constraints

With price sensitive commodities such as horticultural products, margins are low and rely on volume. There are a number of issues and constraints to the production of horticultural crops that drive the cost of production higher. To compete with operations in established horticultural areas close to major markets, the cost of production needs to be managed carefully. These issues are of particular relevance:

Distance to market: The cost of transporting horticultural products across large distances adds costs that can make the product un-competitive. Goondiwindi is 350km from Brisbane, the Lockyer Valley and the Fassifern Valley are 90km to Brisbane. The Bundaberg area is 360km in distance, but due to it being in a populated area on the eastern coast, there is a greater opportunity for two-way freight that significantly lowers the freight costs, this can decrease the freight costs to market for horticultural crops.

Environmental resource issues: This involves the supply of water. Issues arise by drought conditions causing either on-farm water resources to be depleted or the inability to access water from rivers and their tributaries. Until the development of irrigation systems along the different river systems, the location of land that could be irrigated for horticultural production was restricted to the farms ability to store water and the security of water harvesting from rivers and underground aquifers. The lower water security in the past in the project area has hampered the development of larger horticultural areas to gain efficiencies through scale.

Competing commodities: As horticultural products are a commodity, they are easily substituted by other horticultural products. It is only recently the specific traits of particular varieties and types of products are being marketed to avoid competition in a commodity marketplace. Historically the horticultural production was sent to central markets, where it competed against other horticultural crops for limited space. This resulted in an increasing demand for a horticultural crop at the cost of another crop.

Domestic market saturation: As there are a number of areas in Australia that are suitable for horticultural production and the short growing times of crops allows producers to react quicker than other agricultural production to market pricing signals. Producers will plant a specific crop to meet a higher priced market or plant extra land for that crop. This creates increased production that has the ability to lower pricing through supply demand functions.

Logistical facilities: Certain horticultural crops require specific handling, storage and processing to maintain freshness and shelf life. If these facilities are not available, the produce needs to be moved to those facilities in the quickest possible time. This movement adds costs, even though moving towards the destination market, as there is another loading and unloading operation. If the facilities moved to are multi-user or being used by the owner, then timing may

not be suitable due to prioritise at his facility. This adds time and increases in costs of production.

Transportation can have a direct impact on reducing the shelf life of horticultural products. This will have an impact on the value and suitability of particular produce for certain markets. The issues below need to be taken into consideration when looking at the transportation of horticultural produce, by any transport mode, along the supply chain:

- ***Initial quality of fruit / vegetables ex-farm***. The initial quality of the horticultural products to be shipped will have an impact on the ability for the product to handle transport without damage or reduction of shelf life. If the product has been picked late, is suffering from water or heat distress, has hail damage or any one of a number of conditions, then its quality will be compromised through transport along the supply chain. Any produce leaving the producer needs to be suited to the handling it will receive whilst in transit. The shorter the supply chain the riper the products can be as they will spend limited time in transit moving to market. (Vigneault, Thompson, Wu, Hui, & LeBlanc, 2009)

- ***Temperature of the fruit/vegetables before transport and during transport***. The initial temperature after harvesting can be essential for some horticultural products being in saleable condition when they get to market. Products such as sweet corn, grapes and broccoli need to be cooled rapidly to prevent spoilage as well as to maintain firmness, colour and sugars. Although some products are not as susceptible to temperature, but majority of horticultural products have an adversity to high temperatures. (Vigneault, Thompson, Wu, Hui, & LeBlanc, 2009)

- ***Relative humidity during transport.*** Because the value of shelf life in fruit and vegetables is important in its value in the market place, the longer shelf life the horticultural product has when it arrives at its destination, the higher the value it obtains. Most horticultural products require a relative humidity of 90 to 95% (Vigneault, Thompson, Wu, Hui, & LeBlanc, 2009) to prevent moisture loss from the product and to achieve maximum shelf life. As produce is often sold by weight, loss of moisture through low relative humidity will result in reducing the weight of the produce that has a further economic impact on the grower. However, there are a few exceptions such as bulbs onions, garlic and ginger where relative humidity needs to be kept under 70%. Packaging needs to be selected based on the mode of transport, the length of time of transport and the ability for relative humidity to be maintained at the optimal level. (Vigneault, Thompson, Wu, Hui, & LeBlanc, 2009)

- ***Atmospheric conditions during transport, especially with mixed loads.*** Different horticultural products have different requirements when being transported to maintain optimal shelf life. These factors include temperature,

relative humidity, sensitivity to odour absorption and effects of ethyl in the atmosphere. These factors are more critical when the journey is over a longer time-frame, such as being shipped by sea in a container. Utilising the lowest temperature requirement may impact on another product in its shelf life and the reverse can be said if utilising the higher minimal temperature. It is also important to ensure that mixed loads of ethyl or odour sensitive produce are not packed with odour or ethyl emitting produce unless an air exchange system or odour and ethyl scrubbers are used in the air circulation path. In addition, holding produce in its lowest possible temperature will reduce the amount of ethyl emitted. It is essential that mixed loads should only be packaged together if their temperature ranges are compatible, and they are not susceptible to odour and ethyl from other products in the load. (Vigneault, Thompson, Wu, Hui, & LeBlanc, 2009)

- ***Packaging of the fruit / vegetables for transport.*** This is one of the most important areas for horticulture logistics to maintain optimal shelf life. Packaging plays a critical role in preserving the fruit and vegetables from physical damage. If the fruit or vegetables are packed in bulk pallet style containers, it is likely to result in some damage to the product on the bottom due to the weight of the products above. In contrast, if the fruit and vegetables e.g. lettuce, are packed in boxes that have integrity in strength, the products are going to be welled protected. Large and or heavy products are generally not packed in boxes due to the commodities internal strength they are able to be paced in bulk or in pallet containers. The types of packaging needed will depend on the nature of the different products. If the packaging is not appropriate and the road freight of the product is over roads that are rough, this can lead to increased compaction of the products, further increasing spoilage of the fruits and vegetables. (Vigneault, Thompson, Wu, Hui, & LeBlanc, 2009)

- ***Hygiene of the transport vehicle / container.*** This is another important factor that impacts on the product quality. If the vehicle or container is already dirty or carrying a pathogen that reduces the shelf life of a product, then this may impact on the shelf life of the next product to be transported. If the vehicle or container is not clean and the residue in it produces an odour, this may be taken up by the next cargo. The hygiene of the vehicle or container can lead to decreased shelf life, increased spoilage or in the worst case rejection of the entire load. (Vigneault, Thompson, Wu, Hui, & LeBlanc, 2009)

Table 2 and 3 below outline the transport specifications, storage times for fruits and vegetables for crops that have been or are currently grown in the project region. The production and sensitivity to ethylene is a very important consideration when looking at co-mingling different products in a transport unit. There are a number of factors that should be considered:

- The volumes of each different product within the transport unit.

- The ability for the transport unit to exchange the air within the cargo hold to reduce ethylene build up.
- Are ethylene scrubbers able to be fitted to the refrigeration system of the transport unit?
- What is the highest and minimum temperature of the products being transported?

Table 2: Vegetable transportation requirements

Horticultural Product	***Optimum Transport Temp. °C***	***Highest Freezing Temp. °C***	***Optimum humidity***	***Ventilation for 20'FCL***	***Storage Life***	***Ethylene Production***	***Ethylene Sensitivity***
Asparagus	0 to -2	-0.6	95%	25 m^3/hr	2-3 weeks	Very low	Medium
Beetroot	0 to 1	-0.5	95-100%	10 m^3/hr	2-3 weeks (bunched) 3-8 months (topped)	Very low	Medium
Broccoli	0	-0.6	>95%	60 m^3/hr	2-3 weeks	Very low	High
Brussels sprouts	0	-0.8	>95%	60 m^3/hr	3-5 weeks	Very low	High
Cabbage	0	-0.9	>95%	60 m^3/hr	4-17 weeks	Very low	High
Capsicum	7 to 10	-0.7	90-95%	60 m^3/hr	2-3 weeks	Low	Low
Carrots	0 to 1	-1.2	>95%	10 m^3/hr	2 weeks bunched 4-6 weeks (topped immature) 5-6 months (topped mature)	Very low	Low
Cauliflower	0 to 1	-0.8	>95%	60 m^3/hr	2-4 weeks	Very low	High
Celery	0 to 1	-0.5	>95%	25 m^3/hr	1-3 months	Very low	Medium
Chinese cabbage	0	-0.9	>95%	25 m^3/hr	3-6 months	Very low	High
Garlic	-1 to 0	-0.8	<75%	10 m^3/hr	6-9 months	Very low	Low
Onion	0 (dry/green)	-0.8	65-75% dry >95% green	10 m^3/hr	6-9 months dry 3-4 weeks green	Very low	Low
Pumpkin	10 to 13	-0.8	60-70%	10 m^3/hr	2-3 months	Low	Low

Sources (Shipping Australia Limited, 2007), (Vigneault, Thompson, Wu, Hui, & LeBlanc, 2009) and (www.cargohandbook.com, 2015).

Table 3: Fruit transportation requirements

Horticultural Product	Optimum Transport Temp. °C	Highest Freezing Temp. °C	Optimum humidity	Ventilation for 20'FCL	Storage Life	Ethylene Production	Ethylene Sensitivity
Cantaloupe (rockmelon)	2 to 4	-1	90-95%	25 m^3/hr	2-4 weeks	Moderate	High
Dates (dried)	4 to 20	0	50-60%	10 m^3/hr	6-12 months	Very low	High
Figs	0 to 1	-2.4	85-90%	25 m^3/hr	1-2 weeks	Moderate	Low
Grapes	-0.5 to 1	-2.1	90-95%	10 m^3/hr	2-6 months	Very low	Moderate
Lemons	10 to 11	-1.4	90%	25 m^3/hr	2-3 months	Very low	Moderate
Limes	9 to 10	-1.6	90%	25 m^3/hr	1-2 months	Very low	Moderate
Mandarina	4 to 8	-1.1	90%	25 m^3/hr	1-2 months	Very low	Moderate
Olives	5 to 10	-1.4	85-90%	25 m^3/hr	4-6 weeks	Low	Moderate
Watermelon	10	-1	90-95%	25 m^3/hr	2-4 weeks	Moderate	High

Sources (Shipping Australia Limited, 2007), (Vigneault, Thompson, Wu, Hui, & LeBlanc, 2009) and (www.cargohandbook.com, 2015).

Horticulture production and supply chains summary

A number of factors in the transporting and storage of fruit and vegetables impact directly on the duration of storage and shelf life. Some of the key factors to be considered when combining different fruit and vegetables in the one storage or transport vehicle are:

- The optimal temperature range for transport and storage. Are all the products in the same temperature range?
- The optimal humidity. Does a higher or lower humidity have a detrimental effect on the storage and shelf life of each product?
- Ethylene sensitivity. Are there ethylene emitters and are their ethylene sensitive products in the same storage or freight load?

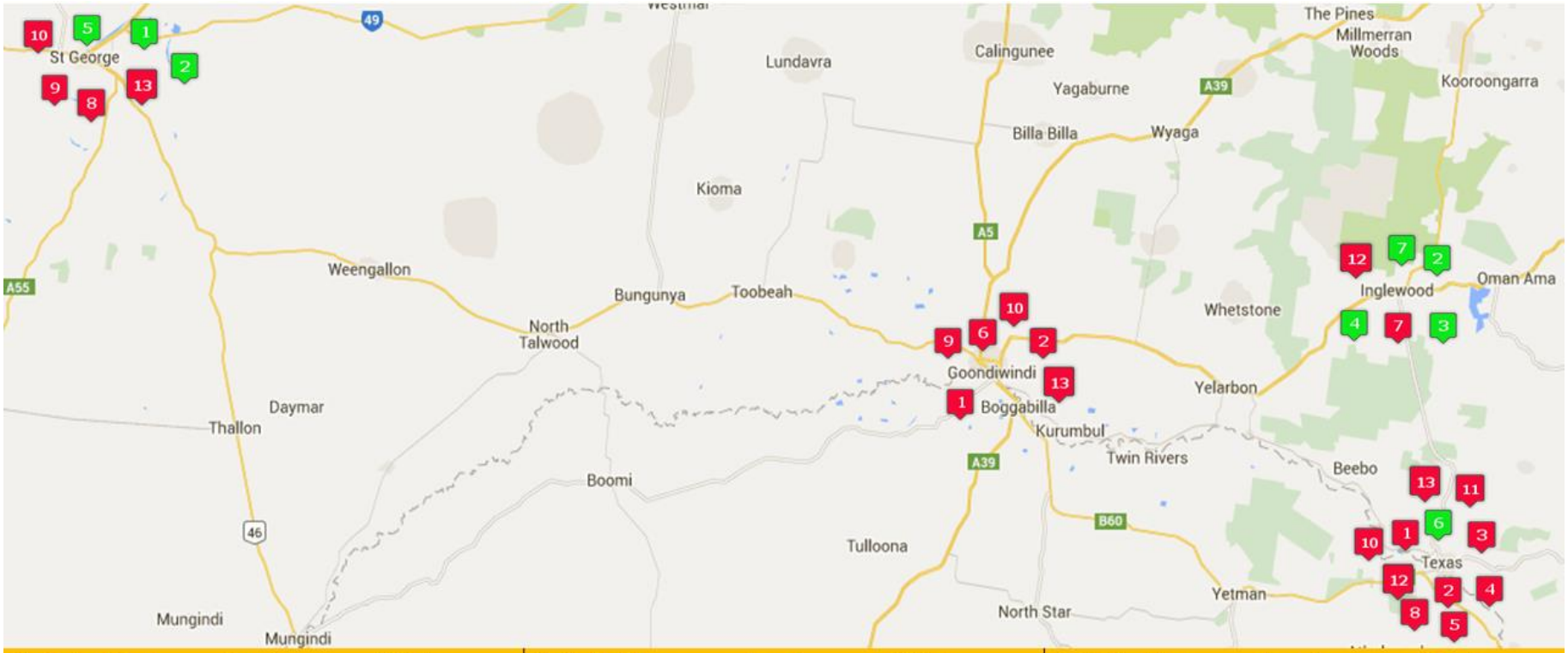
The next section discusses the logistical movement of the current horticultural crops along the supply chain.

3. Horticultural crops and supply chains by region

The current horticultural crops and supply chains in the regions are defined by the produce that is moved along them.

Figure 2 shows the current and historical commercial horticultural crop locations. There are a number of crops that are no longer grown or have been grown sporadically in the past. The map highlights the concentration of horticultural crops at either end of the project area. The reason for this is the available water either from rivers, irrigation infrastructure or bores. Water coupled with fertile soils has allowed the development of horticultural crops in these areas.

Figure 2 Commercial horticultural crop growing locations.



Horticultural Crop	Current	Historic	Horticultural Crop	Current	Historic	Horticultural Crop	Current	Historic
Broccoli		1	Garlic	1		Rockmelon		10
Cabbage		2	Grapes	2	7	Stone fruit	7	11
Capsicum		3	Lavender	3		Tobacco		12
Carrot		4	Olives	4	8	Watermelon		13
Chinese cabbage		5	Onion	5				
Citrus		6	Pumpkin	6	9			

Source: information from (Deuter, Zull, & Taylor, 2015)

Horticultural crops by region

St George Area:

Current crops: grapes, onions, garlic.

Previous crops: rockmelon, pumpkin, olive, watermelon.

Currently the horticultural production at St George are table grapes and onions. There is a hydroponics farm that currently is not in production. There are future plans for blueberries, mandarins, limes and garlic. There is one producer of onions, one wine producer and 7 table grape growers. There were a number of other producers of table grapes but these growers have ceased production. Garlic was planted for the first time in 2015, therefore does not have an established supply chain, the garlic producer is currently growing to commercial quantities.

The **table grape supply chain** is primarily reliant on cold chain integrity to maintain the fruit quality. Harvest generally commences in late November and goes through to early January at the latest. Once the grapes are packed in boxes, they are stored in cold rooms with blast facilities to bring the grapes temperature down to between 2^0C to 4^0C. The grower's cold room facilities at St George vary from 20 pallets through to 150 pallets storage capacity. This variation in cold room storage means that the carriers servicing this region have to offer a number of different models.

There were two refrigerated carriers servicing this region but currently there is only one. The second freight carrier stopped servicing the area as their primary customer closed operations. The current transport models are for all produce to move via road either direct to supermarket chains, consolidators or through the centralised markets of Brisbane, Sydney, Melbourne and Adelaide. The trucks are refrigerated vehicles that can maintain a temperature between 2^0C to 4^0C, have ethylene scrubbers and meets specific quality assurance programs such as:

- Trucksafe
- HACCP
- Fatigue Management Accreditation
- Woolworths Quality Assurance Standards
- Coles Quality Assurance Program
- AS/NZS ISO9001:2000

Variations in the supply chain comes from how the loads are consolidated and collected from the farm and loaded into the trailers for transport. The key differences are:

- ***Grower who has enough storage to consolidate a full B/Double or Road Train***. Truck arrives empty and is loaded. This truck then proceeds to the destination directed by the grower.
- ***Grower who has limited storage but refrigerated trailer on site.*** Carrier supplies trailer to grower at the growers packing shed. This is then loaded over 48 hours with 22 pallets. This trailer is then collected and another left in its

place. This trailer is then hooked up to another trailer and the truck proceeds to its destination.

- ***Grower who has limited storage.*** Carrier has 1 to 2 trailers at a depot in St George with 2 employees and a small refrigerated truck. This small truck is used to consolidate loads into the two trailers from a number of growers. Once these trailers are full, they are exchanged with empty trailers. These trailers, if produce is all destined for a single market will move to that destination, but if destined for multiple destinations, the trailers will move to a distribution hub at Gatton, where it will be split up and consolidated with other produce destined for the same location.

The movement of the trucks out of the St George area are to a number of destinations as detailed below:

- Direct delivery to supermarket. This is a direct sale to either Coles, Woolworths or Aldi. This can be from a single producer or a number of growers who have sold to the same customer. The sales negotiation will have determined where the destination distribution centre is located, be it Brisbane, Sydney, Melbourne or Adelaide.
- Direct delivery to supermarket via Gatton freight hub. The produce is moved to Gatton and then loaded with other produce and moved to final destination as detailed above.
- Delivery to central market. This is when the produce is being moved to market to be sold. If the grower or growers have a full load then it will move direct to the central market. If there is only a partial load, then it is likely to move back to Gatton and then be consolidated with other produce before proceeding to the central markets (i.e. in Brisbane, Sydney, Melbourne and Adelaide). The key determining factor for which central market the produce goes to will be dependent on the market that gives the best return to the grower after taking into consideration of the different costs of freight.

The **wine grape** supply chain is in four distinct product flows. The first is direct cellar sales to the public. The only logistical infrastructure that is required is warehousing, a dark cool interior to best preserve the picked grapes before shipping and the wine after processing and bottling. The second is through online or mail order sales which requires warehousing but needs to include a parcel system, the wine is shipped through Australia Post utilising their wine parcel service. The deliveries can be tracked from collection point to customer delivery. The third product flow is via third party retail sales (such as bottle shops, restaurants and other alcohol sales licensed premises). Depending on the order size, this can be shipped either through Australia Post as per direct orders or if a larger consignment, this will be shipped on pallet/s using the local general freight carriers. This will then be delivered either direct to the purchaser if the general freight carrier delivers to this location or the carrier will utilise other general carriers to deliver the consignment through the general freight networks across Australia. This may result in the consignment being handled by numerous carriers. Finally the fourth supply chain flow is direct sales at field days, produce

shows and other events such as the Birdsville Races. The logistical transportation is managed by the winery staff and utilises road vehicles and trailers. Any requirement for cooling is managed at the destination through the use of ice and insulated boxes (eskies).

There is logistical consideration for the production of the wine from the grape products. The grapes when picked are placed in large plastic boxes with built in pallet slots. These are stored in the cool rooms till a full truck load has been picked and boxed. Once the truck load is accumulated, the grapes are then transported to Stanthorpe in refrigerated road transport. Here they are processed into wine and then placed into wine vats or barrels to be transported back to St George to be bottled. The cold chain integrity of the supply chain, particularly the temperature control of the picked grapes from picking to crushing is critical and has to be maintained within an optimal range to ensure no deterioration to the finished wine.

The other horticultural crop being grown in the St George area is onions. The **onion supply chain** is for a single producer. They do contract other farmers to grow onions in the area for them. The facilities are adequate for the handling of the onion crop. As a single grower controls the drying, sorting and packing of onions, the sale direct to the supermarkets, simplifying the supply chain. The onions are able to be loaded in complete trailer loads so as to ensure maximum efficiencies. When the last of the crop is needed to be transported and it is not a full load, there are two possible scenarios. Firstly the load is transported to Gatton where it is consolidated with other freight and sent through to its destination. Secondly, the road transport vehicle may be short loaded and sent to its destination without further consolidation. This decision is to be made by the grower as they are ultimately responsible for the freight cost of the onions. The preference and goal is to move the onions to market utilising fully loaded road transport.

Thallon

There is no horticultural production currently at Thallon. Also there was no trace of past commercial horticultural crops grown in this area.

Talwood, Bungunya and Toobeah

There is no horticultural production currently at Talwood, Bungunya and Toobeah. Also there was no trace of past commercial horticultural crops grown in this area.

Goondiwindi

Previous crops: broccoli, cabbage, citrus, pumpkin, rockmelon, watermelon.

A number of commercial horticultural crops have been grown in the past around the township of Goondiwindi. Currently there are no commercial sized crops in production.

Yelarbon and Texas

Current crops: pumpkins.

Previous crops: broccoli, cabbage, capsicum, carrot, Chinese cabbage, olives, rockmelons, stone fruit, tobacco, watermelon, sweet corn, potatoes, green beans, onions, tomatoes.

The **pumpkin supply chain** is classified as a heavy crop supply chain due to the weight and durability of the pumpkin. Pumpkins when picked are placed into cardboard containers that are attached to wooden pallets. The cardboard containers are large and encompass the pallet but there shape is round so as to give strength to the sides. The pumpkins are placed on top of each other without any separating material for protection. They are placed directly into the cardboard sided pallets and when full are consolidated till a road freight vehicle is able to move them to their destination. The road vehicle does not have to be refrigerated but preference is given to tautliners as they block out the direct heat. The pumpkins generally move from farm direct to the Brisbane markets. Pumpkins are then combined with other produce and are distributed to the retailer.

Inglewood

Current crops: lavender, olives, stone fruit.

Previous crops: grapes, tobacco.

The current horticultural production around Inglewood is wine grapes, plums, lavender and olives. There was a large tobacco industry in and around Inglewood but through the late 1970's and into the 1980's the industry had ceased to operate.

While there has been in the past a larger number of horticultural products produced within the Inglewood region including wine and table grapes, but the current horticultural crops grown in the region are lavender, plums and olives.

The **lavender supply chain** deals mainly with distilled lavender oils, dried lavender, creams and soaps. The storage requirements of the dried lavender is for a cool, dry environment, this storage environment is suitable for the oil and soap products also. There are three different retail markets for the lavender products to the customer, farm shop, Goondiwindi Tourist Information Centre and online retail sales. The farm retail shop sells direct to the public and there is no logistical facilities required beyond the storage and packaging that occurs on farm. The Tourist Information Centre at Goondiwindi is restocked approximately twice a month and this is done by grower driving the product to Goondiwindi in a passenger vehicle. The products are boxed so as to prevent breakages and spillage and there is no special logistical requirements. The online sales distribution is through Australia Post, requires the products to be packaged according to Australia Post requirements. This packages are driven by passenger car to the Inglewood Post Office, where Australia Post then takes over the distribution. As there are no specific requirements for transport of the lavender

products, the packages move with the other general parcels being handles by Australia Post.

The **stone-fruit supply chain** for plums have two major products, fresh fruit and juice. When harvested, the fruit is loaded onto trucks from the field and taken to a packing facility west of Stanthorpe, which is a 45 minute journey. They are transported in refrigerated trucks and are contained in high sided plastic pallets. Upon arriving at the facility the fruit is rapid chilled to preserve storage and shelf life. 70% of the fruit is sold as fresh and 30% sold as juice.

Accordingly when the fruit is sold as juice, the supply chain stores the fruit at Stanthorpe for approximately 1 month. This is in cool rooms that helps to prevent deterioration of the fruit. The fruit is then shipped via refrigerated truck, in high sided pallets to the fruit processor for juicing. The juice is then packaged into 200 litre drums. These drums are transported to a bottling facility in refrigerated road transport. The 200 litre drums are decanted and packed into 250ml PET bottles and packaged into 10 x 250ml cartons. They are stored in cool rooms in Brisbane and then distributed via refrigerated trucks to Woolworths stores across the eastern seaboard.

The fresh fruit is harvested and moved in high sided plastic pallets, by refrigerated trucks to a cool room and packing facility west of Stanthorpe to be rapid cooled. Once the fruit is cooled to prevent storage and shelf life loss, 2/3 is moved to a packing facility in Shepparton in Victoria. The remainder is stored and processed at Stanthorpe. The fruit in both locations is processed and packaged to meet the destination requirements. This packaging is in either loosely packed lined boxes or in sealed plastic bags. The fruit is distributed to supermarkets on the eastern seaboard in refrigerated trucks. The remaining 1/3 is processed in Stanthorpe, at the same facility as the original cooling, for the Brisbane and export markets. They are packed in cartons and moved to a freight forwarder in Brisbane by refrigerated truck where they are packed in refrigerated containers for export. If moving via air, they are packed in cardboard cartons, moved via refrigerated truck to a freight forwarder in Brisbane, where they are packed on air pallets with dry ice. The air pallet is then placed in the cargo hold of the aircraft for export.

The **olive supply chain** is made up of two different product flows. The first is table olives packaged in plastic tubs, glass screw top bottles or large tins. The nett weight of these individual packages are between 300 grams to 10 kilograms. The second product is olive oil and this is packaged in glass bottles or pouring tins. The nett weight of the olive oil packages are between 250 millilitres to 20 litres. The large variability of sizes of packaging for both the table olives and the olive oil is to meet consumer and commercial market specifications. The packaged products are packed into cardboard boxes for storage and transport.

The transport of these products is vertically integrated and is provided in a van owned by the grower. They manage their own distribution to retailers and wholesalers based in southern Queensland and northern New South Wales. At all stages the olives do not require refrigeration but storage is in a dark cool environment only.

Horticultural logistics and infrastructure by region

St George

There is one general freight carrier based in St George, who handle general freight, refrigerated freight and livestock transport. Currently they have two road-train return trips each week from St George to Brisbane, with the Brisbane to St George leg being utilised for supermarket supplies to towns from Toowoomba west beyond St George. Each road-train has a capacity for 40 pallets (20 pallets per trailer). The carrier has limited cool room storage and would be capable of handling a single pallet only. There is storage for general freight but the business model is not designed to be a storage depot. There carrier does have other depots based in Toowoomba and Rocklea. They also have depot agents in the towns they service for general and refrigerated freight.

St George one public registered weighbridges, located at the cotton gin 18km south east of St George on the Carnarvon Highway. The other cotton gin, 13km east of St George, has a weighbridge but it is not registered for public use.

A food distributor is located in St George and has a small capacity cool room, approximately 10 pallet capacity, this is currently utilised for storage of food items to be distributed to smaller communities west and south of St George. The southern reach is currently to Walgett in New South Wales.

There was a large corporate grape grower that had large cool room storages specifically built for horticultural products such as grapes, the corporate group has closed its grape farms at St George as well as its storage facility, as reported in the local paper, Balonne Beacon on the 23rd January 2015 (see Appendix 3). The majority of the cool rooms have had their refrigeration compressors, piping and blowers removed to other locations. One industry expert stated that the cost of replacing the refrigeration equipment would be close to one million dollars.

An abattoir is located west of St George but it was decommissioned in 2009. The abattoir was built to process sheep, but during its life it has processed goats and also kangaroos for the pet food market. As reported in the Queensland Country Life on the 28th of April 2015, there is a possibility that the abattoir will be re-opened for sheep and goat processing with the possibility of cattle processing in the future.

Thallon

Thallon has two bulk grain facilities. One is a public company that has common storage for growers, traders and consumers. It has rail access and a registered private weighbridge to take full length road trains. Rail does service this township for bulk grain only. The other bulk grain facility is a privately owned facility owned by a group of grain growers in the area. This facility has a private registered weighbridge that can handle road train sized trucks. The private facility does not have rail loading facilities but has loaded trains through the use of mobile grain stackers. Although there are freight companies that service Thallon but they are not based in the town. There is a general rail siding at Thallon but it is not currently used for freight and there is currently no rail freight service schedule. There are individual operators of bulk commodity tippers in the region, but these are also transient depending on where the work requires them to be located.

Talwood, Bungunya and Toobeah

Talwood, Bungunya and Toobeah each have a bulk grain facility that has the ability to load grain direct to rail and road. Rail for bulk grain does service these townships. They all have private registered weighbridges. Both Talwood and Toobeah have rail sidings for general freight but are currently not serviceable. There are individual operators of bulk commodity tippers in the region, but these are also transient depending on where the work requires them to be located. There are freight companies that service this area but are not based at either Talwood, Bungunya or Toobeah.

Goondiwindi

Goondiwindi has 4 bulk grain handling facilities. Two of these facilities are owned by the same corporate, a third is also corporate owned while the 4th is a private company. There are full length weighbridges at these bulk grain handling facilities and 3 are registered private with the fourth registered as public. Three of the four bulk grain handling facilities are able to load direct to rail from their storages. Of the bulk grain handling facilities, two of them have the ability to pack grain into containers, with only one able to move these containers onto rail.

Two rail freight sidings are located in Goondiwindi. The main rail siding being located at the Goondiwindi Train Station and the seconds siding located to the east of the town. Goondiwindi is not serviced by a general freight train nor a livestock train. It currently is serviced by a bulk grain train and has recently been serviced by a container train.

Located to the east of Goondiwindi is a cotton gin. This facility has a bulk storage shed for cottonseed.

A number of freight companies are based in or have depots at Goondiwindi, due to the convergence of the Leichardt, Cunningham, Barwon, Bruxner and Newell highways. These include bulk tippers, livestock transport, couriers, heavy carriers, refrigerated carriers and general freight transport. There are also a

large number of transports companies that service Goondiwindi due to its location on the crossroads of the inland arterial routes.

Yelarbon and Texas

Yelarbon has one bulk grain facility with rail access which also contains a registered private weighbridge. Yelarbon does have a general freight rail siding but is not serviceable. There is no rail service in these townships for rail.

One medium freight operator is located at Texas, they handle general freight. Although there are individual operators of bulk commodity tippers in the region, but these are also transient depending on where the work requires them to be located. There are freight companies that service Yelarbon and Texas but are not based in the area.

Inglewood

A rail siding is located in the township of Inglewood that can be utilised for general freight to be loaded onto rail. There is one medium freight operator at Inglewood that handles livestock cartage, bulk commodities cartage and general freight. While there are individual operators of bulk commodity tippers and livestock transport in the region, these are transient. There are freight companies that service Inglewood from outside the region.

Summary of horticulture and supply chains by region

The geographic location of the horticultural industry in the project area is at the eastern and western extremes. There is no noticeable commercial horticultural production outside of the St George and Inglewood areas. The other factor that has a major influence on the horticultural supply chains besides location is the number of participants, these are extremely low when compared to other horticultural areas in Queensland or other agricultural activities in the same region. The low number of participants limit the quantities that can be produced.

The current logistical infrastructure in the project area is limited. Rail has a number of constraints on its utilisation across the project area, including no general freight service being provided by rail. All freight along the supply chain, except for some grain movements, are done by road transport. Road freight needs consolidation in both directions to drive efficiencies and to reduce empty vehicle movements as much as possible.

Consolidation of freight. For both east and west bound freight movements consolidation is needed to be done to ensure that empty truck movements legs are minimised. Currently trucks running from St George to Brisbane, refrigerated vehicles, that are empty and then returning full. The same can be said for vehicles picking up horticultural production, they move to St George empty but return loaded. There needs to be a co-ordinated effort to ensure efficiencies can be gained through load maximisation on every leg of the freight cycle.

Increased volumes. The volumes of horticultural production are small compared to other horticultural production areas in Queensland such as the Lockyer Valley, Fassifern Valley and Bundaberg region. This is due to the number of participants in the production area. More participants need to enter the market and with new participants, new horticultural crops that utilise facilities at different times of the year to current usages. This will drive efficiencies through improved usage of facilities and efficient transport operations.

Co-operation / collaboration. Co-operation or collaboration between participants within a supply chain or industry not only brings a greater sense of community but also an awareness that increases efficiencies through working together to a common goal. When we look at the other horticultural areas around Australia, we see such groupings as the Batlow Fruit Co-operative. Individually they could not process, pack, market and supply the quantities of apples as market demands, but as a group they are able to obtain marketing expertise, growing expertise, gain efficiencies through volumes and be a consistent supplier to the market with a volume to meet demand.

4. Future horticultural crops

The Queensland Government, through the Department of Agriculture and Fisheries, has made available funding for developing new high-value horticultural value chains in the Murray-Darling Basin. Round one of funding identified potential horticultural crops that are to be developed in the project area, these are: garlic, blue berries, limes and mandarins.

The **garlic supply chain** has the same characteristics as the onion supply chain previously mentioned, both are members of the Allium family of plants and are closely related. The storage, handling and shipping of the garlic is similar to onions. (Lanzotti, 2006)

Some of the storage and handling characteristics of garlic are:

Optimum carrying temperature: -1°C to 0°C

Optimum storage humidity: <75%

Storage life: 6 to 9 months

Ethylene production: very low

Ethylene sensitivity: low

Information sourced from (www.cargohandbook.com, 2015)

Garlic has a planting window from March through to April and a harvest window of September through to October. This crop due to its requirement of drying after harvest will utilise resources that are used for onions, their harvest period is a month later than onions. If this crop is to be an additional to current onion

plantings then new storage infrastructure will be required to handle increased volumes.

The mandarins and limes have similar supply chains as **citrus supply chains** in Australia. Once harvested citrus is generally moved into the market place in either cardboard boxes or plastic or cardboard sided crates. The market will determine the direction of the supply chain. If going to the juicing the market, the citrus will move in plastic or cardboard crates (citrus crates) from the farm via road transport. There is no storage as the fruit is juiced as soon as possible to ensure maximum quality. If the fruit is going into the fresh retail market, it is packed on farm. It will be into either cardboard cartons or citrus nets which are then placed into citrus crates. The farm packed fruit is then moved via road transport either directly to supermarket chains or to a central market such as Rocklea in Brisbane. If the fruit is not packed on farm then it is moved loose in fruit crates via road transport to a packing house where it is packed into cardboard boxes or citrus nets. This fruit is now sent direct to contracted supermarket chains or a central market utilising road transport. Road transport is generally refrigerated to ensure maximum quality of the fruit. Packing on farm or at a packing house involves sorting, grading and packaging of the fruit. (Retail Works Pty Ltd, 2001)

Some of the storage and handling characteristics of mandarins and limes are:

Mandarins

Optimum carrying temperature: 4°C to 8°C

Optimum storage humidity: 90%

Storage life: 1 to 2 months

Ethylene production: very low

Ethylene sensitivity: moderate

Information sourced from (www.cargohandbook.com, 2015)

Limes

Optimum carrying temperature: 9°C to 10°C

Optimum storage humidity: 90%

Storage life: 1 to 2 months

Ethylene production: very low

Ethylene sensitivity: moderate

Information sourced from (www.cargohandbook.com, 2015)

Blueberry supply chain has critical cold chain requirements of optimum carrying and storage temperature of 0°C. Rapidly cooling blueberries to this temperature from picking is essential for suppressing the development of decay and helps to preserve the market qualities that consumers look for. Blueberries are chill sensitive and freezing cause's damage to the fruit, particularly in storage (www.cargohandbook.com, 2015). Blueberries are impact and pressure sensitive and require appropriate handling and packaging to prevent damage and loss of quality (German Insurance Association, 2015). Blueberries are packaged in individual plastic containers, either wrapped in polyethylene film or with a plastic flip lid. The polyethylene film helps prevent the berries from drying out during transport, storage and on the retail shelves. They are in weight range of 200 to 250 grams. These retail packages are packaged in cardboard boxes for ease of handling but also for added protection against impact and pressure damage. Cardboard boxes are combined on pallets where they are shrink wrapped to ensure all boxes are moved as a single freight unit. Road freight is used for the movement of the palletised berries into the marketplace. Due to the perishability of blueberries compared to other horticultural products, the majority go direct to the supermarket retailers to ensure maximum shelf life and maintained quality to meet consumer expectations.

Some of the storage and handling characteristics of blueberries are:

Optimum carrying temperature: 0°C

Optimum storage humidity: 90% to 95%

Storage life: 2 to 4 weeks

Ethylene production: low

Ethylene sensitivity: low

Information sourced from (www.cargohandbook.com, 2015)

The development of new horticultural crops in the St George area supplements the current horticultural industry that already exists. Crops such as mandarins and limes that are counter season to the current table grape industry will help utilise current infrastructure and horticultural supply chains but encourage development of new infrastructure. Any increase in plantings or horticultural produce will help improve production volumes and enable improvements in efficiencies.

The next section explores other agricultural supply chains in the project area and synergies that could benefit the horticultural supply chain.

5. Other agricultural supply chains

A number of agricultural supply chains operate across the project area, each with unique specifications and requirements. They operate as individual supply chains and in competition with each other at different times of the year for certain resources, particularly the cottonseed and grain supply chains, competing for the same road freight vehicles to move their respective commodities.

The majority of these facilities are specific to the different commodities, but facilities such as weighbridges, storage sheds and rail sidings are able to be used across different agricultural supply chains. The other agricultural supply chains are:

The **cotton lint supply chain** is an export orientated supply chain for the movement of the ginned product through to the cotton yarn and cloth manufacturers around the world. The current supply chain originates from the following cotton gins in the region:

- Queensland Cotton Gin, Thallon Road, St George.
- Queensland Cotton Gin, Beardmore, St George
- Cubbie Agriculture, Cubbie Station, St George
- Namoi Cotton Gin, Goondiwindi
- Carrington Cotton, Goondiwindi

The cotton gins have some storage for bales in the form of enclosed sheds that may be suitable for other products. The vehicles used are not suitable for perishable horticultural products.

The **cottonseed supply chain** originates at the same location as the cotton lint, as detailed above. There are no infrastructure used in the cottonseed supply chain that is suitable for perishable horticultural products.

The **grain supply chain** is made up of the summer and winter sores grains, oilseeds, birdseeds, pulses and other grains grown in the region. There has been an increase of the amount of on farm storage built that handles a portion of grain harvested but the majority of grain ends up in multi-vendor storage facilities such as GrainCorp and AWB GrainFlow. The grain storage and logistical infrastructure, except for weighbridges, is not suitable for perishable horticultural logistics.

The other major agricultural supply chain in the region is the **beef supply chain**. This supply chain consists of the movement of cattle from farm through to abattoir processing facilities by a number of different routes. Similar to the other agricultural supply chains, the beef supply chain from farm to abattoir / processor has no infrastructure that may assist the perishable horticultural supply chain.

Synergies and efficiencies could potentially be gained from looking into the different timings of harvest, adaption and modification of facilities that allows

more than one commodity to utilise the facilities, processes to preserve and enhance and certifications of facilities, two way freight loading, and consolidation of commodities and the location of facilities for maximum usage.

The next section looks at the value adding facilities for horticultural in the same geographic region.

6. Value adding facilities for horticulture

There are a number of value adding / processing facilities in the region for agricultural products and in neighbouring regions. The value adding facilities in the region are:

Chicken processing at Inglewood. This facility is designed to process the organic chickens bred at Inglewood Farms. The facilities for processing chickens are specialised and are not able to be modified for other horticultural crops.

Lavender oil production at Inglewood. The main process for lavender oil production is distilling the oil from the plant material. This is done on the lavender farm at Inglewood. The distilled lavender oil is bottled for retail sale at the Inglewood farm also.

Olive processing at Inglewood. There is one farm that processes olives at Inglewood. There are two main streams of processing and these are table olives and olive oil. There are a couple of smaller value added products such as tapenades, face creams and soaps produced. The value adding facilities are located on the olive farm, the close location allows for the reduction of oxidisation of the olives by minimising the time from picking to processing.

Pulse processing at Goondiwindi. The chickpea processing is part of a larger vertically integrated grain business. This business includes production at farm level right through to the wholesale of the finished product, and all stages between. The products that are produced from the chickpeas are:

- chickpea flour
- chickpea fibre
- puffed desi and kabuli chickpeas
- split faba beans
- chana dal
- mung dahl

The facilities that are used for the production of the above products are specific to grain processing and these include roasting facilities, milling facilities, splitting and polishing equipment and also grain cleaning facilities

Sorghum processing at Goondiwindi. The sorghum processing is part of the same vertical integrated company as with the chickpea processing above. The products that are produced from sorghum are:

- puffed sorghum
- red sorghum flour
- white sorghum flour.

Stockfeed manufacturing at Goondiwindi. The stockfeed manufacturing is part of the vertical integrated company that value-adds the chickpeas and sorghum. It has been developed to meet market requirements as well as to value add lower quality grain due to environmental conditions. The stockfeed manufacturing business also uses by-products from the chickpea and sorghum value adding.

Machine dressed, bagged grain and containerised at Goondiwindi. There is the ability at one facility to machine dress (clean), bag and pack into containers all types of grain. This allows grain from the grain catchment area around Goondiwindi to be processed to meet Australian and international markets.

The neighbouring regions that have value adding facilities for horticultural products are the Stanthorpe region, east of the project area and Toowoomba region, north east. Due to the location of the project region, there is a requirement of transport through the areas to the east and north east to reach the major domestic markets of Queensland and the points of export. Looking at value adding facilities along the physical route of the supply chain may help allow for value adding to take place with limited increase in freight costs but potential for entry into high value niche markets. Below is a list of the main value adding facilities in these regions:

Stanthorpe Region

- fruit and vegetable processing
- fruit and vegetable packing
- fruit juice processing
- grape processing for wine and juice
- freight consolidation and distribution
- cold room storage

Toowoomba Region

- organic flour production
- organic stockfeed manufacturing
- bakery goods manufacturing
- ice cream manufacturing
- nut processing
- fruit and vegetable processing
- meat processing

- freight consolidation and distribution

There are many other value adding industries across these two regions from small house enterprises to medium sized companies processing agricultural products into numerous value added products from jams and dried flowers through to cheeses, chocolates and vinegars.

Opportunities exist for usage of value adding facilities within and neighbouring the project area. Usage of these facilities is based on the capacity, utilisation of that capacity and constraints that they operate within. The majority of these value adding facilities are at Inglewood and Goondiwindi.

There are efficiencies to be gained through the use of existing value adding facilities, particularly where they are currently only utilised for a small portion of the year to coincide with a specific crop, crops outside this timing may be a very good fit into these operations.

7. Conclusion

Horticultural production is located around the St George area in the west and Inglewood in the east. Horticultural production includes table grapes, onions, lavender, olive and stone fruit production. The number of farming operations vary from a single producer for a product such as onions and olives up to 7-8 producers for table grapes. The lack of horticultural farms has impeded the development of multi-user horticultural logistic facilities within the project region. Inefficient use of road transport due to empty one-way trips and a lack of cool room storage space has contributed to inefficiencies. Infrastructure development is constrained due to the short operational time, 4-6 weeks of a year.

The value adding / processing facilities for horticultural products in the project area were designed to help vertically integrate individual farms production. These farms have set up facilities that meet their requirements. The farms need access to their own facilities at the optimum time for maximum quality of their produce. They were not built with toll manufacturing as part of the future plan.

The current horticultural supply chains, and logistical facilities and systems meet the current needs of the growers. There are a number of other agricultural supply chains operating in the region with logistical facilities located in the project area. Most of these facilities have been built to handle very specific agricultural commodities and there is little ability to add efficiencies to the horticultural industry. Facilities such as weighbridges and rail loading sidings are able to handle multiple commodities and these are able to be utilised by all agricultural commodities.

There are a number of key issues that need to be addressed for improving supply chain efficiency in the horticulture sector from St George to Inglewood. These are listed in the following table, with possible actions.

Key Issues	Findings / Issues	Actions
Supply chain infrastructure	• Limited redundant capacity if breakdown in the supply chain. • Limited public access infrastructure makes it costly for new entrants into the horticultural industry.	• Planning required for exceptional circumstances. May require collaboration amongst supply chain participants. • Audit of infrastructure to identify facilities that new entrants are able to access without capital expenditure.
Seasonality of production	• Underutilisation of infrastructure due to seasonality of production.	• Other crops to be investigated to fill time gaps in yearly production cycle.
Road transport efficiency	• Outbound journey to load produce is generally empty, cost is borne by loaded journey. • Refrigerated trailers are used as consolidation storage or as overflow storage for limited cool room space. For each trailer used as storage, another trailer is used as transport. • Road transport is for quickest movement to market place as opposed to efficient transport.	• Identify freight that can be moved on current empty leg of freight journey. May also look at rationalisation of carriers to enable better freight utilisation. • Examine options for refrigerated trailers to be used just for freight task and not storage. Utilisation of local cool room facilities to enable consolidation. • Analysing freight movements may identify more efficient movement of freight but may be at cost of time.
Low production volumes	• Limited production reduces supply chain efficiency. • Low volumes reduce attractiveness for infrastructure development.	• Increase production of current crops through introduction of new growers or

Key Issues	Findings / Issues	Actions
	• Higher volumes will drive transport efficiencies.	increase production areas of current growers.

Appendices

Appendix 1: Queensland Local Government map

[Local Government Toolbox]

Appendix 2: Balonne Shire Council and Goondiwindi Regional Council overview

Key Government Metrics	Balonne Shire Council	Goondiwindi Regional Council
Area (sq. km.)	31,144	19,294
Population 2011	4,847	11,437
Population 2026	6,176	12,340
Value of Agriculture (2014)	$221.0 million	$368.2 million
Total Revenue 2013/2014 ($,000)	54,119	40,790
Total Expenditure 2013/2014 ($,000)	39,886	42,995
Road and Street Expenditure 2013/2014 ($,000)	22,092	15,976
Total Assets 2013/2014 ($,000)	219,060	450,642
Total Liabilities 2013/2014 ($,000)	7,530	8,570

Balonne Annual Report 2013-14

Goondiwindi Regional Council Annual Report 2013-14

Appendix 3: Balonne Beacon, Massive blow to St George's grape industry

BALONNE BEACON

Massive blow to St George's grape industry

David Barwell | 23rd Jan 2015 5:28 PM

St George table grape farm Grape Exchange is one of two closures announced by Costa Group today.

Helen Spelitis

COSTA Group has announced the closure of two of its grape farms today including Grape Exchange in St George.

Costa corporate affairs manager Michael Toby said that the closure of the St George and Menindee farms was due to the "changing production landscape in the industry."

"It is regrettable that changed industry and market conditions have led to a decision to reduce our grape farming footprint," Mr Toby said in a statement.

"Costa recognises that the farms have been an important source of employment and economic activity in the St George and Menindee areas and this decision has not been taken lightly.

"Costa acknowledges the dedication and hard work of its staff and contractors at these farms and will do whatever we can to minimise the impact of this decision."

The announcement follows a challenging season for the St George farm that struggled with a late harvest as returns on domestic prices dropped below production costs.

Grape Exchange had been one of the largest table grape producers in the region, employing permanent local staff and hundreds of seasonal workers during peak harvesting months.

Balonne Shire Mayor Donna Stewart said the announcement was disappointing news for the region.

"It will have a very serious impact on the town and local businesses from supermarkets to fuel suppliers," Cr Stewart said.

Mr Toby said Costa will continue to supply the Australian market with table grapes through investing in their other company owned vineyards, as well as a third party network of local grower alliances.

Surat Basin NEWS

Balonne Beacon news

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