King Island Livestock Supply Chain Management

Department of Infrastructure Energy and Resources

14 December 2012

Final Report

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GHD was engaged by the Department of Infrastructure Energy and Resources to undertake a detailed review of the King Island Livestock Supply Chain to assist with workable decision making by stakeholders

The Department of Infrastructure, Energy and Resources engaged GHD to undertake a study that builds on preliminary actions identified as part of the King Island Livestock Industry Forum by providing further understanding and clarification for the transport supply chain.

The study was informed by stakeholder consultation and desktop research to identify constraints and inefficiencies that do, or could, exist within the King Island livestock supply chain. The outcome of this study is to inform interested supply chain parties, and assist them in making sustainable decisions about the future of their supply chain.

The study was set within the context of:

- The closure of the King Island meat processing facility was announced by JBS Australia in September 2012
- Prior to closure, the King Island facility had the capacity to process 180 head of cattle per day
- The closure resulted in the need for livestock to be transported to processing facilities located on the Tasmanian main land – with an expected volume of about 35,000 head per annum
- A King Island Livestock Industry Workshop was held on 21 September to discuss concerns raised regarding the significant increase in livestock movements off the island by ship

This report firstly discusses the approach taken for the study, followed by the definition of the supply chain, its transport flows, commercial arrangements, and the different transport processes for different product groups. The report then discusses the key risks identified in the supply chain, possible causes and mitigation activities to manage the key risks. The report concludes with a number of recommended actions for consideration and potential implementation by the supply chain parties to reduce the likelihood and impact of risks now and into the future.

The approach to the study included three phases: information gathering; defining supply chain risks and mitigations; and the development of actions to manage supply chain risk for the transport of King Island livestock

The approach to the study involved three phases, each requiring a number of tasks as shown in Figure 1.

Phase 1 – Information gathering

- A review of work done to date (notes and actions from the initial King Island Livestock Industry Workshop held on 21 September 2012) and appropriate regulations and guidelines
- Consultation through face-to-face interviews, or telephone meetings with a range of stakeholders in the King Island Livestock Supply Chain. This included a number of producer representatives, stock agents, road transport operators, vessel operators, the port operator, local King Island members of TFGA, local government representatives, and representatives of appropriate State Government departments

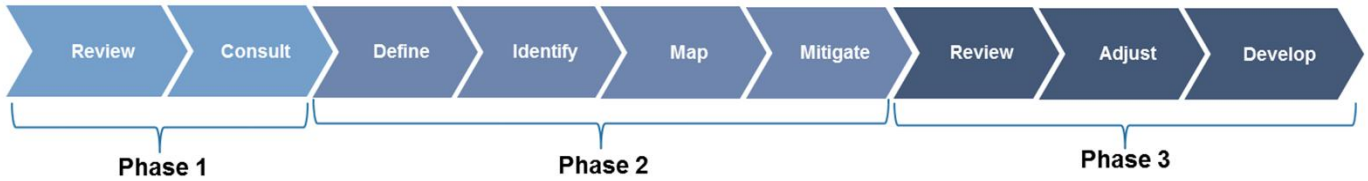
Phase 2 – Defining supply chain risks and mitigations

- Based on the information gathered, the supply chain was defined. This included the various port and transport options available for the movement of livestock between King Island, mainland Tasmania, and Victoria.
- From the information gathered during consultation, desktop research and supply chain experience, a range of risks were identified that have the potential to impact on supply chain performance
- The identified risks were then mapped to the supply chain, including the development of potential mitigation activities to eliminate or manage the chance and impact of each risk

Phase 3 – Development of actions

- The defined supply chain, identified risks, and potential mitigation activities were presented at a second King Island Livestock Industry Workshop on 5 November 2012, to confirm the identified risks, raise any additional risks, allocate an urgency/impact of the risks, and confirm the relevance and/or effectiveness of the initial mitigation activities
- Based on feedback received, and industry review of the work undertaken in Phase 2, the risks and mitigations were adjusted to align with the needs and concerns of the industry
- A series of actions were then developed that directly addressed the major risks to the supply chain

Figure 1 Study approach



The King Island Livestock Supply Chain is a non-integrated system that comprises a large number of commercial interests, each providing specific services or infrastructure

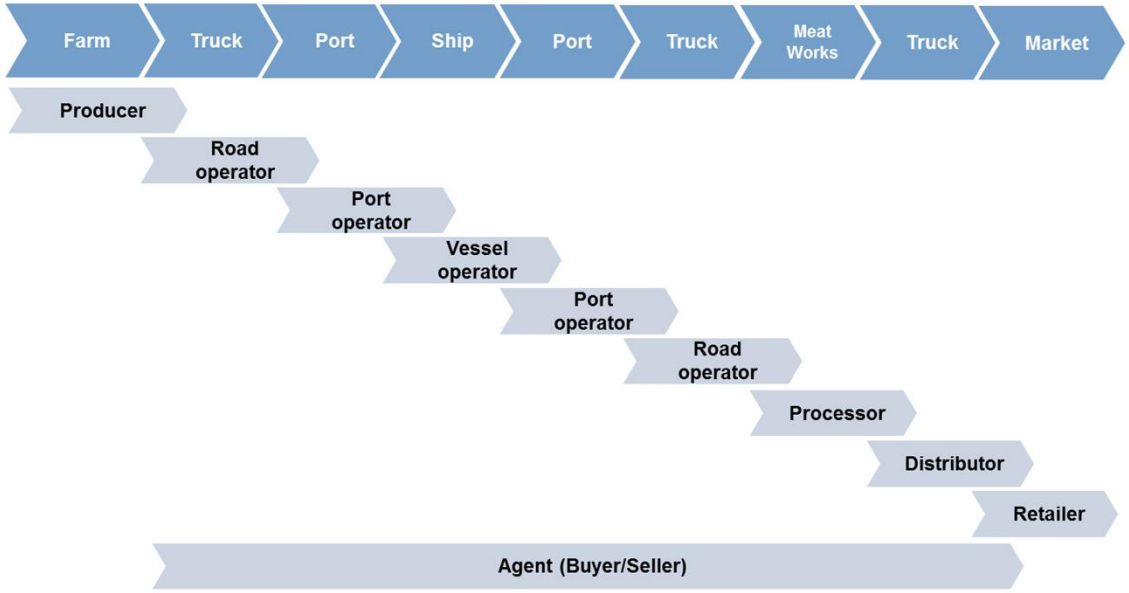
The King Island Livestock Supply Chain provides the movement of goods from farm (as livestock) to market (as meat product). Not all animals are marketed as meat product as some leave the island for the feedlot and other backgrounders.

The supply chain includes a number of nodes (locations) and links (transport) to achieve the movement of goods from origin to destination. A simplified representation of the King Island Livestock Meat Supply Chain, the parties involved, and the length of their commercial interest in the supply chain is presented in Figure 2.

As shown in Figure 2, there are a number of infrastructure and service providers that perform specific activities (functions) in the delivery of the supply chain. The specific functions provided by each of the service providers results in a large number of parties, typically with commercial interests that end with the transfer of cargo to the next party in the supply chain. As a result, the King Island Supply Chain is a non-integrated system that will be influenced by the commercial needs of each party directly involved.

The Agent*, as the ultimate owner of the livestock from farm to market, has the longest commercial interest in the supply chain, but has no direct role in the delivery of the supply chain. Actual ownership of the animals is transferred at slaughter, as payment is based on carcase characteristics

Figure 2 Commercial Interests in the Livestock Meat Supply Chain (simplified)



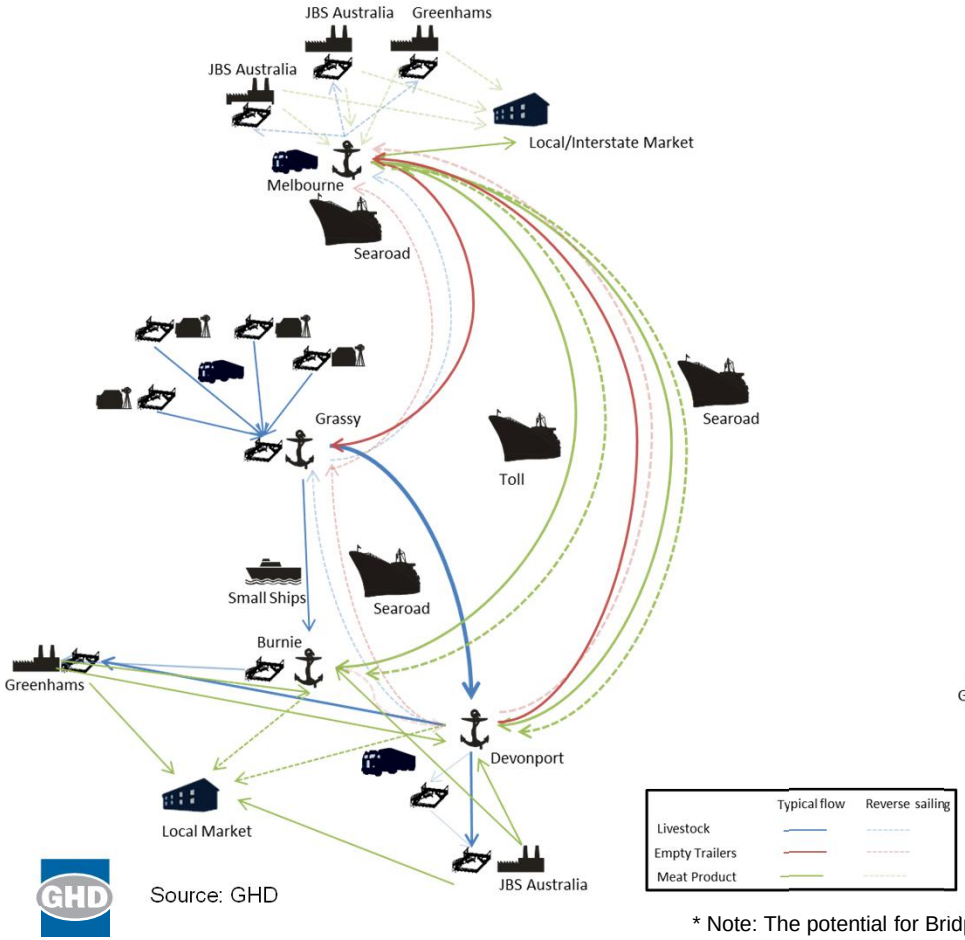
Source: GHD

* Note: Agents are presented as both the stock agent on King Island, and the organisation (Greenhams or JBS Australia) which they represent. Agents are not necessarily employees of either Greenhams or JBS Australia. The pastoral houses also have agents that act to sell stock on behalf of farmers.

Transport flow for the King Island Livestock Supply Chain is complex due to the large number of parties involved and destination options available

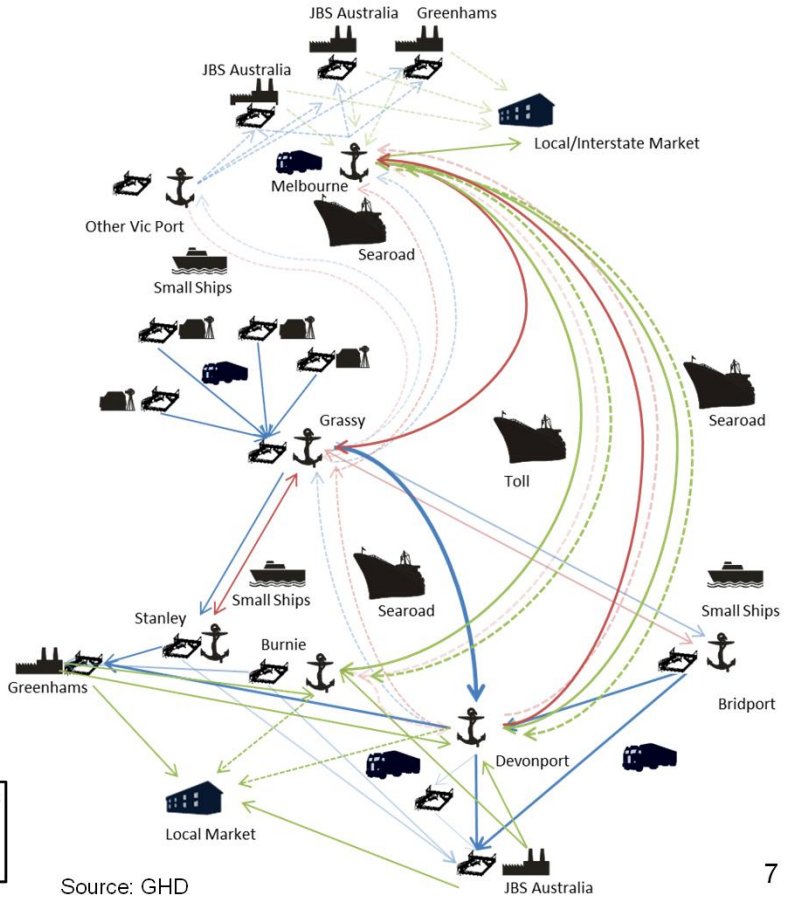
As shown in Figure 3, transport flow for the King Island Livestock Supply Chain is complex when the combination of multiple ports, three vessel operators, the repositioning of empty livestock trailers, and multiple processing facilities are considered. With the introduction of additional transport options resulting from a potential fourth vessel operator (which may include access to Bridport Port), and availability of Stanley Port, the transport flows are significantly more complex, as shown in Figure 4.

Figure 3 Farm to Market – Current Supply Chain (Major Transport Flows)



Source: GHD

Figure 4 Farm to Market – Potential Supply Chain (Major Transport Flows)



Source: GHD

* Note: The potential for Bridport port will be dependent on which small vessel operators are engaged, the commercial agreements reached, and optimisation of the sailing schedule for servicing the Furneaux Group of Islands

There is a difference in the supply chain commercial arrangements as a result of who is the 'freight forwarder', and the type of freight service that is offered

Commercial arrangements between parties are required for the supply chain to function. The arrangements determine accountabilities and set expectations within the supply chain, and influence the communication chain.

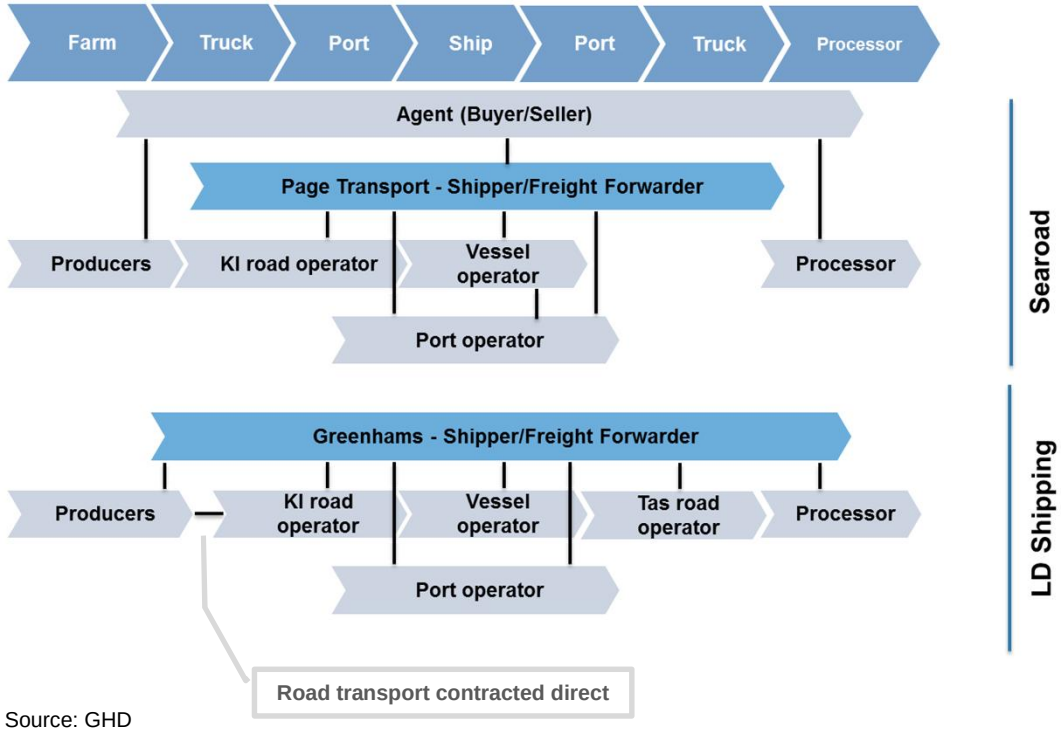
Within the supply chain commercial arrangements must exist between all parties. The arrangements can be implemented in a variety of ways (Figure 5).

As shown in Figure 5, different commercial arrangements exist between parties, driven largely by the organisation that takes the role of the "shipper", and the commercial arrangements they have with the different vessel operators.

As shown in Figure 5, the ultimate cargo owner (Agent) engages a Freight Forwarder (Page Transport), to provide a 'door-to-door' service for the transport of cattle from the farms to the processing facilities using SeaRoad. Under this arrangement, the freight forwarder contracts (and pays for) all services between the transport origin and destination*. As a result, the freight forwarder provides coordination of transport services in the supply chain.

Commercial arrangements between parties with the introduction of the LD Shipping service are different. With this service, Greenhams, in their arrangements with the vessel operator, act as the freight forwarder (and coordinator). Road transport arrangements include Greenhams engaging Page Transport for the Tasmanian mainland, and Producers directly engaging road operators on King Island.

Figure 5 Current commercial relationships in the livestock meat supply chain



Source: GHD

* Port charges are paid by both Pages Transport as the shipper (cargo charges), and SeaRoad (vessel charges)

Note: Agents are presented as both the stock agent on King Island, and the organisation (Greenhams or JBS Australia) which they represent.

The transport process for different product categories, and the types of vessels engaged, result in both general and specific risks

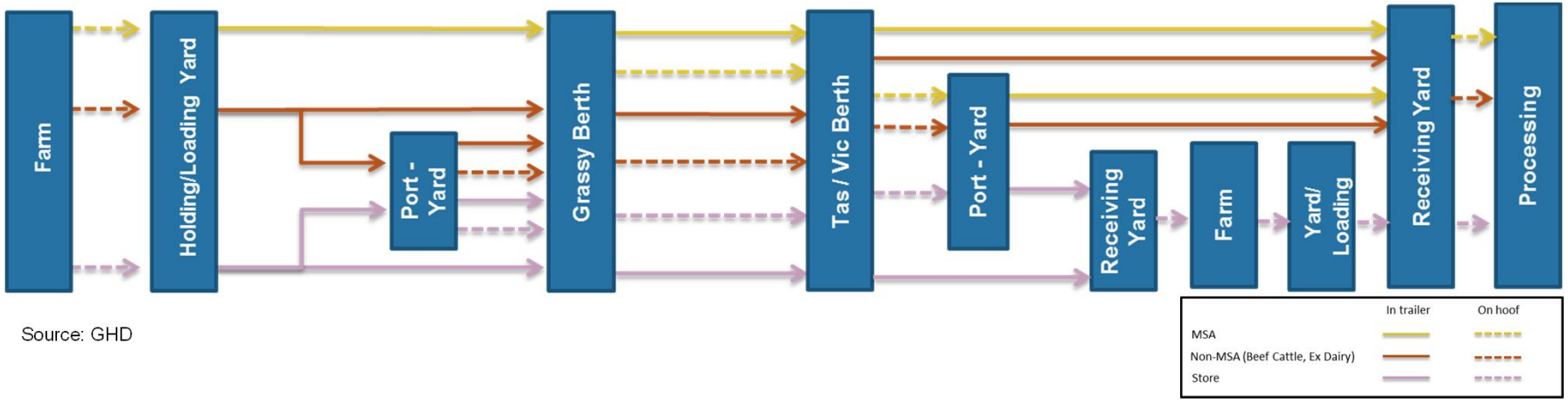
Within the King Island Livestock supply chain there are three generalised product categories:

- **Cattle that are seeking to meet MSA carcase grade specifications (premium product)**
- **Cattle that are not seeking MSA classification, such as ex dairy cattle**
- **Store cattle that are sent from the island to be finished on farms off King Island (Tasmanian mainland and Victoria), or relocated to King Island*.**

In general the transport process is similar across product categories (Figure 6); however, there are a number of constraints on the handling and transport of cattle seeking MSA carcase grade. These include:

- Cattle must be killed by the end of the day after farm departure(depart farm plus 1 day)
- Cattle that have not been run as a mob for at least a month prior to transport cannot be mixed for transport

Figure 6 Transport of livestock – Farm to processing by product



Source: GHD

Due to the different transport processes for each product category, and the requirements to qualify for MSA carcase grading, a range of general risks (cattle transport) and specific risks (MSA requirements, nature of dairy cattle) exist throughout the supply chain.

* The relocation of animals from mainland Tasmania and Victoria to King Island has not been included in Figure 6. While not immediately destined for meat processing facilities, the supply chain (and transport infrastructure) for store cattle is common between the farms on King Island and the port facilities in mainland Tasmania and Victoria.. Due to the use of common transport infrastructure, store cattle both influence, and are exposed to, the same risks as animals being transported for meat processing

Note: LD Shipping has vessel installed equipment that permits the direct transfer on hoof between the vessel and truck without the need to use port yards

Within the operating constraints of the supply chain, operational and commercial risks have the ability to impact the goal of achieving highest price for the lowest cost

The supply chain operates within a set of constraints that act as 'rules' for service providers. A breach in any of these has the potential to lead to an injury to people or animals, and/or a financial penalty. As a result, service providers have a range of standard operating procedures, codes of practice, or company policies that reflect applicable laws and legislation and protect their commercial interest.

For the King Island Livestock Supply Chain these include, but are not limited to:

- Animal Welfare Regulations 2008
- Australian Animal Welfare Standards and Guidelines – Land Transport of Livestock
- Marine Orders Part 43 pursuant to the (Commonwealth) Navigation Act
- Animal Welfare Guidelines- Trade and Transport of Calves, Including Bobby Calves
- Navigation Act 1912
- Animal Welfare Act 1993
- Animal Welfare Guidelines – Transport of Livestock Across Bass Strait
- Vehicle and Traffic (Vehicle Operations) Regulations 2001
- Vehicle and Traffic (Vehicle Standards) Regulations 2001
- Workplace Health and Safety Act 1995
- Pollution of Waters by Oil and Noxious Substances Act 1987
- Occupational Health and Safety (Maritime Industry) Act 1993

Within the operating constraints, the livestock supply chain goal is to ***achieve the highest price for the lowest cost.***

The price that is paid for an animal is critical for the profitability of the producer. While the price paid is influenced by market conditions, there are a range of factors that influence the achievable price of cattle – in particular the meat quality.

The price paid for transport services is also critical, as this can have an impact on the profitability of the farmer and the processer. However, this price may also impact on the profitability of the transport providers, as they need to recover the costs of providing infrastructure (fixed and mobile) capacity to move the livestock.

Risks in the supply chain have the potential to decrease the achievable market price for cattle by increasing stress or injury and bruising. These risks may also result in increased transport costs to the operator (which will either be internalised or passed on) through poor supply chain performance, and the need to oversupply capacity, as animals requiring welfare attention increase the time associated with managing them.

Risks exist at all points in the supply chain, particularly where there is a transfer between parties, as a result of both operational activities and difference in commercial focus. Significant issues arise in the supply chain where the problems in the supply chain are transferred from one party to another party, which may ultimately impact price (animal stress and injury) and costs (excess capacity).

Risks within the supply chain are typically the result of deficiencies in understanding and management of the whole supply chain

Risks in supply chains are typically a result of deficiencies in the following:

- **Capacity/Capability** – transport and farm infrastructure is either unsuitable (capability) or insufficient (capacity)
- **Operations** – the 'rules' in the supply chain do not allow for the safe or efficient use of infrastructure
- **Communication** - the right information is not provided to the appropriate parties so that they can appropriately plan or respond to change
- **Coordination** – plans and schedules for the supply chain do not provide the best outcome for all parties

Addressing the supply chain deficiencies will result in a reduction in both the delivery and commercial risks.

Based on a detailed review of specific risks in the supply chain (Appendix A), consultation with supply chain stakeholders, the desktop review, and experience across a range of product supply chains within Australia and Internationally, the following key risks for the King Island Livestock Supply Chain are:

- **The inability for the supply chain to readily respond to changes in demand**
- **Insufficient capacity to meet a surge in weekly or short term demand for the processors, road transport, or vessel operators**
- **Increased transport costs**
- **Lower meat grading results**
- **Loss of revenue**

While the above risks have been identified, this does not necessarily mean that they currently exist, or have a significant impact on the supply chain (through lower achievable meat prices, inability to reach market, or higher transport costs). However, these risks have the potential to significantly impact the supply chain if not managed appropriately.

Key risks may arise due to a wide range of potential causes within the supply chain

Key risks in the King Island Livestock Supply Chain can arise due to a range of causes. Based on the detailed review of specific risks in the supply chain (Appendix A), possible causes for each key risk are presented in Table 1.

Table 1: Potential causes for key supply chain risks

Key risk	Potential Cause
The inability for the supply chain to respond to changes in demand	• Lack of accurate forecasts (longer period) • Lack of appropriate communication between parties • Late notification of changes in schedules and plans
Insufficient capacity to meet a surge in weekly or short term demand for the processors, road transport, or vessel operators	• Late arrival of animals at processing impacting on throughput at the plant • Allocation of processing capacity does not meet King Island supply • Insufficient empty trailers on King Island, or repositioned to meet each shipment or demand • Insufficient road transport 'buffer capacity' to accommodate operational losses (breakdowns, slow loading, downer animals) • Insufficient trailer/cattle space allocation on vessels to meet demand • Vessel operational losses due to breakdowns, weather and public holidays
Increased transport costs	• Oversupply of road transport capacity (empty trailers and prime movers) in order to meet both weekly demand and to cover for events such as breakdowns and downer animals • Poor utilisation of road transport capacity (animals per pen) • Oversupply of vessel capacity due misalignment or last minute changes in weekly or short term demand • Poor utilisation of vessel capacity due to presentation of animals that are unfit for travel, and slow loading/unloading performance requiring delayed sailings or forgoing cargo
Lower meat grading results	• Breaches in compliance requirements for MSA grading of cattle • The handling and transport of cattle leads to increased stress , bruising and injury of animals
Loss of revenue	• Inappropriate preparation of animals resulting in them being declared unfit for travel • The handling and transport of cattle leads to animals being declared unfit for travel

A broad range of mitigation activities are required to manage the risks across the whole supply chain

There are a range of ways that supply chain risks can be mitigated. A range of specific mitigation activities has been identified to eliminate or reduce the chance and impact of each of the key risks (Table 2), identified during this study.

Table 2: Mitigation activities for key supply chain risks

Key risks	Mitigation activities
The inability for the supply chain to respond to changes in demand	• Preparation and update of season forecasts • Define communication protocols for all parties in the supply chain, including timing expectations
Insufficient capacity to meet a surge in weekly or short term demand for the processors, road transport, or vessel operators	• Alignment of vessel unloading time with processing time (unloading vessels earlier or opening processing facilities later) • Balance forward processing demand between facilities using forecasts • Adjust King Island road fleet (trailers and prime movers) to meet next week's demand • Unload inbound empty trailers as early as possible • Provide sufficient 'buffer capacity' in the road fleet to accommodate operational losses • All transport equipment is reliable and 'fit for purpose' • Provide sufficient vessel capacity to manage peaks and surges, and clear backlogs in demand (through arrangements with other vessel operators and reverse sailings for Monday Public Holidays) • Program the transport of non-MSA cattle to Grassy Port yards on a Saturday for high demand SeaRoad sailings • Develop guidelines for minimum loading and unloading performance standards
Increased transport costs	• Cattle loading and unloading facilities must meet minimum performance standards • Align trailers and pen sizes with farm demand to make optimal use of equipment and minimise animal damage • Commercial arrangements with additional vessel operators must be flexible through the ability to increase or decrease the number of sailings and allow the vessel operator to seek other cargo (revenue) • Early identification of animals that are unfit for travel prior to penning animals at the farm, and adherence to feed and water curfews to minimise effluent
Lower meat grading results	• Compliance with requirements for MSA grading – MSA cattle only • Alignment of trailer pen size with farm lot size (or co-mingle animals)
Loss of revenue	• Guidelines for the preparation of cattle for travel, including the drying and conditioning of ex-dairy cattle for transport* • Introduction of soft surfaces (pens and trailers) ,where feasible, to minimise lameness during transport

* Lactating or third trimester pregnant cows cannot be transported.

Based on the assessment of the key risks, potential causes, and mitigation activities, a number of priority actions have been recommended for the King Island Livestock Supply Chain

In order to implement identified mitigation activities to manage risks within the King Island Livestock Supply Chain, a number of priority actions have been identified. The developed actions are presented in Table 3.

Table 3: Recommended priority actions for the King Island Livestock Supply Chain

Action	Priority	To be actioned by
• Producers and transport operators to review success of feed and water curfew procedures	High	Producers/Vessel Operators
• Agents to distribute sales volume, load location, and intended shipping date reports each week to road transport and vessel operators for short term planning.	High	Agents
• Freight Forwarders (Shippers) as the central coordinators, to define communication responsibilities and timing expectations through developing communication protocols - similar to that presented in Appendix B	High	All parties (Shippers lead)
• Road transport operators to develop and distribute schedules that optimise trailer pen configurations with farm lot size and include sufficient spare capacity (in their schedule) to adjust schedule as a result of unplanned events such as breakdowns and downer animals	High	Road operators
• Vessel operators to provide optimised load plans to road transport operators for efficient scheduling of the road fleet, and enable unloading of cattle trailers as early as possible	High	Vessel operators
• Transport operators to implement an asset compliance register (based on certification requirements) to ensure all vehicles, trailers and vessels are well maintained and 'fit for purpose' to minimise delays, rejection and OHS risks	High	Road/Vessel Operators
• Processors, freight forwarders, vessel operators and any other relevant stakeholders to develop an agreement on departure time and opening hours to minimise lost processing capacity at abattoirs	High	Processors/Vessel Operators
• Producers and Freight Forwarders (Shippers) to develop operating procedures for the transport of non-MSA cattle to the Grassy pens on the day before shipping during periods of high demand	High	Producers/Shippers
• Port owner to develop fit for purpose livestock facilities at Grassy Port.	High	Tasports
• Freight forwarders and Tasmanian Government to develop an agreement on quarantine procedures' on Tasmanian mainland that impose minimum disruption to movement of livestock".	High	Freight Forwarders/Tas Government

Based on the assessment of the key risks, potential causes, and mitigation activities, a number of other actions have been recommended for the King Island Livestock Supply Chain

In order to implement identified mitigation activities to manage risks within the King Island Livestock Supply Chain, a number of key actions have been identified. The developed actions are presented in Table 4

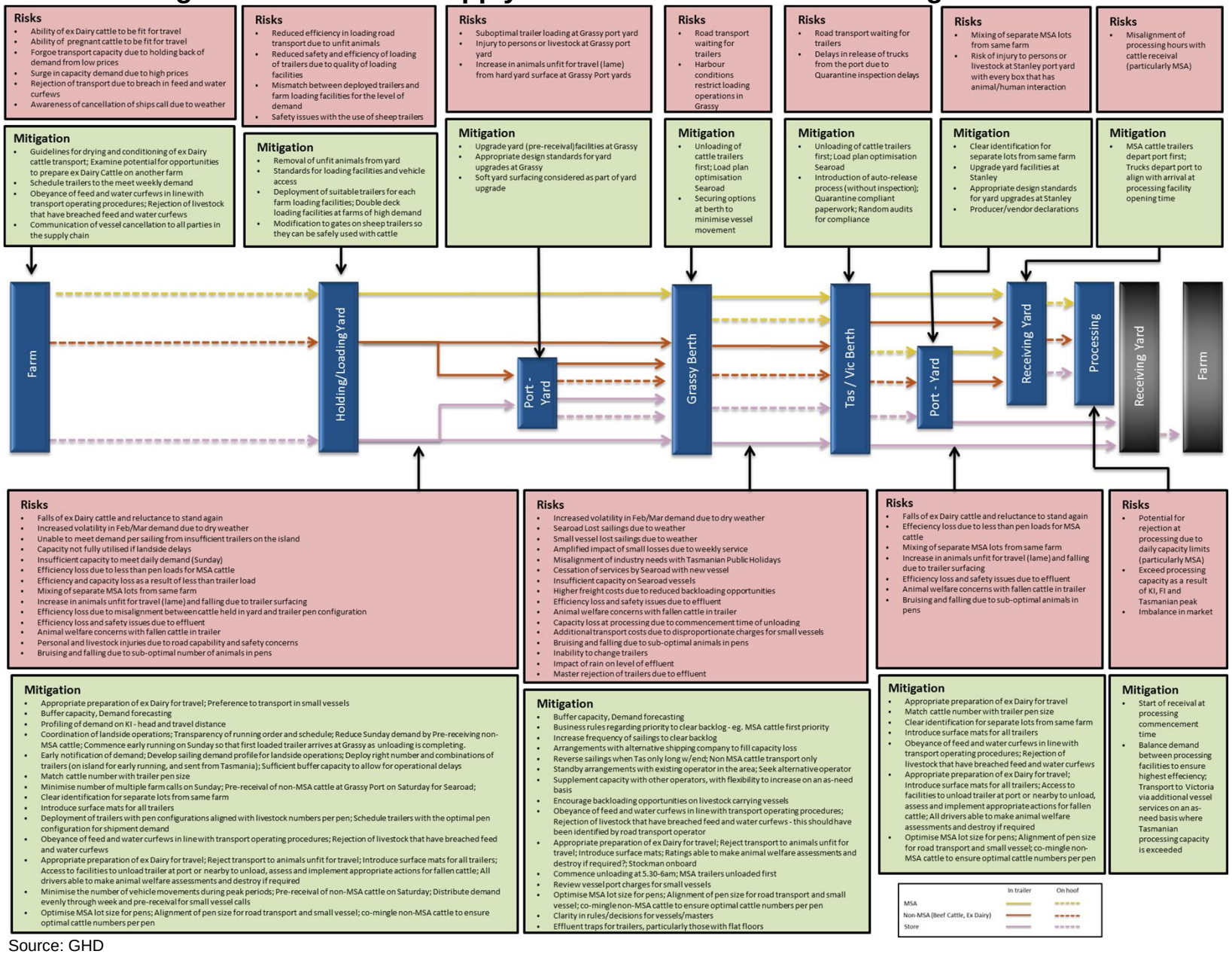
Table 4: Recommended actions for the King Island Livestock Supply Chain

Action	Priority	To be actioned by
• Vessel operators to provide a written policy to customers on reverse sailing (for Monday long weekends) and the provision of extra capacity to clear backlogs in demand (from delayed demand and weather cancellations)	Medium	Vessel Operators
• Agents in coordination with road transport operators to develop guidelines for transport priorities (MSA Cattle) in order to clear backlogs	Medium	Agents/Road Operators
• Agents, in co-operation with producers, prepare and distribute (to all parties) seasonal forecasts	Medium	Agents/Producers
• Producers to develop guidelines for the preparation of cattle for Bass Strait travel. This should include drying and conditioning of ex-dairy cattle (including the use of other farms), pre-loading, lot identification, quarantine documentation and transport requirements for MSA cattle as a minimum	Medium	Producers
• Agents, in co-operation with producers to periodically review forecasts and distribute updates	Medium	Agents/Producers
• Processors to develop a demand balancing agreement for processing facilities in Tasmania to maximise processing capacity within the state.	Medium	Processors
• Processors to collaborate during peak periods which may require discussions with ACCC – Refer Appendix C	Medium	Processors
• Freight Forwarders (Shippers) to develop guidelines for the coordination of road fleet and vessel requirements with transport operators	Medium	Shippers/Road/Vessel Operators
• Producers and road transport operators to develop guidelines (and implement) for minimum performance requirements for farm based infrastructure. At a minimum, the guidelines should include requirements for maintenance, upgrading and installation of suitable loading facilities for the level of demand generated by a farm	Medium	Producers/Road Operators
• Road transport operators in conjunction with Tasports and vessel operators to develop guidelines (and implement) for minimum condition and performance requirements of land based infrastructure (pens. loading facilities and vessel securing winches).	Medium	Road/Vessel Operators/Tasports
• Processors (or Shippers) to enter into flexible arrangements with additional vessel operators to secure ad-hoc capacity for periods of peak demand, a surge in demand, or to clear backlogs	Low	Processors and/or Shippers
• Transport operators and Tasports to introduce soft surfaces (pens and trailers) ,where feasible, to minimise lameness during transport	Low	Road/Vessel Operators/Tasports

Appendices

Appendix A

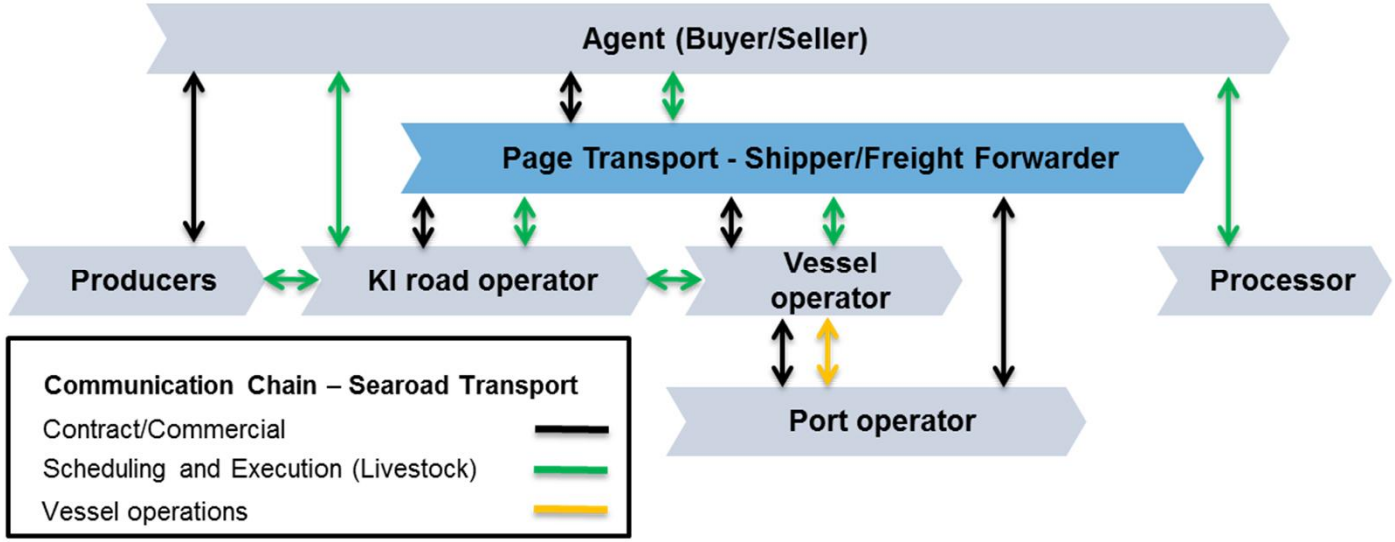
Identified King Island Livestock Supply Chain Risks and Potential Mitigation



Source: GHD

Appendix B

Recommended communication chains – livestock meat supply chain



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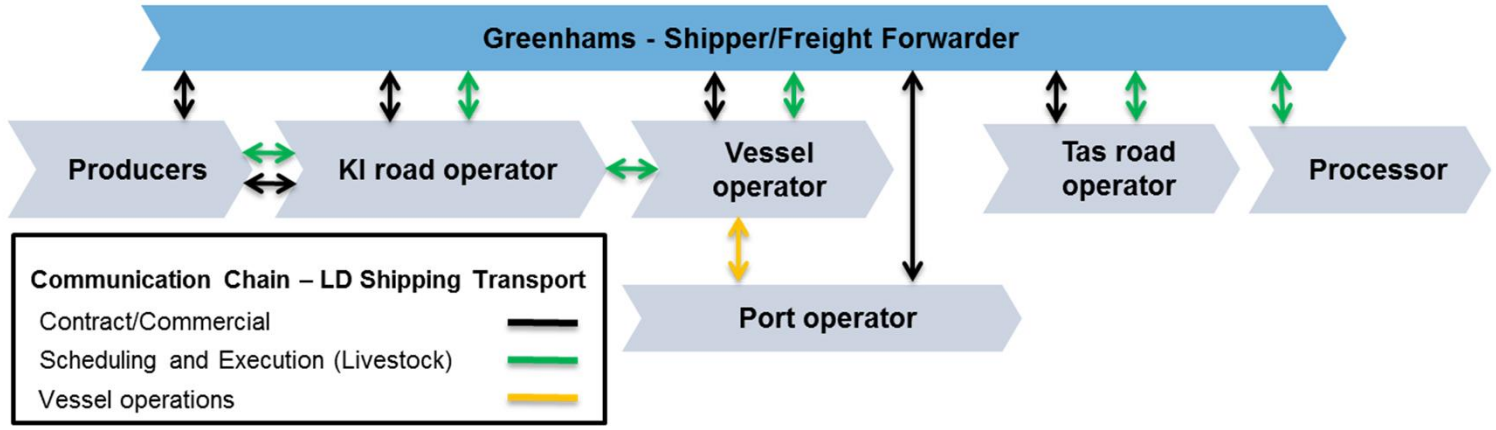
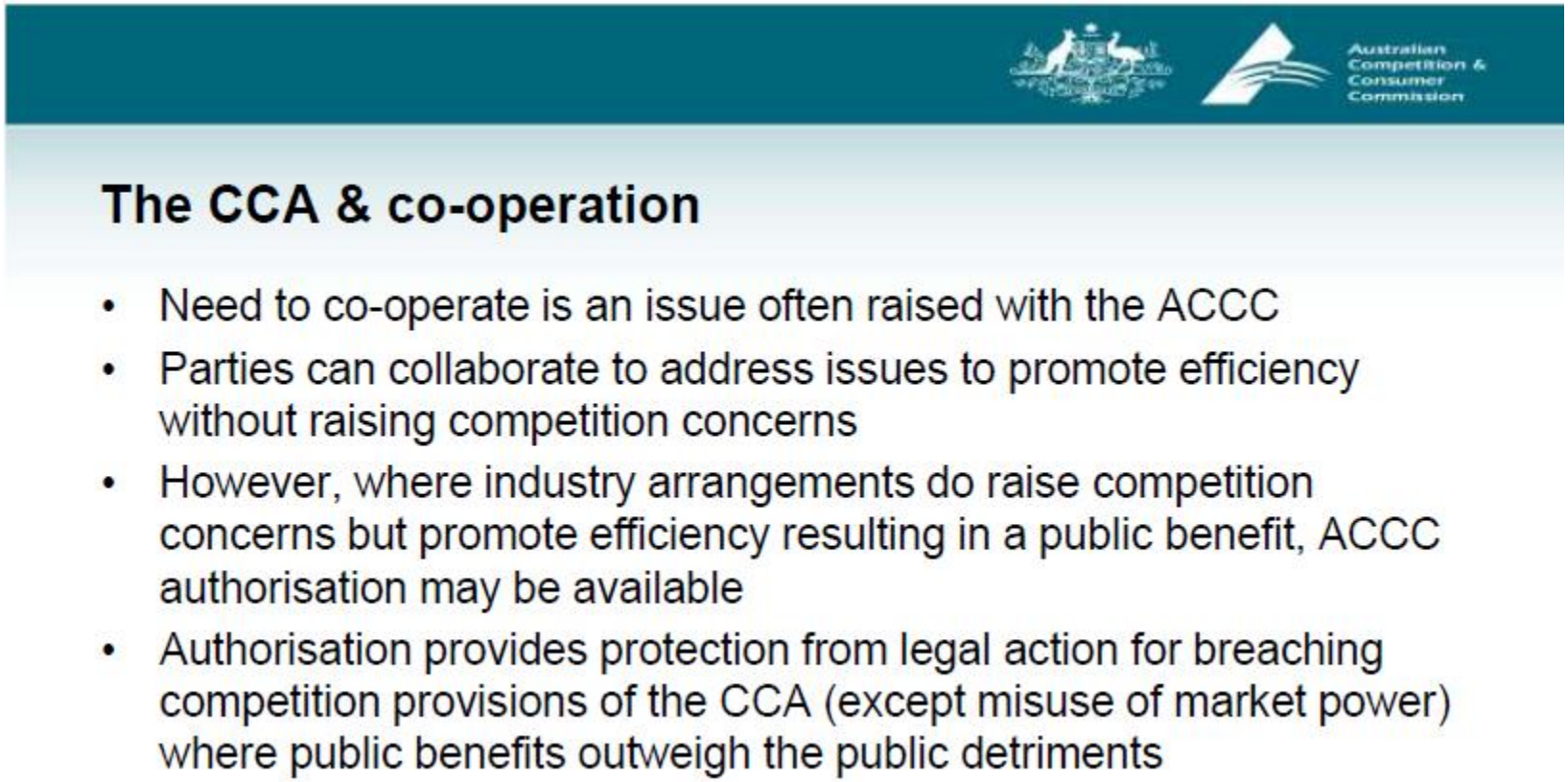


Source: GHD

* Note: Agents are presented as both the stock agent on King Island, and the organisation (Greenhams or JBS Australia) which they represent

Appendix C

ACCC Position on Co-operation



Source: Dimasi, J. 2012, Ports – What Measure of Regulation, Presentation at the 43rd Ports Australia Biennial Conference, Adelaide, 25 October 2012

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