final report

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QMPC

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Risk assessment, wastewater treatment information and retail display photographs for QCMPA member processors

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Executive summary

The following report was conducted in order assess the current level of risk taken by employees at processing plants that are members of the QCMPA. This was achieved by observing operations and following the guidelines set out in Queensland Government Workplace Health and Safety Regulation 2008.

Contained in the results of this report are detailed tables depicting a risk rating for all the hazards involved in a given task along a single processing line. The tasks are then listed according to the overall risk rating given to the task. Tasks with high risk ratings are then evaluated to describe where the risk occurs.

Information was also gathered in order to discover approximate COD levels for the waste water produced on site. This data is then used to give a representation of the volume of waste water treatment required if the waste were to be treated in a series of anaerobic and aerobic ponds. Calculations using data gathered at each site are included in the appendices.

A series of
The major conclusions of this project include:

- Most hazards observed are related to manual handling tasks or cuts or puncture injuries.
- Some risk reduction could be simply achieved through the implementation of basic personal protective equipment.
- Waste water treatment methods across the sites are varied and are poorly managed.
- Currently there is little knowledge of the effectiveness or implications of waste water treatment practices

From these conclusions the following recommendations were drawn:

- Members may require external assistance to deal with issues that may become major problems in the future. Particularly with issues surrounding legal requirements, employee safety and environmental management.
- Further work needs to be put in to demonstrate the benefits of active membership in the QCMPA.
- Increased collaboration between members to uncover solutions to common problems that are already in place at other sites within the association.
- Any reduction in the amount of tasks involving manual handling would improve employee safety.
- Emergency procedures need to be put in place and each employee must be aware of their requirements and responsibilities in an emergency situation.
- Each site should have at least one member of staff competent in the application of first aid and should not begin production when there is no member of staff able to apply first aid.
- Further investigation is required to discover the environmental impact of current waste management practices.

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1 Introduction

This report was conducted as a joint venture between the Queensland Country Meat Processors Association, Meat and Livestock Australia, and the Australian Meat Industry Council. It covers issues pertaining to workplace health and safety, environmental standards, and product quality.

1.1 The Australian Red Meat Industry

Red meat is the meat recovered during the processing of cattle, sheep and goats. The Australian red meat industry covers the production, processing and selling of red meat for consumption, and is a major player in both domestic and international markets. In 2007, production totals included 25.4 million head of cattle and 85.7 million head of sheep and lambs. This resulted in the production of 2.2 million tonnes cwt of beef and 693 thousand tonnes cwt of sheep and lamb [4]. Forecasts predict production to increase to 2.43 million tonnes cwt of beef and 770 thousand tonnes cwt of sheep and lamb by 2013 [3]. Approximately 1.4 million tonnes cwt of the beef produced is exported, making Australia the second highest exporter of beef in the world, following Brazil [4].

1.2 The Queensland Country Meat Processors Association

The Queensland Country Meat Processors Association (QCMPA) is a small, producer run association, with members having operations in meat processing and, or, the meat retailing business. The association was formed in 1982, with the purpose of 'advancing the interest of our rural-based members' [1]. Currently, the QCMPA consists of 35 members from all over the state of Queensland. Of these members, 11 agreed to take part in this activity, coordinated by the QCMPA, the Australian Meat Industry Council (AMIC), and Meat and Livestock Australia (MLA). These members are:

- Barcoo Butchery, Blackall
- Carey Brothers Meats, Warwick
- Gleeson Quality Meats Pty Ltd, Chinchilla
- Jimbour Butchery, Jimbour
- Kemp Meats Pty Ltd, Sarina
- Kuttabul Butchery, Kuttabul
- Maclagan Meats, Maclagan
- Millmerran Meat Holdings P/L, Millmerran
- Monto Meats, Monto
- Mundubbera Butchering Co., Mundubbera
- Schulte's Meat Tavern, Plainland

1.3 Project Brief

The aim of this report is to share information and ideas between small, country based butcheries that are members of the QCMPA. This report focuses mainly on workplace health and safety, with an occupational health and safety risk analysis being conducted at all of the abattoirs listed above. This report also includes information on effluent treatment and the presentation of value added products. Information collected during this project and included in this report will also be used during a QCMPA workshop in 2009. A copy of the letter sent to QCMPA members, describing the outline of the project is included in Appendix I.

1.3.1 Occupational Health and Safety Risk Analysis

The occupational health and safety risk analysis will be completed following guidelines set out in the Workplace Health and Safety Queensland Risk Management Code of Practice, and methods explained in the three corresponding supplements titled: Hazard identification; Risk assessment; and Control, implement monitor and review.

It is important to define the key terms in order to better describe the context in which the risk analysis is conducted. A hazard is defined as 'something with the potential to cause harm' [6] Risk is defined as the 'likelihood that a harmful consequence (death, injury or illness) might occur when exposed to the hazard' [7].

The risk analysis involves identifying the hazards inherent in the processing methods and workplace design at each abattoir. Each hazard is then analysed to assess the associated risk(s) that the hazard brings to the workplace. The hazards are then prioritised depending on the likelihood and consequences of the hazard occurring. Finally, possible control measures are then suggested in order to minimise the risk.

This report aims to highlight high priority risks that are present in the majority of the sites visited with a view to improve occupational health and safety practices throughout the membership base of the QPMCA. Photographs of each hazard are taken at each site to be kept as examples of problem areas, or where good control measures are in place, as examples of possible solutions. The photographs will also be used in a future QCMPA workshop to discuss practical solutions to the observed risks.

1.3.2 Effluent Treatment

The effluent treatment section of this project looks into the current methods used to treat waste products from the processing plant. The aim is to discover whether current methods meet environmental requirements, and if not, share ideas about how quality requirements can be successfully met. The information collected will be used for comparison between sites and will be discussed during a future QCMPA workshop.

1.3.3 Value Added Product Presentation

The purpose of the value added product section is to share idea about the presentation of products in retail section of the business. This involves taking several photos at the retail outlets including: the shop; the counter; the meat display; and the value added products. These photographs will be used during a future QCMPA workshop to gather ideas and recommendations.

2 Methodology

A risk assessment evaluates the risks an employee faces whilst completing a task in a normal working day. Once these risks are identified, they are rated or prioritized according to the likelihood of the hazard occurring, and the severity of the consequences of the hazard. The ratings are determined by considering the risk involved in the task if it were to be done by an employee without experience or training for the given task. In meat processing plants, there are many inherent risks that are often accepted by employees as harmless or unimportant because, 'this is the way it has always been done.' By completing this risk assessment it is hoped that employee safety is improved through sharing ideas that reduce the risk of injury, and by highlighting areas that may have been overlooked in the past. During the site visits, general observations were documented to provide an overview of current practices and to back up information in direct relation to the risk assessment.

2.1 Risk Assessment

The first objective is to break down the processing plant into major areas where employees perform tasks. This is often similar for many plants, with specific areas such as the kill floor or the load out area being present in all plants. By identifying the major plant areas, the risk assessment is broken down into smaller sections that are much easier to arrange, and results in an assessment that is more readily reproducible.

Once the areas of the plant are defined, the tasks being performed within these areas are observed. These tasks are then listed and categorised into species where applicable. Each identified task is then considered, and the hazards associated with each task are listed.

All of the observed hazards are then assessed to determine the potential risk faced by the employees. The risk is then given a rating following guidelines set in the Queensland Government, Department of Employment and Industrial Relations, Risk Management Code of Practice 2007. A copy of the chart and an explanation of the risk ratings can be found in section 2.2.

Once the ratings are determined, a list of current control measures in place is made. A revised risk rating is then determined due to the implementation of the existing control measures. Although not completed in this report, the next step in the risk assessment process is to propose, plan and implement control measures to reduce risk in high risk tasks.

2.2 Risk Priority Chart

As work was completed in Queensland for the QCMPA, the risk priority chart was taken from advice given in the Queensland Government, Department of Employment and Industrial Relations, Risk Management Code of Practice 2007. The following chart can be found in Supplement 2 of the Risk Management Code of Practice, entitled 'Risk Management.

Risk priority chart

LIKELIHOOD **How likely is it to happen?**	**CONSEQUENCES** **How severely it hurts someone (if it happens)?**				
	Insignificant (no injuries)	Minor (first aid treatment only; spillage contained at site)	Moderate (medical treatment; spillage contained with outside help)	Major (extensive injuries; loss of production)	Catastrophic (death; toxic release of chemicals)
Almost certain – expected in most circumstances	**3 H**	**3 H**	**4 A**	**4 A**	**4 A**
Likely – will probably occur in most circumstances	**2 M**	**3 H**	**3 H**	**4 A**	**4 A**
Possible – might occur at some time	**1 L**	**2 M**	**3 H**	**4 A**	**4 A**
Unlikely – could occur at some time	**1 L**	**1 L**	**2 M**	**3 H**	**4 A**
Rare – may occur, only in exceptional circumstances	**1 L**	**1 L**	**2 M**	**3 H**	**3 H**

Source: Workplace Health and Safety Queensland, Risk Management Code of Practice 2007, Supplement 2, Risk Assessment

Risk score and statement

Score and statement	**Action**
4 A: Acute	ACT NOW – Urgent – do something about the risks immediately. Requires immediate attention.
3 H: High	Highest management decision is required urgently
2 M: Moderate	Follow management instructions
1 L: Low	Okay for now. Record and review if any equipment/ people/ materials/ work processes or procedures change

Source: Workplace Health and Safety Queensland, Risk Management Code of Practice 2007, Supplement 2, Risk Assessment

2.3 Common Hazards

The following list includes common hazards that considered for all tasks when performing the risk assessment.

Bending, twisting or reaching
Hazards relating to bending, twisting and reaching are characterised by the employee moving their body in one of these three actions in order to complete a given task. Greater risk ratings for this hazard are given to tasks that require an extra extension of these actions. The degree of force exerted and the time spent in these positions also increase the associated risk.

Burns or scalds
Burns or scald are characterised by the presence of either a hot surface or fluid. Higher risk ratings are given when there is a greater likelihood for an employee to come into contact with this surface or fluid.

Carrying or holding
Hazards that fall under this category involve an employee carrying or holding an object. The risk associated with this hazard becomes greater as the weight being carried or held is increased, the distance an object is carried is increased or the length of time an object is held for increases.

Chemical exposure
This hazard it characterised by an employee coming into contact with a potentially dangerous chemical. Higher risk ratings are given for this hazard as the toxicity of the chemical increases, the time frame of exposure increases or the frequency of exposure increases.

Cuts or punctures
A task involving a cuts or puncture hazard is classified by the presence of a tool or piece of machinery that has the ability to cause a cut or a puncture. Risk ratings for this hazard are increased by how likely a cut or puncture is likely to occur or by how fast the cutting action is.

Electrical shock
A hazard pertaining to electrical shock is classified by the presence of electricity. A higher risk rating for this task would indicate that the employee has a greater chance of coming in contact with electricity or the current or voltage passing through the source is higher.

Extreme temperature exposure
This hazard is classified by a task in which an employee works in a confined space in high or low temperatures. Risk ratings for this task are increased as the temperature gets more extreme, or as the length of exposure increases.

Falling object
A hazard relating to a falling object involves the employee coming into contact with or manoeuvring and being stuck by an object above head height. This hazard would receive a higher risk rating as the weight or the height becomes greater, or as the likelihood increases.

Lifting or lowering
A lifting or lowering hazard requires an employee to manually alter the vertical position of an object. A higher risk rating for this hazard occurs when the weight of the object increases or the distance the object is shifted increases.

Noise
A task including a noisy hazard is likely to include operating machinery or loud animals. Higher ratings for this hazard are given as the noise level or the time frame of exposure increases.

Pushing, pulling or striking
This hazard can be found in task that require the employee to manually transfer and object horizontally, or require an employee to cause an impact. Risk ratings for this hazard are higher when the distance, frequency or required force increase.

Slipping, tripping or falling
A hazard related to slipping, tripping or falling involves the chance of an employee losing grip or balance. Higher ratings for this hazard are given when the likelihood of occurrence increases or when there is a chance of another hazard occurring as a result.

Stressed animal
A task that involves a stressed animal hazard contains the possibility of a live animal causing injury. Higher ratings for this hazard are given when the exposure to the hazard increases.

Other
Hazards that fall under the other classification are not easily categorised into other hazards in this list. These hazards are often related to plant design or irregular procedures.

2.4 Photographs

During the observation stage of the risk assessment, photographs are taken of employees completing tasks. A focus is set to capturing photographs of particularly risky tasks while also photographing innovative control measures that have been put in place that could be transferrable to other plants.

Photographs of the retail side of the business are taken but are unrelated to the risk management side of the project. Photographs of all of display counter(s) along with signage and the shop frontage are taken in order to record the presentation of the products and the business.

2.5 Questionnaire

A questionnaire, as included in appendix II, is conducted to gather information about the processing plant. The questionnaire was conducted with the business owner or representative during the site visit. The questions included in the questionnaire were targeted to find information relating to two distinctive aspects of the project.

2.5.1 Current OH&S Practices

The majority of the questions are focused on factors that may affect the way that risks are considered and rated. Questions pertaining to distances from emergency services and the availability of first aid are examples of the questions asked in this section of the questionnaire.

2.5.2 Waste Management

Questions in this section of the questionnaire centre on how waste generated on site is treated. It also covers water usage and how many animals are processed each week, on average, to get an indication about how much waste water is produced.

2.6 Explanation of Results

The results obtained in this study are presented in six major sections. These sections are: description; processing overview; risk assessment; general notes; effluent treatment; and retail display. These sections were then filled using information gathered at each site.

The description section covers a brief background of the business including: the location; the owners; and the business areas that they operate. The processing overview section then details the processes that occur at each site, listing information such as the number of animals processed each week and where water used on site is sourced from.

The risk assessment section then presents the main findings of the project. The risk assessment is set up in tables that list the tasks in order and according to a number assigned to each task along the top. The task corresponding to each number can be found in appendix III. Down the side of the table, common hazards are listed. Then each task was assessed to whether these common hazards appear within the task. If the hazardous does appear, the likelihood and consequences of that hazard occurring in that task was assessed and given a rating according to table 2.2.0.0.1 – Risk rating chart. At the bottom of the table, an overall risk rating was each task, with the overall rating corresponding to the highest risk rating given for the task. Additionally to this information, some tasks were marked using the key shown on the following page.

When a task was not observed, it was marked with an N in the overall risk rating row. Those marked in blue indicated that the rating given to the hazard was higher due to an irregularity in procedures. A task highlighted in orange indicates that the task was being performed in an innovative manner that differed to almost all other ways that this task was at other sites. Ratings highlighted with grey indicated that the rating given was lower than it could be, due to current practices or procedures in place. If, however, these procedures were to change, then the given rating would increase. A risk rating highlighted in pink indicates that the current rating could easily be reduced by implementing simple control measures.

Each task was then grouped according to the risk rating they were given. Tasks with risks ratings of either 3 or 4 were then elaborated further in the following format.

TASK 54: Removing ox-tail
Involved hazards:

- Bending, twisting or reaching
- **Cuts or punctures**
- Pushing, pulling or striking

	Risks	**PPE in Regular Use**	**Risk Assessment**
	- Bending down to attach boning hook - A cut or puncture from the boning hook if it were to become free from the ox-tail during the process - Pulling and twisting whilst pulling the ox-tail off of the tail hide	- Steel cap rubber boots - Hard hats	**Likelihood** Unlikely **Consequences** Major

The involved hazards indicate which hazards are involved in the task, with hazards given a rating of 3 indicated by bold lettering, while task given a rating of 4 were indicated by bold, block lettering. A description of how each hazard is involved is then listed along the current personal protective equipment and were the given risk rating for the highest risk tasks were reached.

The general notes section elaborates on procedures noted in the risk rating charts as being innovative. It also makes note of tasks, procedures or design features that appear hazardous. The effluent treatment section discusses current practices for waste disposal as viewed at each site for both solid and liquid waste. The retail display component exhibits how each butcher shop presented their value added products.

3 Results

3.1 Carey Brothers Meats, Warwick

Front counter of Carey Brothers Meats delicatessen

3.1.1 Description

Carey Brothers Meats operate an abattoir at Yangan, approximately 20 kilometres east of Warwick. The company is a family run business consisting of the abattoir, a smokehouse located at Yangan, two butcher shops in town, and a delicatessen at the local shopping centre.

3.1.2 Processing Overview

The abattoir at Yangan processes 770 animals a week, on average, consisting of 180 cattle, 450 sheep and lambs, 125 pigs and 15 goats. There is also a rendering plant on-site that processes the animal waste generated on the kill floor into meat and bone meal and tallow. In the rendering plant there is a wood fired boiler that generates steam that is used to heat the two cookers in the rendering plant, and provide hot water for the kill floor. Sheep hides are salted and graded on site, with the salting process done in a machine that resembles a large cement mixer. Water on site is drawn from a bore and is treated with chlorine and to reduce hardness before it is used on the kill floor.

3.1.3 Risk Analysis

Risk rating chart – lamb processing at Carey Brothers Meats, Warwick

	Tasks																												
Hazards	**147**	**2**	**1**	**3**	**4**	**151**	**5**	**8**	**11**	**7**	**13**	**14**	**152**	**6**	**15**	**16**	**17**	**18**	**25**	**19**	**20**	**153**	**21**	**22**	**23**	**24**	**26**	**28**	**27**	**148**
Bending, twisting or reaching	1	2	1	1	1	1	2			1	2	1	1	1	1	1	1	1	2	1		2	1		2	2	1		2	2
Carrying or holding	1		1	2															1			2			1		1			1
Chemical exposure																													1	
Cuts or punctures						1		1	1		1				0	1	1	2		1				1				1	2	
Electrical shock			1																											
Falling object	1		1		1		1			2												2	1		1		1			
Lifting or lowering	2				2		3			1			2	1					2			3			2		2	1	2	2
Noise																													2	
Pushing, pulling or striking	2	2		2	1	1	2	2	1		2		1		1	1	2	1		1			2			2	2	1	2	1
Slipping, tripping or falling	2	1		1			1	1	1										1			2			2		1		1	
Stressed animal		1																												
Other																										1				
Overall risk rating	**2**	**2**	**1**	**2**	**2**	**1**	**3**	**2**	**1**	**2**	**2**	**1**	**2**	**1**	**1**	**1**	**2**	**2**	**2**	**1**	**0**	**3**	**2**	**1**	**2**	**2**	**2**	**1**	**2**	**2**

Rating	**Statement**	**Action**
4	Acute risk	Urgent action required
3	High risk	Put in place steps to reduce risk
2	Moderate risk	Consider changes to current procedures
1	Low risk	Okay for now

N	Task not observed
	Higher due to irregular procedure
	Innovative procedures in place
	Lower due to changeable control measures
	Higher due to changeable control measures

Risk rating chart – beef processing at Carey Brothers Meats, Warwick

	Tasks																																									
Hazards	**147**	**29**	**30**	**31**	**32**	**34**	**35**	**36**	**37**	**38**	**39**	**44**	**66**	**40**	**41**	**42**	**43**	**45**	**46**	**47**	**48**	**50**	**49**	**52**	**62**	**53**	**54**	**55**	**56**	**57**	**60**	**58**	**61**	**63**	**64**	**65**	**67**	**68**	**59**	**148**
Bending, twisting or reaching		1	2		2		1	1	2	2	1				1	1	1	2	2	2	1		1		1	1		1		1	1	2					1	1			
Carrying or holding											1										1										1	1	1				1			
Cuts or punctures							1			1		1	2		1	1	1	1	1	1			1			0	0	0		2	1			1			1		1	
Falling object						1								1											2															
Lifting or lowering											2																				2					2		1	
Noise			1																		1																			
Pushing, pulling or striking		2	1		2		2	1	1	2		1	1		2	2	1	1	1	1	2		1			1	2	1		1	1		1	1		2	1		1	
Slipping, tripping or falling					1		1	1	1		1														1	1	1	1					1	2		1	1			
Stressed animal		1			2	1																																		
Overall risk rating	**N**	**2**	**2**	**0**	**2**	**1**	**2**	**1**	**2**	**2**	**2**	**1**	**2**	**1**	**2**	**2**	**1**	**2**	**2**	**2**	**2**	**N**	**1**	**0**	**2**	**1**	**2**	**1**	**N**	**2**	**1**	**2**	**1**	**2**	**0**	**2**	**2**	**N**	**1**	**N**

Rating	Statement	Action
4	Acute risk	Urgent action required
3	High risk	Put in place steps to reduce risk
2	Moderate risk	Consider changes to current procedures
1	Low risk	Okay for now

N	Task not observed
	Higher due to irregular procedure
	Innovative procedures in place
	Lower due to changeable control measures
	Higher due to changeable control measures

Risk rating chart – pork processing at Carey Brothers Meats, Warwick

	Tasks																							
Hazards	**147**	**93**	**92**	**94**	**95**	**103**	**98**	**99**	**100**	**101**	**103**	**104**	**114**	**101**	**107**	**105**	**106**	**108**	**109**	**117**	**111**	**114**	**115**	**148**
Bending, twisting or reaching		1	1	1		1	1		1	1	1	1		1	1	2	1	1	1	1	2		1	
Burns or scalds									1			1												1
Carrying or holding			1	1	1															1				
Cuts or punctures				1											1	2	2	1	2		2			
Electrical shock	1																							
Falling object				1		1					1													
Lifting or lowering																				1	1			
Noise		2						1		1		1	1	1	1	1	1							
Pushing, pulling or striking	2	2		2		1	1		2	1	1			1	1	2	2	2	2	1	2		2	2
Slipping, tripping or falling		1		2			2																	
Stressed animal		1		1	1																			
Overall risk rating	**2**	**2**	**1**	**2**	**1**	**1**	**2**	**1**	**2**	**1**	**1**	**1**	**1**	**1**	**1**	**2**	**2**	**2**	**2**	**1**	**2**	**0**	**2**	**2**

Rating	Statement	Action
4	Acute risk	Urgent action required
3	High risk	Put in place steps to reduce risk
2	Moderate risk	Consider changes to current procedures
1	Low risk	Okay for now

N	Task not observed
	Higher due to irregular procedure
	Innovative procedures in place
	Lower due to changeable control measures
	Higher due to changeable control measures

Risk rating chart – back fatter processing at Carey Brothers Meats, Warwick

	Tasks																														
Hazards	**147**	**118**	**119**	**120**	**121**	**122**	**123**	**138**	**124**	**126**	**127**	**125**	**128**	**129**	**130**	**131**	**132**	**134**	**139**	**133**	**135**	**136**	**144**	**137**	**140**	**141**	**142**	**143**	**145**	**146**	**148**
Bending, twisting or reaching			2		2	2		2		1	1	1	2	2	2	1			1			1		1	2			1	1	1	
Carrying or holding																1							1		1				1		
Cuts or punctures					1			1		1	1	1	1	1	1					1	1	2		1			1		1		
Falling object							1		1									1	2												
Lifting or lowering																							2						2		
Noise		2	1													1									1						
Pushing, pulling or striking		1	1		2	1		2	1	2	2	1				2				1	2	2		1	2		1	2		2	
Slipping, tripping or falling																			1	1		1			1		2	1		1	
Stressed animal		1			1	1	1																								
Overall risk rating	**0**	**2**	**2**	**0**	**2**	**2**	**1**	**2**	**1**	**2**	**2**	**1**	**2**	**2**	**2**	**2**	**N**	**1**	**2**	**1**	**2**	**2**	**2**	**1**	**2**	**0**	**2**	**2**	**2**	**2**	**N**

Rating	**Statement**	**Action**
4	Acute risk	Urgent action required
3	High risk	Put in place steps to reduce risk
2	Moderate risk	Consider changes to current procedures
1	Low risk	Okay for now

N	Task not observed
	Higher due to irregular procedure
	Innovative procedures in place
	Lower due to changeable control measures
	Higher due to changeable control measures

Low risk (1) tasks

The following tasks observed at Carey Brothers Meats, Warwick, are considered to involve a low level of risk:

- **Lamb processing:** 1, 151, 11, 14, 6, 15, 16, 19, 22, 28
- **Beef processing:** 34, 36, 44, 40, 43, 49, 53, 55, 60, 61, 59
- **Pork processing:** 92, 95, 103, 99, 101, 103, 104, 114, 107, 117
- **Back fatter processing:** 123, 124, 125, 134, 133, 137

Moderate risk (2) tasks

The following tasks observed at Carey Brothers Meats, Warwick, are considered to involve a moderate level of risk:

- **Lamb processing:** 147, 2, 3, 4, 8, 7, 13, 152, 17, 18, 25, 21, 23, 24, 26, 27, 148
- **Beef processing:** 29, 30, 32, 35, 37, 38, 39, 66, 41, 42, 45, 46, 47, 48, 62, 54, 57, 58, 63, 65, 67
- **Pork processing:** 147, 93, 94, 98, 100, 105, 106, 108, 109, 111, 115, 148
- **Back fatter processing:** 118, 119, 121, 122, 138, 126, 127, 128, 129, 130, 131, 139, 135, 136, 144, 140, 142, 143, 145, 146

High hazard tasks

The following tasks observed at Carey Brothers Meats, Warwick, are considered to involve 6 or more hazards:

- **Lamb processing:** 26, 27
- **Beef processing:** 67
- Pork processing: 94

High risk (3) tasks

The following tasks observed at Carey Brothers Meats, Warwick, are considered to involve a high level of risk:

- **Beef processing:**

TASK 5: Lifting into fore-quarter sling
Involved hazards:

- Bending, twisting or reaching
- Falling object
- **Lifting or lowering**
- Pushing, pulling or striking
- Slipping, tripping or falling

	Risks	PPE in Regular Use	Risk Assessment
	- Bending down and reaching to grab hold of the forelegs of the lamb - Lamb falling out of employees hold and causing injury - Lifting animal from below feet to head height - Pulling animal during lifting action - Falling off platform that the task is performed on	- Steel capped rubber boots	**Likelihood** Likely **Consequences** Moderate

TASK 153: Transferring carcase to hanger
Involved hazards:

- Bending, twisting or reaching
- Carrying or holding
- Falling object
- **Lifting or lowering**
- Slipping, tripping or falling

	Risks	PPE in Regular Use	Risk Assessment
 	- Reaching to place carcase on hanger - Carrying carcase approximately 3 metres from the rail to the hanger - Carcase not being put on hanger properly, falling off and causing injury - Lifting and lowering carcase off the rail. Lifting carcase from chest height to above head height to place it on hanger - Slipping on floor between rail and hanger due to fat on floor	- Steel capped rubber boots	**Likelihood** Likely **Consequences** Moderate

Acute risk (4) tasks

There were no acute risks observed at Carey Brothers Meats, Warwick.

3.1.4 General Notes

V-restrainer race
The v- restrainer race is used to immobilise the legs of the animals as they come into the processing plant. This makes the task of stunning the animal easier on the employee as the animal is unable to move out of the way. This machine also presents the animals at a comfortable height for the employee to apply the stunners, so that there is no need for the employee to bend in any way to complete this task. Additionally, this machine also conveys the animal into the plant, eliminating the need for the employee to transfer the animal into the processing plant manually.

Hide pulling machine
The hide puller is used to remove the hide along the back and rear quarters of the lamb carcase. The hide is connected to the puller and the employee turns the machine on and the hide is pulled down and off. This machine reduces the number of manual tasks that the employee is required to perform along the lamb processing line.

Rise and fall platform
During cattle processing, a special platform is used during the bunging out, ox-tail removal, hide removal – back, and the side splitting tasks. This platform is operated by the employee's foot and reduces the amount of bending and reaching required in the task.

Trolley for waste buckets
Waste buckets used on site have trolleys underneath them with wheels attached. This removed the need for the employee to lift and physically carry these buckets into the viscera sorting room.

Automatic tray for paunch transfer
In the viscera sorting room the paunches are separated from the rest of the viscera to be emptied and washed in a separate room. Once the paunches are separated they are placed inside a tray, a button is pressed and the tray lifts up and empties into a chute to the adjacent paunch emptying room.

Plant signage
The processing plant at Yangan has a number of signs that give safety information about the site. These signs include,

for example, signs indicating warnings such as safety warnings for the augers and signs stating high risk Q-fever areas.

Grate covering drain through centre of kill floor

There is a metallic cross- hatched grate that covers a drain that runs between the small stock side of the floor and the beef side. This grate is hazardous as offers very limited grip when wet, which is the majority of the time when the plant is in operation.

3.1.5 Effluent Treatment

Solid waste treatment

All solid waste generated is processed in the rendering plant on site, producing meat and bone meal and tallow. The meat and bone is milled in the rendering plant and put into 25 kilogram bags for sale. All paunch materials are spread out on land to evaporate the moisture and return the solids to pasture.

Rendering plant at Carey Brothers Meats, Warwick

Waste water treatment

Waste water produced on site is pumped away and put onto pasture in the fields surrounding the abattoir. The water is spread using an irrigator which is moved around the paddocks to spread the water over a greater area. The paddocks are used as a finishing paddock for lambs.

3.1.6 Retail Display

Display case at Carey Brothers Meats butcher shop at Rose City

Display case at Carey Brothers Meats delicatessen at Rose City

Display at Carey Brothers Meats, Locke St, Warwick

3.2 Jimbour Butchery

View of Jimbour Butchery from road

3.2.1 Description

Jimbour Butchery is located at Jimbour, approximately 25 kilometres north west of Dalby, and nearby to the iconic Jimbour House. Jimbour Butchery is owned and operated by Lincoln and Belinda Waldock, and in Lincoln's absence the site is managed by Paul Edwards. There is also a butcher shop attached to the abattoir, located approximately 5 minutes away on the main road through Jimbour.

3.2.2 Processing overview

Jimbour Butchery processes approximately 500 to 600 animals per week consisting of 30 cattle and between 450 and 550 pigs. The abattoir operates three days a week, on Mondays, Wednesdays and Fridays. Hides from cattle are stored in a fridge and sold green. Water used on site is drawn from a bore and is treated with chlorine and passes through a 'magnet' to reduce hardness before being used on site.

Risk rating chart – beef processing at Jimbour Butchery

	Tasks																																							
Hazards	**147**	**29**	**30**	**31**	**32**	**34**	**35**	**36**	**38**	**39**	**44**	**66**	**40**	**41**	**42**	**43**	**45**	**46**	**47**	**48**	**49**	**50**	**52**	**53**	**54**	**55**	**62**	**57**	**60**	**58**	**59**	**56**	**61**	**63**	**64**	**65**	**148**
Bending, twisting or reaching					1		1	1	2					1	1		1	1	1	1				1	1	2				3	2		1	1			1
Carrying or holding	1				2	1				1			1							2								1				1				1
Chemical exposure																																							
Cuts or punctures			1				1		1		1	2		2	2	1	1	1	1	1	1			1	3	1		2	2		1			1			1
Electrical shock																																							
Falling object						1				1													2			1	2	1								1		
Lifting or lowering										2																				2			1					
Noise			2																	1													1				1
Pushing, pulling or striking	2	1		1	1			1	1					1	1		1	1	1	1				1	2	2		1	1	2	1		2			2	1
Slipping, tripping or falling																																	3				1
Stressed animal		2	2	1	2		1																															
Overall risk rating	**2**	**2**	**2**	**1**	**2**	**1**	**1**	**1**	**2**	**2**	**1**	**2**	**1**	**2**	**2**	**1**	**1**	**1**	**1**	**2**	**1**	**N**	**2**	**1**	**3**	**2**	**2**	**2**	**2**	**3**	**2**	**N**	**3**	**1**	**0**	**2**	**1**

Rating	Statement	Action
4	Acute risk	Urgent action required
3	High risk	Put in place steps to reduce risk
2	Moderate risk	Consider changes to current procedures
1	Low risk	Okay for now

N	Task not observed
	Higher due to irregular procedure
	Innovative procedures in place
	Lower due to changeable control measures
	Higher due to changeable control measures

Risk rating chart – pork processing at Jimbour Butchery

	Tasks																													
Hazards	**147**	**92**	**95**	**93**	**94**	**96**	**97**	**98**	**99**	**100**	**101**	**102**	**103**	**104**	**101**	**114**	**107**	**108**	**109**	**110**	**103**	**111**	**112**	**113**	**114**	**115**	**116**	**154**	**155**	**117**	**148**
Bending, twisting or reaching		2	2		2		1	1		2			2		1			2	2	2		2	2	1			2	2	2	2	1
Burns or scalds							3	1						1																1
Carrying or holding			2										1									1					2				
Cuts or punctures					1						2	3			1		2	1	2	2		2	2								
Electrical shock		2																													
Extreme temperature exposure																															1
Falling object				1		1							2						1		1	1									
Lifting or lowering											1		2						2			1				1	2	2	2	2	2
Noise		2	2		1	1	1	1	1	1				1	1	1	1	1	1	1	1	1	1	1	1		1	1			
Pushing, pulling or striking		1		2	2	1	1	2		2	1	2	2					1	1	1	2	2	1	1		2	1	2	2	1	1
Slipping, tripping or falling							2	1																		1	1		1		1
Stressed animal		2	2	1																											
Overall risk rating	**N**	**2**	**2**	**2**	**2**	**1**	**3**	**2**	**1**	**2**	**2**	**3**	**2**	**1**	**1**	**1**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**1**	**1**	**2**	**2**	**2**	**2**	**2**	**2**

Rating	Statement	Action
4	Acute risk	Urgent action required
3	High risk	Put in place steps to reduce risk
2	Moderate risk	Consider changes to current procedures
1	Low risk	Okay for now

N	Task not observed
	Higher due to irregular procedure
	Innovative procedures in place
	Lower due to changeable control measures
	Higher due to changeable control measures

Risk rating chart – back fatter processing at Jimbour Butchery

	Tasks																													
Hazards	**147**	**118**	**119**	**120**	**121**	**122**	**123**	**138**	**133**	**124**	**126**	**127**	**125**	**128**	**129**	**130**	**131**	**132**	**134**	**135**	**139**	**135**	**136**	**137**	**140**	**141**	**142**	**143**	**144**	**145**	**146**	**148**
Bending, twisting or reaching		1			2	2		2			1	1	1	2	2	2	1	1		2					2				2	2	2	
Carrying or holding	1					1				1							1	1							1					2	2	1
Cuts or punctures			1		1			2	1		2	2	1	1	1	1				1		1	2	2			1					
Electrical shock																																
Falling object							1	1		1									1		2		1	1				1				
Lifting or lowering								1									1	1							1				2	1	2	
Noise		2	2								1	1					1	1							1							
Pushing, pulling or striking	2	1		1	2	2	1			1	1	1	1	1	1	1	1	1		1		1	1	1				2	2		2	2
Slipping, tripping or falling		1				1																			3			1		1		
Stressed animal		2	2	1	2	2																										
Overall risk rating	**2**	**2**	**2**	**1**	**2**	**2**	**1**	**2**	**1**	**1**	**2**	**2**	**1**	**2**	**2**	**2**	**1**	**1**	**1**	**2**	**2**	**1**	**2**	**2**	**3**	**0**	**1**	**2**	**2**	**2**	**2**	**2**

Rating	Statement	Action
4	Acute risk	Urgent action required
3	High risk	Put in place steps to reduce risk
2	Moderate risk	Consider changes to current procedures
1	Low risk	Okay for now

N	Task not observed
	Higher due to irregular procedure
	Innovative procedures in place
	Lower due to changeable control measures
	Higher due to changeable control measures

Low risk (1) tasks
- **Beef processing:** 31, 34, 35, 44, 40, 43, 45, 46, 47, 49, 53, 63, 148
- **Pork processing:** 96, 99, 104, 114, 113
- **Back fatter processing:** 120, 123, 133, 124, 125, 131, 132, 134, 142

Moderate risk (2) tasks
- **Beef processing:** 147, 29, 30, 32, 38, 39, 66, 41, 42, 48, 52, 55, 62, 67, 60, 59, 65
- **Pork processing:** 92,95, 93, 94, 98, 100, 101, 103, 107, 108, 109, 110, 111, 112, 115, 116, 154, 155, 117, 148
- **Back fatter processing:** set up, 118, 119, 121, 122, 138, 126, 127, 128, 129, 130, 135, 139, 136, 137, 143, 144, 145, 146, 148

High hazard tasks
- **Beef processing:** 61
- Pork processing: 109, 111, 116

High risk (3) tasks
- **Beef processing**:

TASK 54: Removing ox-tail
Involved hazards:
- Bending, twisting or reaching
- **Cuts or punctures**
- Pushing, pulling or striking

	Risks	**PPE in Regular Use**	**Risk Assessment**
	- Bending down to attach boning hook - A cut or puncture from the boning hook if it were to become free from the ox-tail during the process - Pulling and twisting whilst pulling the ox-tail off of the tail hide	- Steel cap rubber boots - Hard hats	**Likelihood** Unlikely **Consequences** Major

TASK 58: Viscera transfer
Involved hazards:
- **Bending, twisting or reaching**
- Lifting or lowering
- Pushing, pulling or striking

	Risks	PPE in Regular Use	Risk Assessment
No photograph available	- Bending down to pull viscera along ground into adjoining room, approximately 5 metres - Bending to pick up viscera, lifting it up and then reaching to put it in the waste bin	- Steel cap rubber boots - Hard hats	**Likelihood** Likely **Consequences** Moderate

TASK 61: Splitting carcase
Involved hazards:
- Bending, twisting or reaching
- Carrying or holding
- Lifting or lowering
- Noise
- Pushing, pulling or striking
- **Slipping, tripping or falling**

	Risks	PPE in Regular Use	Risk Assessment
	- Operating the band saw requires the employee to bend while holding, lowering and pushing. - Band saw is noisy when in operation - Task is performed on a platform that is approximately 0.6 metres off the ground. Platform is lightweight, so it is possible the platform could fall over whilst in use if employee loses balance. There are no guard rails on the platform to prevent falls and employee needs to use overhead rails in order to get up on platform.	- Steel cap rubber boots - Hard hats	**Likelihood** Unlikely **Consequences** Major

- **Pork processing:**

Task 97: Scalding
Involved hazards:

- Bending, twisting or rotating
- **Burns or scalds**
- Noise
- Pushing, pulling or striking
- Slipping, tripping or falling

	Risks	**PPE in Regular Use**	**Risk Assessment**
	- Slipping and falling into scalding tank - Noise from the dehairer - Bending minimally to push around pig in scalding tank	- Steel cap rubber boots - Hard hats	**Likelihood** Unlikely **Consequences** Major

TASK 102: Toe nail removal
Involved hazards:

- **Cuts or punctures**
- Pushing, pulling or striking

	Risks	**PPE in Regular Use**	**Risk Assessment**
	- A cut or puncture from the boning hook if the hook slips out from behind the toe nail during the action of pulling off the toe nail and catches the employees on the arm or body - Twisting and pulling while removing the toe nail	- Steel cap rubber boots - Hard hats	**Likelihood** Unlikely **Consequences** Major

- **Back fatter processing:**

TASK 140: Splitting carcase
Involved hazards:

- Bending, twisting or rotating
- Carrying or holding
- Lifting or lowering
- Noise
- **Slipping, tripping or falling**

	Risks	**PPE in Regular Use**	**Risk Assessment**
	- Operating the band saw requires the employee to bend while holding, lowering and pushing. - Band saw is noisy when in operation - Task is performed on a platform that is approximately 0.6 metres off the ground. Platform is lightweight, so it is possible the platform could fall over whilst in use if employee loses balance. There are no guard rails on the platform to prevent falls and employee needs to use overhead rails in order to get up on platform.	- Steel cap rubber boots - Hard hats	**Likelihood** Unlikely **Consequences** Major

Acute risk (4) tasks

There were no acute risks observed at this processing plant

3.2.3 General Notes

Intrascope
To measure the thickness of fat on the back of the pigs, the employees at Jimbour Butchery use a small device called an intrascope, which measures how thick, in millimetres, the fat on the back of the carcase is.

3.2.4 Effluent Treatment

Solid waste treatment

Waste collection bins at Jimbour Butchery

All solid waste produced on-site is collected in large metallic bins and stored outside. These bins are then loaded into a semi-trailer by a contractor and transported to a rendering plant in Beaudesert. The cattle paunch is emptied into the blood pit before the viscera is transferred into these bins.

Waste water treatment

Waste water generated during processing and cleaning accumulates in a blood pit just outside the kill floor and is pumped down into ponds. The water treatment system contains three ponds, all of which are new additions to the site. The ponds are designed for waste to be pumped into the first pond and then flow naturally through to the second and third pond as water is added to the first.

Effluent pond 1 at Jimbour Butchery

3.2.5 Retail Display

Display case at Jimbour Butchery

3.3 Gleeson Quality Meats, Chinchilla

View of Gleeson Quality Meats butcher shop from road

3.3.1 Description

Gleeson Quality Meats in Chinchilla operate an abattoir on the outskirts of Chinchilla, near the local racetrack. The business is owned and run by Danny and Alison Gleeson and includes the abattoir and the butcher shop on the main street in Chinchilla.

3.3.2 Processing Overview

At the abattoir, approximately 200 animals are processed each week consisting of 35 cattle, 140 lambs and 30 pigs, with goats also being processed sporadically. Cattle and sheep hide collected on site are salted, with the cattle hides being spread out, hair side down, and the salt spread evenly on top, while the sheep skins are salted in a large tumbler. All water used on site is taken from the town water supply and as such is already potable and does not require treatment.

3.3.3 Risk Analysis

Risk rating chart – lamb processing at Gleeson Quality Meats

	Tasks																											
Hazards	**147**	**1**	**2**	**3**	**4**	**5**	**11**	**8**	**36**	**6**	**12**	**15**	**9**	**7**	**13**	**14**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**25**	**26**	**28**	**27**	**148**
Bending, twisting or reaching		1	2	1	2	1	1			1	1	1			2	1		1						1	1	1	2	2	
Carrying or holding			1	2															1	1				2	1	1	1	2	
Chemical exposure																												1	
Cuts or punctures				1			1	2		1	1	1		1	1		1	1	2	2							1	1	
Electrical shock		1																											
Falling object					2			1					2									1							
Lifting or lowering			2		3	2							2						1					1	1			2	
Pushing, pulling or striking			2	1	1			1	1	1				1	2	3			1	1		2			1			2	
Slipping, tripping or falling			1			1	1	1	1	1	1	1	1	1	1							1			1		1	1	
Stressed animal		1	1																										
Other																												2	
Overall risk rating	**N**	**1**	**2**	**2**	**3**	**2**	**1**	**2**	**1**	**1**	**1**	**1**	**2**	**1**	**2**	**3**	**1**	**1**	**2**	**2**	**0**	**2**	**0**	**2**	**1**	**1**	**2**	**2**	**0**

Rating	Statement	Action
4	Acute risk	Urgent action required
3	High risk	Put in place steps to reduce risk
2	Moderate risk	Consider changes to current procedures
1	Low risk	Okay for now

N	Task not observed
	Higher due to irregular procedure
	Innovative procedures in place
	Lower due to changeable control measures
	Higher due to changeable control measures

Risk rating chart - beef processing at Gleeson Quality Meats

	Tasks																																												
Hazards	**147**	**29**	**30**	**31**	**35**	**32**	**34**	**36**	**38**	**39**	**44**	**66**	**40**	**41**	**42**	**43**	**47**	**46**	**45**	**156**	**49**	**48**	**51**	**52**	**54**	**53**	**50**	**52**	**55**	**56**	**57**	**60**	**58**	**59**	**61**	**62**	**63**	**64**	**65**	**67**	**68**	**148**
Bending, twisting or reaching	1	1	1		2	2		1	1					1	1	1	1	2	1	2	1	1	2		1	1	1		2	1			1	2	2	2				0	2	2	1
Carrying or holding					1					2			1										2								1	1	1	1						2		
Chemical exposure																																										1	
Cuts or punctures	1				2				2		2	2		2	2	1	2	1	2	1	1					1	1		1		2	2		2			1			1		
Falling object							1		1				1							2			1	1				1			1				1					1		
Lifting or lowering	1									2													1						1			2	1	1					2	2	1
Noise																																			1								
Pushing, pulling or striking	1	1		1	1	2		1	1		1	1		2	2	1		1				3			2	1	2		1	2	1	2	2	1	1	1			2	3		1
Slipping, tripping or falling		1	2							1																							1	1	2	2			1	1	2	
Stressed animal		1	1	1	2	2	1																																				
Other													3	3	3	3	3	3	3																								
Overall risk rating	**1**	**1**	**2**	**1**	**2**	**2**	**1**	**1**	**2**	**2**	**2**	**2**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**2**	**1**	**3**	**2**	**1**	**2**	**1**	**2**	**1**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**1**	**0**	**2**	**3**	**2**	**1**

Rating	Statement	Action
4	Acute risk	Urgent action required
3	High risk	Put in place steps to reduce risk
2	Moderate risk	Consider changes to current procedures
1	Low risk	Okay for now

N	Task not observed
	Higher due to irregular procedure
	Innovative procedures in place
	Lower due to changeable control measures
	Higher due to changeable control measures

Risk rating chart - pork processing at Gleeson Quality Meats

	Tasks																									
Hazards	**147**	**92**	**93**	**94**	**95**	**96**	**97**	**98**	**99**	**100**	**101**	**102**	**157**	**104**	**114**	**107**	**105**	**108**	**109**	**103**	**110**	**111**	**112**	**115**	**116**	**117**	**148**
Bending, twisting or reaching		1	2	2	2					1						1	2	1		1	2	2	1	0		1	1
Burns or scalds						1	1	1						1													
Carrying or holding		2			1																	1					2
Cuts or punctures				1							1	2				2	1	1	2		2	2	1				
Electrical shock		1																									
Extreme temperature exposure						1																					
Falling object						2				1			1						1	1		1		1			
Lifting or lowering			1								1								1								2
Noise		2		1	1	1	2		2		2	2	1	1	1	1	1	1	1	1	1	1	1				
Pushing, pulling or striking			3	1	1	1	1			2	1	2				1	2	1	1		1	1		2		2	2
Slipping, tripping or falling			3	1	1	2	1																	1		1	
Stressed animal		2	2	1																							
Overall risk rating	**N**	**2**	**3**	**2**	**2**	**2**	**2**	**1**	**2**	**2**	**2**	**2**	**1**	**1**	**1**	**2**	**2**	**1**	**2**	**1**	**2**	**2**	**1**	**2**	**N**	**2**	**2**

Rating	Statement	Action
4	Acute risk	Urgent action required
3	High risk	Put in place steps to reduce risk
2	Moderate risk	Consider changes to current procedures
1	Low risk	Okay for now

N	Task not observed
	Higher due to irregular procedure
	Innovative procedures in place
	Lower due to changeable control measures
	Higher due to changeable control measures

Low risk (1) tasks
- **Lamb processing:** 1, 11, 36, 6, 12, 15, 7, 16, 17, 25, 26
- **Beef processing:** 147, 29, 31, 34, 36, 49, 52, 53, 63, 148
- **Pork processing:** 98, 157, 104, 114, 108, 103, 112

Moderate risk (2) tasks
- **Lamb processing:** 2, 3, 5, 8, 9, 13, 18, 21, 23, 28, 27
- **Beef processing:** 30, 35, 32, 38, 39, 44, 66, 156, 51, 54, 50, 55, 56, 57, 60, 58, 59, 61, 62, 65, 68
- **Pork processing:** 92, 94, 95, 96, 97, 99, 100, 101, 107, 105, 109, 110, 111, 115, 117, 148

High hazard tasks
- **Lamb processing:** 2, 27
- **Beef processing:** 59, 61, 67
- Pork processing: 94, 96, 111

High risk (3) tasks
- **Lamb processing:**

TASK 4: Lift to rails
Involved hazards:
- Bending, twisting or reaching
- Falling object
- **Lifting or lowering**
- Pushing, pulling or striking

	Risks	**PPE in Regular Use**	**Risk Assessment**
	- Bending down to pick up animal - Carcase not being placed on to rail correctly, falling, and causing injury - Lifting carcase up onto the rail from the floor to head height - Pulling animal during the lifting action	- Steel cap rubber boots	**Likelihood** Likely **Consequences** Moderate

TASK 14: Pull off hide
Involved hazards:
- Bending, twisting or reaching
- **Pushing, pulling or striking**

	Risks	**PPE in Regular Use**	**Risk Assessment**
	- Bending during the pulling action - Pulling hide off the back and legs of the carcase	- Steel cap rubber boots	**Likelihood** Likely **Consequences** Moderate

- **Beef processing:**

TASKS 40, 41, 42, 43, 47, 46 and 45
Involved hazards:
- Other

	Risks	**PPE in Regular Use**	**Risk Assessment**
	- An injury caused due to contact with a hook, used to lift the animal by the brisket, left hanging idly just below chest height	- Steel cap rubber boots	**Likelihood** Likely **Consequences** Moderate

TASK 48: Splitting brisket
Involved hazards:
- Bending, twisting or reaching
- **Pushing, pulling or striking**

	Risks	**PPE in Regular Use**	**Risk Assessment**
	- Bending, twisting and reaching during the cutting action - Pushing and pulling during the cutting action	- Steel cap rubber boots	**Likelihood** Possible **Consequences** Moderate

TASK 67: Offal washing, sorting and transport

Involved hazards:

- Bending, twisting or reaching
- Carrying or holding
- Cuts or punctures
- Falling object
- Lifting or lowering
- **Pushing, pulling or striking**
- Slipping, tripping or falling

	Risks	**PPE in Regular Use**	**Risk Assessment**
	- Reaching to place offal on hook - Carrying offal from basin to hanger - Puncture whilst using jigger to put string through offal - Injury due to offal falling if placed incorrectly on hanger - Lifting offal up onto hanger - Pushing offal up inclined rail towards cold room - Slipping or tripping while shifting offal to cold room	- Steel cap rubber boots	**Likelihood** Possible **Consequences** Moderate

- **Pork processing:**

TASK 93: Transfer to plant

Involved hazards:

- Bending, twisting or reaching
- Lifting or lowering
- **Pushing, pulling or striking - 1**
- **Slipping, tripping or falling - 2**
- Stressed animal

	Risks	**PPE in Regular Use**	**Risk Assessment**
	- Bending during pulling	- Steel	**Likelihood**

	action to transfer carcase to plant - Lifting carcase whilst pulling it into plant - Pulling carcase into plant - Slipping on congealed blood or falling off platform - Injury caused by stunned animal	cap rubber boots	1. Possible 2. Likely **Consequences** 1. Moderate 2. Moderate

Acute risk (4) tasks

There were no acute risks observed at Gleeson Quality Meats

3.3.4 General Notes

Water reducing hose nozzles

The hose used on the kill floor to wash carcases is connected to both water and air resulting in a hose that sprays water at a higher pressure than normal. An additional benefit of this hose is that it reduces water usage by performing the tasks it is used for more effectively.

Hook used to lift brisket during cattle processing

During cattle processing a hook is used to lift the brisket. When not in use this hook is left on the winch and hanging just below chest height. This hook is hazardous in the position it is left in a better solution to where it is stored between uses must be considered.

3.3.5 Effluent Treatment

Solid waste treatment

Solid waste generated is composted on site. The compost heap is located on the same property and waste is transported to it using a tractor. At the end of each day the waste is covered using material recovered from the cattle yards, while saw dust is also used for cover.

Composting operation at Gleeson Quality Meats

Waste water treatment

Waste water produced on site is spread on to pasture. The water is pumped out of the blood pit often during processing and is spread across the land using a sprinkler.

Waste water sprinkler at Gleeson Quality Meats

3.3.6 Retail Display

Display case at Gleeson Quality Meats, Chinchilla

Display case 2 at Gleeson Quality Meats, Chinchilla

3.4 Millmerran Meat Holdings Pty. Ltd.

View of Millmerran Meat Holdings abattoir from road

3.4.1 Description

Millmerran Meat Holdings abattoir is located on the outskirts of Millmerran, on the Darling Downs. The plant is owned by Scott Glasser, with the abattoir being run by Mick Stubbin. The processing plant provides bodies for the butcher shop located on the main street of Millmerran. The cattle processed on site are often provided by a Hereford cattle stud owned by Scott Glasser.

3.4.2 Processing Overview

Each week at Millmerran Meat Holdings abattoir, approximately 40 animals are processed including 15 sheep and lambs, 20 cattle, 5 pigs and goats occasionally. The processing site consists only of the kill floor however both cattle hides and sheep skins are salted on site. Water used on site is drawn from town water supplies and does not require treatment as it is already potable.

3.4.3 Risk Assessment

Risk rating chart - lamb processing at Millmerran Meat Holdings

	Tasks																												
Hazards	**147**	**1**	**2**	**3**	**4**	**10**	**5**	**11**	**36**	**158**	**8**	**13**	**14**	**7**	**9**	**159**	**6**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**25**	**26**	**27**	**148**
Bending, twisting or reaching	1	2	2	1	2	1	1			1		2	1	2	2	1	2			1								1		1
Carrying or holding	1	1																										2		
Chemical exposure																														
Cuts or punctures				2		2		1			2		1	2			2	1	1	1	2	1			1					
Electrical shock	1	1																												
Falling object					2		1	1		1	1				1									1			1			
Lifting or lowering	1				3		2			2					2	2					1					1		2		1
Noise																											3			
Pushing, pulling or striking	1	1	2	1	2	2	2	2	1		1	2		2	1		2	1	1	1	1	1		2	1	1	2			
Slips, trips or falls			1																								1			
Stressed animal		1	1	1																										
Overall risk rating	**1**	**2**	**2**	**2**	**3**	**2**	**2**	**2**	**1**	**2**	**2**	**2**	**1**	**2**	**2**	**2**	**2**	**1**	**1**	**1**	**2**	**1**	**0**	**2**	**1**	**1**	**3**	**2**	**N**	**1**

Rating	Statement	Action
4	Acute risk	Urgent action required
3	High risk	Put in place steps to reduce risk
2	Moderate risk	Consider changes to current procedures
1	Low risk	Okay for now

N	Task not observed
	Higher due to irregular procedure
	Innovative procedures in place
	Lower due to changeable control measures
	Higher due to changeable control measures

Risk rating chart – beef processing at Millmerran Meat Holdings

	Tasks																																													
Hazards	**147**	**29**	**30**	**31**	**32**	**34**	**35**	**36**	**37**	**38**	**39**	**44**	**66**	**40**	**41**	**42**	**43**	**45**	**46**	**47**	**48**	**49**	**50**	**51**	**52**	**53**	**54**	**52**	**55**	**56**	**57**	**60**	**61**	**63**	**62**	**64**	**65**	**58**	**67**	**68**	**148**
Bending, twisting or reaching	2	1	2		2		1	1	1	2					1	1	1	1	1	1	1	1	2			2			2		2	1	2		2					2	1
Carrying or holding	1				1					1	1			1										1					1									2	1	1
Chemical exposure																																								1	
Cuts or punctures	1						1			2		1	2		2	2	1	1	1	1		1	2			2	1				2	1	1	1					1		
Electrical shock	1																																								
Falling object						1								1														1						2		1		1			
Lifting or lowering	1									1	2																		2			1						2		1
Noise			1																		1											1					3			
Pushing, pulling or striking	2	1		2	1		2	2	1			1	1		2	2		1	1	1	3		2	1			2		1	1	2	1	1		1		2	2	1		1
Slipping, tripping or falling			2																												1	1	1		1			1		1		
Stressed animal		1	1	2	2	1	1																																	2	
Overall risk rating	**2**	**1**	**2**	**2**	**2**	**1**	**2**	**2**	**1**	**2**	**2**	**1**	**2**	**1**	**2**	**2**	**1**	**1**	**1**	**1**	**3**	**1**	**2**	**1**	**0**	**2**	**2**	**1**	**2**	**2**	**2**	**1**	**2**	**1**	**2**	**0**	**2**	**3**	**2**	**2**	**1**

Rating	Statement	Action
4	Acute risk	Urgent action required
3	High risk	Put in place steps to reduce risk
2	Moderate risk	Consider changes to current procedures
1	Low risk	Okay for now

N	Task not observed
	Higher due to irregular procedure
	Innovative procedures in place
	Lower due to changeable control measures
	Higher due to changeable control measures

Risk rating chart – pork processing at Millmerran Meat Holdings

	Tasks																						
Hazards	**147**	**114**	**92**	**93**	**94**	**95**	**96**	**97**	**98**	**99**	**100**	**101**	**106**	**103**	**104**	**105**	**107**	**110**	**108**	**109**	**114**	**115**	**117**	**148**
Bending, twisting or reaching									1		1		1	1		1	1	2	1	1				2
Burns or scalds								2	2						1									
Carrying or holding																							2	
Chemical exposure																								
Cuts or punctures												1	1			1	1	1		2				
Electrical shock																								1
Falling object											1			1						1				
Lifting or lowering												1												1
Noise								2		2		2	2	2	1	1	1	1	1				3	
Pushing, pulling or striking								1	1		2	1	1			2		1	1	2		2	2	2
Slipping, tripping or falling																							1	
Overall risk rating	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**1**	**2**	**0**	**2**	**1**	**2**	**0**	**2**	**3**	**2**

Rating	Statement	Action
4	Acute risk	Urgent action required
3	High risk	Put in place steps to reduce risk
2	Moderate risk	Consider changes to current procedures
1	Low risk	Okay for now

N	Task not observed
	Higher due to irregular procedure
	Innovative procedures in place
	Lower due to changeable control measures
	Higher due to changeable control measures

Low risk (1) tasks
- **Lamb processing:** 147, 14, 15, 16, 17, 19, 22, 23, 148
- **Beef processing:** 29, 34, 37, 44, 40, 43, 45, 46, 47, 49, 51, 52, 60, 63, 148
- **Pork processing:** 104, 108

Moderate risk (2) tasks
- **Lamb processing:** 1, 2, 3, 10, 5, 11, 158, 8, 13, 7, 9, 159, 6, 18, 21, 26
- **Beef processing:** (set up), 30, 31, 32, 35, 36, 38, 39, 66, 41, 52, 50, 53, 54, 55, 56, 57, 61, 62, 65, 67, 68
- **Pork processing:** 97, 98, 99, 100, 101, 106, 103, 105, 110, 109, 115, (pack up)

High hazard tasks
- **Lamb processing:** -
- **Beef processing:** 61
- **Pork processing:** -

High risk (3) tasks
- **Lamb processing:**

TASK 4: Lift to rail
Involved hazards:
- Bending, twisting or reaching
- Falling object
- **Lifting or lowering**
- Pushing, pulling or striking

	Risks	**PPE in Regular Use**	**Risk Assessment**
	- Bending to pick up animal - Body of animal falling if incorrectly put on rail - Lifting animal off of ground, up to a rail around head height - Pulling during the lifting action	- Steel cap rubber boots	**Likelihood** Likely **Consequences** Moderate

- **Beef processing:**

TASK 48: Splitting brisket
Involved hazards:
- Bending, twisting or reaching
- **Pushing, pulling or striking**

	Risks	**PPE in Regular Use**	**Risk Assessment**
	- Bending during the cutting action - Pushing and pulling during the cutting action	Steel cap rubber boots	**Likelihood** Possible **Consequences** Moderate

- **Common Tasks**

TASKS 25, 58, 117: Viscera transfer
Involved hazards:
- **Noise**
- Pushing, pulling or striking
- Slipping, tripping or falling

	Risks	**PPE in Regular Use**	**Risk Assessment**
	- Noise from hydraulic lift that is used to transfer waste bins to waste fridge - Pulling and pushing waste bins - Falling off hydraulic lift	- Steel cap rubber boots	**Likelihood** Likely **Consequences** Moderate

Acute risk (4) tasks

There were no acute risks observed at Millmerran Meat Holdings

3.4.4 General Notes

Animal washing
Animals are washed prior to entry in the holding yard, just before the entrance to the processing plant. The animals are washed from underneath via a series of copper pipes that run along the ground. When the pipes are turned on, the water pressure increases to an extent that it washes the dirt and mud off the underside of the animal.

Sheep hide pulling
Sheep hides are removed using a hide pulling machine consisting of a chain passed through a metal eye on the floor and attached to a winch. The other end of the chain is attached to the hide and the hide is removed using the winch. The metal eye on the floor is removed from the floor when not in use

3.4.5 Effluent Treatment

Solid waste treatment

Solid waste generated on site is kept in a cold room before being taken away to be rendered off site.

Waste water treatment

Waste water from the kill floor is pumped away from the kill floor into an evaporative pond. Water had previously been treated in a bio filter however due to low levels of processing on site, the bio filter often stopped working, particularly during colder weather.

3.4.6 Retail Display

Display case at Millmerran Meat Holdings butcher shop

Display case 2 at Millmerran Meat Holdings

Display case 2 at Millmerran Meat Holdings

3.5 Schulte's Meat Tavern, Plainland

Schulte's Meat Tavern's abattoir as seen from car park

3.5.1 Description

Schulte's Meat Tavern is located at Plainland in the Lockyer Valley. The business consists of a large butcher shop and delicatessen on the Warrego Highway between Ipswich and Toowoomba and an abattoir 5 to 10 minutes away from the tavern.

3.5.2 Processing Overview

At the abattoir there are approximately 30 animals processed each week, including 10 cattle and 20 pigs. The processing site consists only of the kill floor however cattle and back fatters are boned out hot on the kill floor. The processing plant is connected to the town water supply and as a result does not require pre-treatment before use.

3.5.3 Risk Analysis

Risk rating chart - beef processing at Schulte's Meat Tavern, Plainland

	Tasks																																												
Hazards	**147**	**29**	**30**	**31**	**35**	**32**	**33**	**34**	**37**	**44**	**36**	**38**	**39**	**66**	**40**	**41**	**160**	**43**	**45**	**42**	**46**	**47**	**49**	**48**	**50**	**51**	**52**	**54**	**53**	**52**	**57**	**58**	**60**	**55**	**56**	**61**	**63**	**64**	**161**	**62**	**162**	**163**	**65**	**67**	**68**	**148**
Bending, twisting or reaching		2			2	2	2		1		1	2	2	1		1	2	1	1	1	2	1	1	1	1			2	1			1	1	2	1	2	1		1	2	1	1	1			
Carrying or holding			1		1	1	1					1	1											1	1	1										1			1		1	1	1	1		
Chemical exposure																																														
Cuts or punctures					1					1		2		2		2		1	1	2	1	1	1					1	1		2		1	1		1	1		2		0	0		1		
Electrical shock																																														
Falling object								1					1		1												1			1									1	1	1	1	1			
Lifting or lowering													2											1	1										2	2			1		1	1	2	2		
Noise			1																					2	2											1			1							
Pushing, pulling or striking		2	1	2	2	1	1		1	1	2	2		1		2	2	1		2	1			1	1	1		2	1		2	2	1	1	2	1			1		2	2	1	2		
Slipping, tripping or falling		2	2		2																							1															2			
Stressed animal		2	2		3	2	2																																							
Overall risk rating	**N**	**2**	**2**	**2**	**3**	**2**	**2**	**1**	**1**	**1**	**2**	**2**	**2**	**2**	**1**	**2**	**2**	**1**	**1**	**2**	**2**	**1**	**1**	**2**	**2**	**1**	**1**	**2**	**1**	**1**	**2**	**2**	**1**	**2**	**2**	**2**	**1**	**0**	**2**	**2**	**2**	**2**	**2**	**2**	**N**	**N**

Rating	Statement	Action
4	Acute risk	Urgent action required
3	High risk	Put in place steps to reduce risk
2	Moderate risk	Consider changes to current procedures
1	Low risk	Okay for now

N	Task not observed
(cyan)	Higher due to irregular procedure
(yellow)	Innovative procedures in place
(grey)	Lower due to changeable control measures
(magenta)	Higher due to changeable control measures

Risk rating chart - pork processing at Schulte's Meat Tavern, Plainland

	Tasks																									
Hazards	**147**	**92**	**95**	**93**	**103**	**94**	**98**	**99**	**100**	**101**	**102**	**103**	**104**	**114**	**107**	**109**	**108**	**164**	**165**	**111**	**112**	**103**	**114**	**115**	**116**	**117**	**148**
Bending, twisting or reaching		1	1	2	1	1			2	1	1	1			1	1	1	2	1	2	1	1			1	1	2
Burns or scalds									1				1														1
Carrying or holding		2																									2
Cuts or punctures						1				1	2				1	2	1	2	1	2	1				1		
Electrical shock		1																									
Falling object					1							1										1					
Lifting or lowering																2	1	1		1					2		2
Noise		3	1	1				1									1	1									
Pushing, pulling or striking		1	1	3		2	1		2	1	2	2			1	1	1	1	2	1				2	1	1	1
Slipping, tripping or falling													1	1	1	1											
Stressed animal		2	2	1	1	1																					
Overall risk rating	**N**	**3**	**2**	**3**	**1**	**2**	**1**	**1**	**2**	**1**	**2**	**2**	**1**	**1**	**1**	**2**	**1**	**2**	**2**	**2**	**1**	**1**	**0**	**2**	**2**	**1**	**2**

Rating	Statement	Action
4	Acute risk	Urgent action required
3	High risk	Put in place steps to reduce risk
2	Moderate risk	Consider changes to current procedures
1	Low risk	Okay for now

N	Task not observed
	Higher due to irregular procedure
	Innovative procedures in place
	Lower due to changeable control measures
	Higher due to changeable control measures

Risk rating chart – backfatter processing at Schulte's Meat Tavern

	Tasks																																	
Hazards	**147**	**141**	**118**	**119**	**120**	**121**	**122**	**123**	**124**	**125**	**126**	**166**	**128**	**129**	**130**	**66**	**131**	**132**	**51**	**134**	**133**	**135**	**136**	**144**	**140**	**138**	**142**	**141**	**160**	**139**	**162**	**163**	**143**	**148**
Bending, twisting or reaching	1	1	1	1	1	2	2			1	1	2	2	2	2	1	1	1	1		1	1	1	2	1	2			1	2	1	1	1	1
Carrying or holding																	1	1						1							1	1	1	
Chemical exposure																																		
Cuts or punctures						1				1	2		1	1	1	1	1	1			1		2		1	2	1		1		0	0		
Falling object								1	1											1									1	1	1	1	1	
Lifting or lowering																								2	2	2			1		1	1	2	
Noise			2														1	1							1				1					
Pushing, pulling or striking	1		1	1	1	2	1		1	1	2	2	1	1	1	1	2	2	1		1		2	2	1	2			2		2	2	1	1
Slipping, tripping or falling																																	2	
Stressed animal			1		1	1	2																											
Overall risk rating	**1**	**1**	**2**	**1**	**1**	**2**	**2**	**1**	**1**	**1**	**2**	**2**	**2**	**2**	**2**	**1**	**2**	**2**	**1**	**1**	**1**	**1**	**2**	**2**	**2**	**2**	**1**	**0**	**2**	**2**	**2**	**2**	**2**	**1**

Rating	Statement	Action
4	Acute risk	Urgent action required
3	High risk	Put in place steps to reduce risk
2	Moderate risk	Consider changes to current procedures
1	Low risk	Okay for now

N	Task not observed
	Higher due to irregular procedure
	Innovative procedures in place
	Lower due to changeable control measures
	Higher due to changeable control measures

Low risk (1) tasks
- **Beef processing:** 34, 37, 44, 40, 43, 45, 47, 49, 51, 52, 53, 60, 63
- **Pork processing:** 98, 99, 101, 104, 114, 107, 108, 112, 117
- **Back fatter processing:** 147, 141, 119, 120, 123, 124, 125, 66, 51, 134, 133, 135, 142, 148

Moderate risk (2) tasks
- **Beef processing:** 29, 30, 31, 32, 33, 36, 38, 39, 66, 41, 160, 42, 46, 48, 50, 54, 57, 58, 55, 56, 61, 161, 62, 162, 163, 65, 67
- **Pork processing:** 95, 94, 100, 103, 109, 164, 165, 111, 115, 116, 148
- **Back fatter processing:** 118, 121, 122, 126, 166, 128, 129, 130, 131, 132, 136, 144, 140, 138, 160, 139, 162, 163, 143

High hazard tasks
- **Beef processing:** 35, 61, 161, 65
- **Pork processing:** 92
- **Back fatter processing:** 160, 143

High risk (3) tasks
- **Beef processing:**

TASK 35: Sticking
Involved hazards:
- Bending, twisting or reaching
- Carrying or holding
- Cuts or punctures
- Pushing, pulling or striking
- **Stressed animal**

	Risks	**PPE in Regular Use**	**Risk Assessment**
	- Bending to cut throat - Holding neck of animal straight with legs whilst sticking - Cuts from knife used for sticking - Pushing and pulling neck straight - Injury caused by stunned animal striking out	- Steel cap rubber boots - Hard hats	**Likelihood** Unlikely **Consequences** Major

- **Pork processing:**

TASK 92: Stun
Involved hazards:
- Bending, twisting or reaching
- Carrying or holding
- Electrical shock
- **Noise**
- Pushing, pulling or striking
- Stressed animal

	Risks	PPE in Regular Use	Risk Assessment
	- Bending to stun animals - Holding stunners on place - Electrical shock from stunners - Noise created by stressed animals - Pushing and pulling animals while trying to apply stunners - An injury caused by a stressed animal striking out	- Steel cap rubber boots	**Likelihood** Possible **Consequences** Moderate

TASK 93: Transfer to plant
Involved hazards:

- Bending, twisting or reaching
- Noise
- **Pushing, pulling or striking**
- Stressed animal

	Risks	PPE in Regular Use	Risk Assessment
	- Bending whilst dragging animal - Noise created by a stressed animal - Pulling animal into plant - An injury caused by a stressed animal striking out	- Steel cap rubber boots	**Likelihood** Likely **Consequences** Moderate

Acute risk (4) tasks

There were no acute risks observed at Schulte's Meat Tavern.

3.5.4 General Notes

Pulling off back fatter hide

During back processing, the dressing bed is chained to the floor so that it can be used in the hide removal process. To do this, employees at Schulte's Meat Tavern cut through the bone of the rear trotter from the rear side but leave the trotters connected at the front. The trotters are then connected to hooks on the dressing bed. When the animal is raised

using the winch, the rear trotters remain secure and the hide of the animal is removed.

Hot boning of beef and back fatter carcases

Both beef and back fatter processing lines contain a boning out section before the bodies are transferred to the cold room. After the sides are split and the head is removed, the sides are split again into fore and hind quarters. In the fore quarter the blade bone is then removed and in the hind quarter the h-bone is removed. All material is then shifted to the cold room either along the rail or in large plastic tubs.

Congealed blood on floor during beef processing

During cattle processing, the animal is shackled and then hung up by both the fore and hind legs. The body is held in this position until it is lowered into the dressing bed. Although the animal was bled out on the ground, often some blood remains in the carcase. When the carcase is then lifted out of the dressing bed, large lumps of congealed blood fall out onto the floor. These lumps are slippery when stood on and rarely removed from the floor immediately.

The blood pit

The blood pit that all the waste water produced on site drains to is located just outside the rear doors of the plant. The pit contains guards to prevent unwanted solids from settling in the bottom of the pit and causing problems with the pump in operation. The pit, as it is currently, is hazardous as it has no guarding rails to prevent an employee or visitor to the site from falling in.

3.5.5 Effluent Treatment

Solid waste treatment

Solid waste produced on site is picked up daily on processing days and transported to Beaudesert for rendering. Paunches are split and the contents are put onto pasture.

Waste water treatment

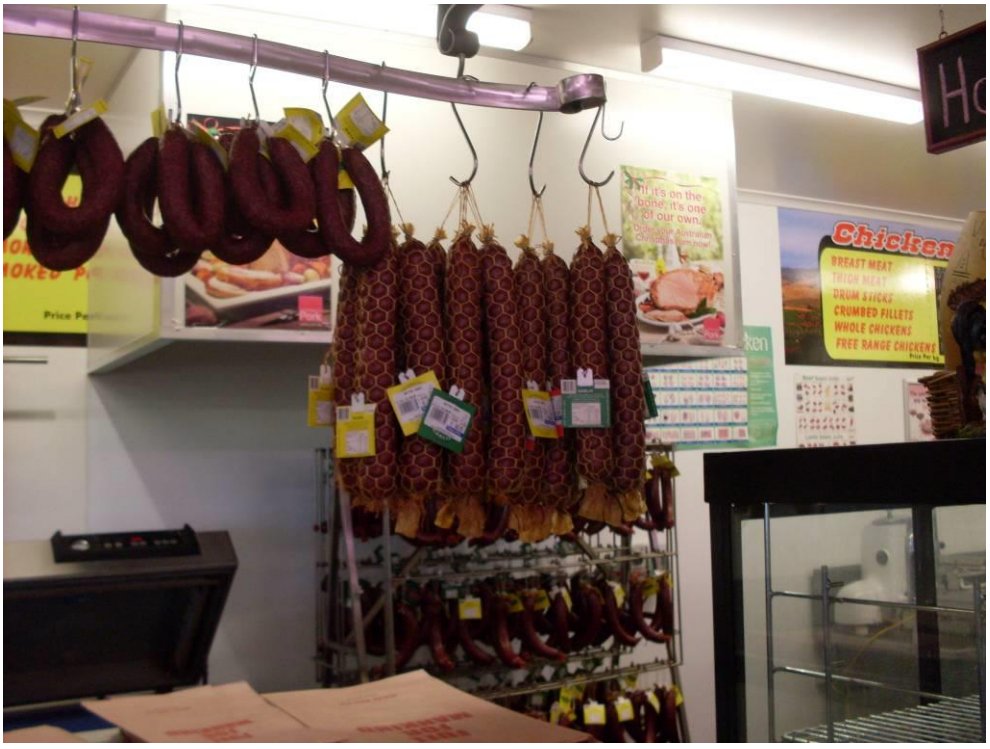
Waste water produced on site is pumped away as the blood pit during processing away the site and put onto the surrounding pasture.

3.5.6 Retail Display

Lamb display at Schulte's Meat Tavern, Plainland

Beef display at Schulte's Meat Tavern, Plainland

Display case 3 at Schulte's meat Tavern, Plainland



Wurst display at Schulte's Meat Tavern, Plainland

3.6 Maclagan Meats

View of Maclagan Meats processing plant from road

3.6.1 Description

Maclagan Meats is located east of Dalby, on the Darling Downs. The processing plant is owned and operated by Dudley Schilf and has eight employees working in the three major sections of the plant: the butcher shop and boning room; the kill floor; and the boiler and rendering plant. The butcher shop and processing plant are located on the main road through Maclagan, with the small town being within walking distance. This site was the only site visited that had the butcher shop attached to the processing plant.

3.6.1 Processing Overview

Maclagan Meats processes between 140 and 150 animals a week on average consisting of 40 cattle, 60 – 65 sheep and lambs and 40 pigs. The employees working on the kill floor also operate the butcher shop when the site has finished slaughtering for the day. The rendering plant is located adjacent to the processing plant and has one large cooker that converts all of the animal waste generated on site into tallow and meat and bone meal following the high temperature rendering process. The cooker is heated by a coal fired boiler that is also used to provide steam and heated water for the processing plant and butcher shop. Cattle hides removed on site were initially stored in a refrigerator and sold green but salting of cattle hides began during the second day of the site visit. Sheep and lamb skins are also salted on site but this was not observed. The processing plant and boiler use bore water which is treated with chlorine and to reduce hardness before use.

3.6.2 Risk Analysis

Risk rating chart - beef processing at Maclagan Meats

	Tasks																																												
Hazards	**147**	**29**	**30**	**31**	**32**	**34**	**35**	**36**	**44**	**38**	**39**	**66**	**40**	**41**	**42**	**43**	**45**	**46**	**47**	**48**	**49**	**50**	**51**	**52**	**53**	**54**	**52**	**55**	**56**	**57**	**60**	**58**	**61**	**63**	**64**	**62**	**65**	**59**	**167**	**67**	**68**	**148**
Bending, twisting or reaching	1	1	2		2		2	1	2	2	2			1	1	1	1	2	1	1	1	1			1	1		2	1	1	1	1	1	1		2	1	2	2	1	2	1
Carrying or holding										1	1									1													1							2	1	
Chemical exposure																																									1	
Cuts or punctures							1		2	2		2		2	2	1	1	1	1	1	1	1			1	3		1		2	1		1	1				1		2		1
Falling object	1					1				1	1		1											1		1									2	2			1		
Lifting or lowering	1										2																		2				1				2	1	2		
Noise			1																	1													1									
Pushing, pulling or striking	1	2	2	1	2		2	2	1	2		1	1	2	2	1	1	1	1	2		2	1			2		1	1	2	1	2	2			1	2	2	1	2	2	1
Slipping, tripping or falling			1				1	1	1	1	2		1							1													2			2		2	2		2	
Stressed animal		1	1		2	1	2																										1							1	
Overall risk rating	**1**	**2**	**2**	**1**	**2**	**1**	**2**	**2**	**2**	**2**	**2**	**2**	**1**	**2**	**2**	**1**	**1**	**2**	**1**	**2**	**1**	**2**	**1**	**1**	**1**	**3**	**1**	**2**	**2**	**2**	**1**	**2**	**2**	**1**	**0**	**2**	**2**	**2**	**2**	**2**	**2**	**1**

Rating	Statement	Action
4	Acute risk	Urgent action required
3	High risk	Put in place steps to reduce risk
2	Moderate risk	Consider changes to current procedures
1	Low risk	Okay for now

N	Task not observed
	Higher due to irregular procedure
	Innovative procedures in place
	Lower due to changeable control measures
	Higher due to changeable control measures

Risk rating chart – pork processing at Maclagan Meats

	Tasks																							
Hazards	**147**	**92**	**93**	**94**	**96**	**97**	**98**	**99**	**100**	**101**	**102**	**111**	**103**	**104**	**101**	**114**	**107**	**108**	**109**	**105**	**114**	**115**	**117**	**148**
Bending, twisting or reaching	1	1	2	1	1		1		1	1	1	1	1	1	2		2	1	1	2			2	1
Burns or scalds	2					1	2		1					1	1									1
Carrying or holding	2	1										2											1	2
Cuts or punctures				1						1	3	2			1		1	1	2	2			2	
Electrical shock		1																						
Falling object					1				1			1	2		1								2	
Lifting or lowering	1												2										1	2
Noise	3	2			1	1		2		1	1	1	1											
Pushing, pulling or striking	2		2	1	1	1			2		2	2	1		2		1	2	2	2		1	2	2
Slipping, tripping or falling			2																			1		
Stressed animal		1	1	1																				
Overall risk rating	**3**	**2**	**2**	**1**	**1**	**1**	**2**	**2**	**2**	**1**	**3**	**2**	**2**	**1**	**2**	**0**	**2**	**2**	**2**	**2**	**0**	**1**	**2**	**2**

Rating	Statement	Action
4	Acute risk	Urgent action required
3	High risk	Put in place steps to reduce risk
2	Moderate risk	Consider changes to current procedures
1	Low risk	Okay for now

N	Task not observed
	Higher due to irregular procedure
	Innovative procedures in place
	Lower due to changeable control measures
	Higher due to changeable control measures

Low risk (1) tasks
- **Beef processing:** 147, 31, 34, 40, 43, 45, 47, 49, 51, 52, 53, 60, 63, 148
- **Pork processing:** 94, 96, 97, 104, 115

Moderate risk (2) tasks
- **Beef processing:** 29, 30, 32, 35, 36, 44, 38, 39, 66, 41, 42, 46, 48, 50, 55, 56, 57, 58, 61, 62, 65, 59, 167, 67, 68
- **Pork processing:** 92, 93, 98, 99, 100, 111, 103, 101, 107, 108, 109, 105, 117, 148

High hazard tasks
- **Beef processing:** 38, 48, 61, 67, 68
- **Pork processing:** 111, 117

High risk (3) tasks
- **Beef processing:**

TASK 54: Removing ox-tail
Involved hazards:
- Bending, twisting or reaching
- **Cuts or punctures**
- Pushing, pulling or striking

	Risks	**PPE in Regular Use**	**Risk Assessment**
No photograph available	- Bending and twisting during pulling action and to attach boning hook - A cut or puncture from the boning hook if it were to become free from the ox-tail during the pulling action - Pulling and twisting whilst pulling the ox-tail off of the tail hide	- Steel cap rubber boots - Hard hats	**Likelihood** Unlikely **Consequences** Major

- **Pork processing:**

TASK 147: Set up
Involved hazards:
- Bending, twisting or reaching
- Burns or scalds
- Carrying or holding
- Lifting or lowering
- **Noise**
- Pushing, pulling or striking

	Risks	PPE in Regular Use	Risk Assessment
	- Bending and twisting while putting machinery, tables and platforms in place - Burns or scalds from the hot water used to fill scalding tank - Carrying and holding while putting machinery, tables and platforms in place - Noise from pipe while filling scalding tank with hot water - Pushing or pulling machinery, tables and platforms into place	- Steel cap rubber boots	**Likelihood** Possible **Consequences** Moderate

TASK 102: Toenail removal
Involved hazards:

- Bending, twisting or reaching
- **Cuts or punctures**
- Noise
- Pushing, pulling or striking

	Risks	PPE in Regular Use	Risk Assessment
	- A cut or puncture from the boning hook if the hook slips out from behind the toe nail during the action of pulling off the toe nail and catches the employees on the arm or body - Noise generated by dehairer - Twisting and pulling while removing the toe nail	- Steel cap rubber boots - Hard hats	**Likelihood** Unlikely **Consequences** Major

Acute risk (4) tasks

There were no acute risks observed at Maclagan Meats

3.6.3 General Notes

Viscera washing

Before paunches are sent to the rendering plant, the contents are emptied and the paunch is cleaned. At Maclagan Meats there was an addition cleaning step that was used before the waste was transferred for rendering. The intestinal sections of the viscera were cleaned by putting a hose into the bung and passing water through until it ran clear.

The blood pit

The blood pit at Maclagan meats is located outside, next to the processing plant and the cattle race into the kill floor. The blood pit is quite large and deep yet has no guarding to prevent employees or visitors to the site from falling in.

Transferring waste to the rendering plant

Currently waste is transferred from the viscera room to the rendering plant in 200 litre drums made of metal. These drums are transferred by leaning the drum on the bottom edge and supporting the weight at the top. The drum is then rolled along the bottom edge all of the way to the rendering plant. Once at the rendering plant, the drum is lifted manually and emptied into a hopper on the ground that takes the waste to the cooker.

3.6.4 Effluent Treatment

Solid waste treatment

Rendering plant at Maclagan Meats

Solid waste generated on site is processed on site in a rendering plant. The rendering follows the high temperature rendering method with involves the water being driven out off the waste during the cooking process before the tallow is separated from the solids using mechanical separation. The products of the rendering plant, tallow and meat and bone meal, are stored in vats or in bags respectively before being sold as by-products.

Waste water treatment

Waste water from the kill floor and the cattle yards and small stock pens is pumped down to a series of waste water ponds on the property. The ponds appear to be operating as naturally aerated aerobic ponds but may have slightly anaerobic sections towards the edges of the ponds.

Waste water ponds at Maclagan Meats

3.6.5 Retail Display

Meat trays prepared at Maclagan Meats

Produce fridge at Maclagan Meats

3.7 Mundubbera Butchering Co.

View of Mundubbera Butchering Co. Butcher shop from road

3.7.1 Description

Mundubbera Butchering Co. operates a butcher shop and small abattoir in Mundubbera in the Burnett region in Southern Queensland. The abattoir is located on a property off the main highway to Mundubbera, just on the outskirts of town. The butcher shop is located in the main street and is known for producing pork sausages that won the Queensland state sausage king contest in 2006 and the Australian nation sausage king contest in 2007.

3.7.2 Processing Overview

The slaughtering on the kill floor is done by two or three employees who also work at the butcher shop in town. The abattoir is used to process approximately 20 bodies a week including 6 cattle on a Monday, 7 pigs on Tuesday and 8 lambs on Wednesday. Cattle hides are stored and sold green while sheep hides are salted on site although this was not observed during the site visit. Water used on site is drawn from town water supplies and requires no pre-treatment before use.

3.7.3 Risk Analysis

Risk rating chart - lamb processing at Mundubbera Butchering Co.

	Tasks																													
Hazards	**147**	**1**	**3**	**2**	**4**	**168**	**12**	**9**	**5**	**11**	**36**	**169**	**159**	**7**	**10**	**13**	**6**	**14**	**8**	**16**	**15**	**18**	**19**	**20**	**170**	**21**	**22**	**23**	**25**	**148**
Bending, twisting or reaching		1	2	2	1		1		1		1	1	1	2	1	2	2	2	2		1				2	1		1	1	
Carrying or holding		2																							2			2	1	
Cuts or punctures			2				1			1		2		2		1	2	1	2	1	1	2	1							
Electrical shock		1																												
Falling object					1			1					1												1					
Lifting or lowering													1						1			1			2			2	1	
Pushing, pulling or striking			1	2		1	1			1	1	1		2	1	2	2	2	2		1	2	1			2			1	
Slipping, tripping or falling																									3	1		1	1	
Stressed animal		1	1	1																										
Overall risk rating	**0**	**2**	**2**	**2**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**2**	**1**	**2**	**1**	**2**	**2**	**2**	**2**	**1**	**1**	**2**	**1**	**0**	**3**	**2**	**0**	**2**	**1**	**0**

Rating	Statement	Action
4	Acute risk	Urgent action required
3	High risk	Put in place steps to reduce risk
2	Moderate risk	Consider changes to current procedures
1	Low risk	Okay for now

N	Task not observed
	Higher due to irregular procedure
	Innovative procedures in place
	Lower due to changeable control measures
	Higher due to changeable control measures

Risk rating chart - beef processing at Mundubbera Butchering Co.

	Tasks																																								
Hazards	**147**	**29**	**30**	**31**	**32**	**34**	**35**	**36**	**37**	**44**	**38**	**39**	**40**	**41**	**42**	**45**	**46**	**47**	**49**	**50**	**48**	**51**	**52**	**53**	**54**	**52**	**55**	**56**	**57**	**60**	**58**	**61**	**63**	**64**	**62**	**65**	**66**	**67**	**148**
Bending, twisting or reaching	1	1	1		1		2	2	1	2	2	2		1	1		1	1	1	1	1	1		2	2		2	2		1	2	2	1		1	1	1	1	1
Carrying or holding												1									2							1		1		1						2	
Cuts or punctures							2			1	2			2	2	1	2	2	1	1	1			1	3		2		2	1		4	1				2	1	
Falling object						1						1	1										1			1			1						1					
Lifting or lowering												2									2							1			2	1						2	
Noise			1																		3											3							
Pushing, pulling or striking	1	2	2	2	2	1	2	2		1	2		1	2	2	1	1	1	1	2	2	1		1	2		1	2	2	2	2	2			1	2	1		1
Slipping, tripping or falling		1	1									1																						1	1		1	
Stressed animal		1	1	1	2	1																																	
Overall risk rating	**1**	**2**	**2**	**2**	**2**	**1**	**2**	**2**	**1**	**2**	**2**	**2**	**1**	**2**	**2**	**1**	**2**	**2**	**1**	**2**	**3**	**1**	**1**	**2**	**3**	**1**	**2**	**2**	**2**	**2**	**2**	**4**	**1**	**0**	**1**	**2**	**2**	**2**	**1**

Rating	Statement	Action
4	Acute risk	Urgent action required
3	High risk	Put in place steps to reduce risk
2	Moderate risk	Consider changes to current procedures
1	Low risk	Okay for now

N	Task not observed
	Higher due to irregular procedure
	Innovative procedures in place
	Lower due to changeable control measures
	Higher due to changeable control measures

Low risk (1) tasks
The following tasks observed at Mundubbera Butchering Co. are considered to be low risk:
- **Lamb processing:** 4, 168, 12, 9, 5, 11, 36, 158, 10, 16, 15, 19, 25
- **Beef processing:** 147, 34, 37, 40, 45, 49, 51, 52, 63, 62, 148

Moderate risk (2) tasks
The following tasks observed at Mundubbera Butchering Co. are considered to be of moderate risk:
- **Lamb processing:** 1, 3, 2, 169, 7, 13, 6, 14, 8, 18, 21, 23
- **Beef processing:** 29, 30, 31, 32, 35, 36, 44, 38, 39, 41, 42, 46, 47, 50, 53, 55, 56, 57, 60, 58, 65, 66, 67

High hazard tasks
The following tasks observed at Mundubbera Butchering Co. have 6 or more involved hazards:
- **Beef processing:** 48, 61

High risk (3) tasks
The following tasks observed at Mundubbera Butchering Co. are considered to be high risk:
- **Lamb processing:**

TASK 170: Transfer carcase to rail
Involved hazards:
- Bending, twisting or reaching
- Carrying or holding
- Falling object
- Lifting or lowering
- **Slipping, tripping or falling**

	Risks	**PPE in Regular Use**	**Risk Assessment**
 	- Reaching to put carcase onto rail - Carrying approximately 3 metres from hanging position to rail - Injury caused by falling carcase, placed incorrectly onto rail - Lowering carcase from hanging position. Lifting carcase onto rail - Falling off or tripping on steps used by employee when putting carcase on rail	- Steel cap rubber boots - Hard hats	**Likelihood** Likely **Consequences** Moderate

- **Beef processing:**

TASK 48: Splitting brisket
Involved hazards:
- Bending, twisting or reaching
- Carrying or holding
- Cuts or punctures
- Lifting or lowering
- **Noise**
- Pushing, pulling or striking

	Risks	**PPE in Regular Use**	**Risk Assessment**
	- Bending and reaching whilst using reciprocating saw - Holding saw - Cuts from saw - Noise from saw in operation - Pushing or pulling saw	- Steel cap rubber boots - Hard hats	**Likelihood** Possible **Consequences** Moderate

TASK 54: Removing ox-tail
Involved hazards:
- Bending, twisting or reaching
- **Cuts or punctures**
- Pushing, pulling or striking

	Risks	**PPE in Regular Use**	**Risk Assessment**
	- Bending and twisting during pulling action and to attach boning hook - A cut or puncture from the boning hook if it were to become free from the ox-tail during the pulling action - Pulling the ox-tail off of the tail hide	- Steel cap rubber boots - Hard hats	**Likelihood** Unlikely **Consequences** Major

Acute risk (4) tasks
The following tasks observed at Mundubbera Butchering Co. are considered to contain an acute risk:
- **Beef processing:**

TASK 61: Splitting Carcase

Involved hazards:

- Bending, twisting or reaching
- Carrying or holding
- **CUTS OR PUNCTURES – 1**
- Lifting or lowering
- **Noise - 2**
- Pushing, pulling or striking

	Risks	**PPE in Regular Use**	**Risk Assessment**
	- Bending and reaching whilst using reciprocating saw - Carrying or holding saw while in used - <u>Cuts to employee standing behind holding carcase steady</u> - Lifting and lowering saw during use - Noise generated by saw in operation - Pushing and pulling saw in operation	- Steel cap rubber boots - Hard hats	**Likelihood** **1. <u>Unlikely</u>** 2. Likely **Consequences** **1. <u>Catastrophic</u>** 2. Moderate

3.7.4 General Notes

Rear leg hide removal

Hide along the rear leg is removed while the animal is in the process of being transferred into the dressing bed. Before the shackles are removed from the legs, the hide removal process is started. This is done by the employee to make it easier to perform the initial cut and to add some tension to the hide during cutting. Once the cut is started the animal is lowered completely into the dressing bed and the shackle is removed.

3.7.5 Effluent Treatment

Solid waste treatment

Solid waste produced on site is buried on site once all the processing for the day is finished.

Waste water treatment

Waste water from the processing plant is pumped away as the blood pits fill up, into a drain that releases the water into one of the surrounding paddocks.

3.7.6 Retail Display

Display case 1 at Mundubbera Butchering Co.

Display case 2 at Mundubbera Butchering Co.

3.8 Monto Meats

View of Monto Meats butcher shop from road

3.8.1 Description

Monto Meats is owned and operated by Rob and Sharon Ramage, supplying meat products to Monto and surrounding areas in the North Burnett region in Queensland. The butcher shop is located in the main street of Monto while the abattoir is on a property five to ten minutes out of town.

3.8.2 Processing

Monto Meats process, on average, three to four cattle and three to four pigs each week. Hides removed from the cattle are hand salted in a salting shed on site. Water used inside the processing plant is drawn from town water supplies and is not pre-treated prior to use.

3.8.3 Risk Analysis

No processing occurred during the site visit to Monto meats. As a result no risk analysis was performed.

3.8.4 General Notes

Small stock knocking box

During pig processing, the animals are walked into the plant alive before being stunned. The animals are restrained inside in a small stock knocking box which appears to be a smaller version of the knocking box used regularly for the stunning of cattle and back fatters.

Pigs dehairer and scalder

The scalding and dehairing process in pig processing is performed in a single machine that performs both tasks. This machine is also used at the processing plants of Carey Brothers in Warwick and Schulte's Meat Tavern at Plainland. This machine is completely covered and operates much more quietly than the dehairers used at most other sites that processed pigs. A further benefit of the machine is that it saves time by performing two essential tasks.

3.8.5 Effluent Treatment

Solid waste treatment

All solid waste collected on site is collected and transferred off site to the local council waste disposal site located nearby to the abattoir.

Waste water treatment

Waste water generated on site passes through no treatment system and is drained straight from the kill floor onto the land surrounding the site. During processing, blood collection does occur, with the collected blood being transferred to the local council waste disposal site along with all the solid waste.

3.8.6 Retail Display

Display case 1 at Monto Meats

Display case 2 at Monto Meats

3.9 Kuttabul Butchery

Kuttabul Butchery

3.9.1 Company Background

Kuttabul Butchery is located on the Bruce Highway approximately 20 minutes north of Mackay in Northern Queensland and is owned and operated by Leana and Marcus McLeod. The business consists of the butcher shop; an abattoir located 5 minutes away on a small property; and a feedlot. Recently a second butcher shop has been opened in Moranbah.

3.9.2 Processing Overview

Kuttabul Butchery's processing plant operates 4 days each processing 140 bodies on average. These include 40 cattle and 100 pigs although goats are slaughtered occasionally, up to 20 bodies over 3 months. Cattle hides, at the time of the site visit, were being salted by hand in an external room connected to the abattoir although during normal operation these hides are sold green. Water used on site is drawn from a bore and is treated with chlorine before use on the slaughter floor.

3.9.3 Risk Analysis

Risk rating chart - beef processing at Kuttabul Butchery

	Tasks																					
Hazards	**147**	**29**	**30**	**31**	**33**	**35**	**171**	**36**	**32**	**34**	**37**	**41**	**44**	**38**	**39**	**66**	**40**	**42**	**43**	**45**	**46**	**47**
Bending, twisting or reaching	2		1	2	1	2		1	1		1		2	2			1	1	1	2	2	2
Carrying or holding															1							
Chemical exposure																						
Cuts or punctures						2		1				1	2	2		1		2	1	1	1	1
Electrical shock											1	1										
Falling object										2					1		1					
Lifting or lowering														2	2							
Noise			1																			
Pushing, pulling or striking	1	1		1	1	1		1				2		1		1						
Slipping, tripping or falling	3	2	3		2	2																
Stressed animal		1	1	2	1	1																
Other																						
Overall risk rating	**3**	**2**	**3**	**2**	**2**	**2**	**0**	**1**	**1**	**2**	**1**	**2**	**2**	**2**	**2**	**1**	**1**	**2**	**1**	**2**	**2**	**2**

	Tasks																					
Hazards	**48**	**49**	**50**	**51**	**52**	**53**	**55**	**52**	**56**	**54**	**57**	**58**	**60**	**61**	**62**	**63**	**64**	**65**	**172**	**67**	**68**	**148**
Bending, twisting or reaching		1		1		1	2					2	1	1	1	1		1	1		1	1
Carrying or holding														1						1	1	
Chemical exposure																					1	
Cuts or punctures		1	1			1	1			1	2		1			1				2		
Electrical shock																						
Falling object								1							2				1			
Lifting or lowering	1								1			1		2						2		
Noise	1													1								
Pushing, pulling or striking			1						1		1	1						2			1	1
Slipping, tripping or falling									3			3						3	2		1	
Stressed animal																						
Other														3								
Overall risk rating	**1**	**1**	**1**	**1**	**0**	**1**	**2**	**1**	**3**	**1**	**2**	**3**	**1**	**3**	**2**	**1**	**0**	**3**	**2**	**2**	**1**	**1**

Rating	**Statement**	**Action**
4	Acute risk	Urgent action required
3	High risk	Put in place steps to reduce risk
2	Moderate risk	Consider changes to current procedures
1	Low risk	Okay for now

N	Task not observed
(cyan)	Higher due to irregular procedure
(yellow)	Innovative procedures in place
(grey)	Lower due to changeable control measures
(magenta)	Higher due to changeable control measures

Risk rating chart – veal (left) and pork (right) processing at Kuttabul Butchery

Veal – Tasks

Hazards	147	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	87	84	85	86	87	88	89	90	91
Bending, twisting or reaching	1		2	2	2	1		1	1		1	1	1	2	1		1	1				1		1	
Burns or scalds																									
Carrying or holding	1																	2							
Chemical exposure																									
Cuts or punctures				2				2	2		2	1	1	1	1		2		1	2	1	1			1
Electrical shock																									
Extreme temperature exposure																									
Falling object																		2							
Lifting or lowering																		2							1
Noise																									
Pushing, pulling or striking	1		1		1	1		1			1									1				2	
Slipping, tripping or falling	2		2																					2	
Stressed animal			1	1																					
Other																									
Overall risk rating	**2**	**N**	**2**	**2**	**2**	**1**	**0**	**2**	**2**	**0**	**2**	**1**	**1**	**1**	**1**	**N**	**2**	**2**	**1**	**2**	**1**	**1**	**0**	**2**	**1**

Pork – Tasks

Hazards	147	92	93	94	95	96	97	98	99	100	102	104	101	103	104	114	110	105	106	107	108	109	114	115	117	148
Bending, twisting or reaching		2	2	1	2			1		1			1	2			2	1			2	2		1	2	2
Burns or scalds	3					1	2				2				2											1
Carrying or holding	2																					1				2
Chemical exposure																										
Cuts or punctures				1							3		1				1	1	1	1	1	2				
Electrical shock		1																								
Extreme temperature exposure					1	1	1	1	1	1	1	1	1	1	1	1										1
Falling object						1								1												
Lifting or lowering	2				1									2								2			2	2
Noise		3		1	1	2	2	2	2		2	2	2	2	1	1	1	1	1	1	1	1	1			
Pushing, pulling or striking	2		2	1	1	1		2		2	2		1					1	1		1	1		2	2	2
Slipping, tripping or falling	3							2	2	2	2	2	1	1										2	2	3
Stressed animal		2	1	1	2																					
Other																										
Overall risk rating	**3**	**3**	**2**	**1**	**2**	**2**	**2**	**2**	**2**	**2**	**3**	**2**	**2**	**2**	**2**	**1**	**2**	**1**	**1**	**1**	**2**	**2**	**1**	**2**	**2**	**3**

Rating	Statement	Action
4	Acute risk	Urgent action required
3	High risk	Put in place steps to reduce risk
2	Moderate risk	Consider changes to current procedures
1	Low risk	Okay for now

N	Task not observed
	Higher due to irregular procedure
	Innovative procedures in place
	Lower due to changeable control measures
	Higher due to changeable control measures

Low Risk (1) Tasks
Low risk tasks at Kuttabul Butchery include:
- **Beef processing:** 28, 32, 33, 36, 39, 44, 45, 46, 47, 48, 49, 50, 56, 59, 62, 64.
- **Veal processing:** 73, 79, 80, 81, 82, 85, 87, 88, 91
- **Pork processing:** 94, 114, 105, 106, 107

Moderate Risk (2) Tasks
Moderate risk tasks at Kuttabul Butchery include:
- **Beef processing:** 25, 27, 29, 30, 31, 34, 35, 37, 38, 40, 41, 42, 43, 51, 53, 58, 63, 172
- **Veal processing:** 147, 70, 71, 72, 75, 76, 78, 87, 84, 86, 90
- **Pork processing:** 93, 95, 96, 97, 98, 99, 100, 104, 101, 103, 110, 108, 109, 115, 117

High Hazard Tasks
The following tasks completed at Kuttabul Butchery have 6 or more involved hazards:
- **Pork processing:** 95, 101, 103, 109

High Risk (3) Tasks
The following tasks observed at Kuttabul Butchery are considered to be high risk.
- **Beef processing:**

TASK 147: Set up
Involved hazards:
- Bending, twisting or reaching
- Pushing, pulling or striking
- **Slipping, tripping or falling**

	Risks	**PPE in Regular Use**	**Risk Assessment**
No photograph available	- Bending while shifting dressing bed - Pushing and pulling dressing bed and knocking box into place - Slipping or tripping on raised section of floor in doorways	- Steel cap rubber boots	**Likelihood** Likely **Consequences** Moderate

TASK 30: Stunning
Involved hazards:
- Bending, twisting or reaching
- Noise
- **Slipping, tripping or falling**
- Stressed animal

	Risks	PPE in Regular Use	Risk Assessment
No photograph available	- Bending down into knocking box to stun animal - Noise created by stunner - Slipping off platform on side of knocking box and falling to the ground - An injury occurring due to a live animal acting in an unpredictable manner	- Steel cap rubber boots	**Likelihood** Possible **Consequences** Moderate

TASK 56: Hide transfer
Involved hazards:
- Lifting or lowering
- Pushing, pulling or striking
- **Slipping, tripping or falling**

	Risks	PPE in Regular Use	Risk Assessment
No photograph available	- Lifting hide off floor - Pulling hide to adjacent room - Slipping or tripping on raised section of floor in door way	- Steel cap rubber boots	**Likelihood** Possible **Consequences** Moderate

TASK 58: Viscera transfer
Involved hazards:
- Bending, twisting or reaching
- Lifting or lowering
- Pushing, pulling or striking
- **Slipping, tripping or falling**

	Risks	PPE in Regular Use	Risk Assessment
No photograph available	- Bending down to pick up viscera to transfer to trailer	- Steel cap rubber	**Likelihood** Possible

	- Lifting viscera off floor to transfer to trailer - Pulling viscera tub to trailer - Slipping or tripping on raised section of floor in the door way	boots	**Consequences** Moderate

TASK 61: Splitting carcase
Involved hazards:
- Bending, twisting or reaching
- Carrying or holding
- Lifting or lowering
- Noise
- **Other**

	Risks	**PPE in Regular Use**	**Risk Assessment**
No photograph available	- Bending and reaching while operating band saw - Carrying and holding saw in use - Lifting and lowering saw in use - Noise generated by saw in operation - Injury obtained whilst operating saw with right hand and raising or winch with left hand	- Steel cap rubber boots	**Likelihood** Possible **Consequences** Moderate

TASK 65: Shifting to cold room
Involved hazards
- Bending, twisting or reaching
- Pushing, pulling or striking
- **Slipping, tripping or falling**

	Risks	**PPE in Regular Use**	**Risk Assessment**
No photograph available	- Reaching whilst pushing carcase to cold room - Pushing carcase up inclined rail to cold	- Steel cap rubber boots	**Likelihood** Possible **Consequences**

	room - Slipping or tripping on raised section on floor near scales		Moderate

- **Pork processing**

TASK 147: Set up
Involved hazards:
- **Burns or scalds - 1**
- Carrying or holding
- Lifting or lowering
- Pushing, pulling or striking
- **Slipping, tripping or falling - 2**

	Risks	**PPE in Regular Use**	**Risk Assessment**
No photograph available	- Burns or scalds from hot water used to fill up scalding tank. Hot water is carried approximately 3 metres in full 20 litre buckets and emptied into scalding tank - Carrying buckets of hot water to scalding tank. Carrying machinery, tables and platforms when putting in to place - Lifting bucket to empty into scalding tank. Lifting machinery, tables and platforms when putting into place - Pushing and pulling machinery, tables and platforms into place - Slipping or tripping on raised sections of floor in doorways and across the entrance end of the kill floor	- Steel cap rubber boots	**Likelihood** 1. Possible 2. Possible **Consequences** 1. Moderate 2. Moderate

TASK 92: Stun
Involved hazards:
- Bending, twisting or reaching
- Electrical shock
- **Noise**

- Stressed animal

	Risks	PPE in Regular Use	Risk Assessment
No photograph available	- Bending and reaching to apply stunners - Electrical shock from stunners - Noise generated by stressed animals - Injury obtained from stressed animal striking out	- Steel cap rubber boots	**Likelihood** Possible **Consequences** Moderate

TASK 102: Toenail removal
Involved hazards:
- **Cuts or punctures**
- Extreme temperature exposure
- Noise
- Pushing, pulling or striking
- Slipping, tripping or falling

	Risks	PPE in Regular Use	Risk Assessment
No photograph available	- A cut or puncture from the boning hook if the hook slips out from behind the toe nail during the action of pulling off the toe nail and catches the employees on the arm or body - Exposure to high temperatures due to poor cooling air flow during pork processing - Noise generated by dehairer - Pulling off toe nails - Falling off platform used in task	- Steel cap rubber boots	**Likelihood** Unlikely **Consequences** Major

TASK 148: Pack up
Involved hazards:
- Bending, twisting or reaching
- Burns or scalds
- Carrying or holding
- Extreme temperature exposure
- Lifting or lowering

- Pushing, pulling or striking
- **Slipping, tripping or falling**

	Risks	**PPE in Regular Use**	**Risk Assessment**
No photograph available	- Bending while shifting objects used during processing - Burns or scalds obtained while emptying hot water from scalding tank - Carrying objects used during processing back to storage areas - Extreme temperature exposure due to poor cooling air flow during pork processing - Lifting and lowering objects used during transfer to storage - Pulling object during transfer to storage - Slipping or tripping on raised section of floor in doorways and across floor at entrance end	- Steel cap rubber boots	**Likelihood** Possible **Consequences** Moderate

Acute Risk (4) Tasks

There were no acute risks observed at Kuttabul Butchery

3.9.4 General Notes

Steadying carcase during sticking
Once the cattle are stunned, a winch is attached to top, fore leg of the animal and the body is raised slightly. By doing this it restrains the carcase, removing some of the risk associated with sticking.

Cheek freeing

When taking the cheek flesh off the head of the cattle, a metal bar that has an end that looks similar to a steel with a handle similar to those found on a boning hook. This device is pushed down between the cheek flesh and the jaw bone in order to separate them. By using this tool to perform this task it appears that less cheek flesh is left behind on the bone, and time is saved when cutting out the cheek and tongue.

Sealing and freeing weazand using weazand rodder

The weazand of the cattle is sealed using a docking ring that is placed on the weazand rodder using docking ring pliers. The rodder differs from those used at other sites in that instead of having a curly tail that wraps around the weazand, this rodder is a long thin metal bar with a trigger handle at one end and an eye made out of a short piece of pipe at the other. When in use, a docking ring is rolled down over the eye of the rodder, the weazand is passed through that eye and then the docking ring is shifted from the eye of the rodder to the weazand.

Preventing beef carcase touching ground during side splitting

When splitting the cattle carcase into sides, a tray is placed underneath and the carcase is lowered down to rest on this tray. This removes the need for the employee to operate the band saw while standing on a platform or reaching above head height, while also stopping the carcase from contacting contaminants that may be on the floor. This was the first site that this was done at but was subsequently performed at Kemp Meats in Sarina.

Raised sections of floor

At the door way to both the hide salting room at the back of the floor and the viscera room on the side, and across the middle of the floor near the scales, there is a raised section of floor that creates a hazard that could be tripped over. More pertinently however, is how slippery these sections of floor become once wet, which occurs at most times that the abattoir is in use.

Air flow during pork processing

During pork processing there is a significant amount of hot water used for the scalding of the pigs before they are dehaired. This hot water, possibly with additional factors, causes the slaughter floor to become noticeably hotter. This appears to be due to insufficient air flow through the plant.

3.9.5 Effluent Treatment

Solid waste treatment

Solid waste produced on site is dealt with in two ways. Meat and bone waste is collected in bins to be transported to the nearby rendering plant in Sarina. All other waste including viscera and hair is transferred from the kill floor into a trailer to be transported to a nearby feedlot, owned and operated by Kuttabul Butchery, and buried. Recently, fat has started to be kept to produce bio-diesel on-site, although this was not performed during the site visit.

Waste water treatment

Stick water from the processing plant is pumped into a set of ponds. The first pond was approximately 15 metres in diameter, while the second was between 20-25 metres in diameter. The volume of both these ponds is unknown. Although the site manager believes these ponds to be settling ponds, the colour of the water contained in and leaving the second pond was much lighter. In association with an apparent reduction in turbidity, this would suggest that some degree of biological treatment may occur in these ponds. However, this assumption may be skewed as at the time of viewing there had been rainfall in the area in recent days.

3.9.6 Retail Display

Display case at Kuttabul Butchery

3.10 Kemp Meats, Sarina

3.10.1 Description

Kemp Meats operate a processing plant at Sarina, approximately half an hour south of Mackay in Northern Queensland. The site is located approximately five minutes from the township and consists of the slaughter floor, a boning and packaging room and a boiler shed and rendering plant.

3.10.2 Processing Overview

The site processes approximately 150 animals each week including 50 cattle and 100 pigs. The site also contains a boning room that breaks the bodies down into primal cuts and packs them in boxes for transport. The rendering plant on site operates following a high temperature rendering process to produce meat and bone meal and tallow. The cooker is heated by boiler which also supplies heat to the slaughter floor. The boiler is run on diesel during start up and run on tallow produced in house, and is operated using tallow 80% of the time it is in use. The rendering plant also processes meat and bone waste from other butchers and processors in the area including Kuttabul Butchery. The site uses bore water which is treated with chlorine before it is used on the floor. Water used in the boiler undergoes additional treatment before use.

3.10.3 Risk Assessment

Risk rating chart – beef processing at Kemp Meats, Sarina

	Tasks																																								
Hazards	147	29	30	31	32	34	35	37	36	44	38	39	66	41	40	42	43	45	46	47	48	50	51	52	53	49	52	57	60	55	56	68	58	61	62	63	64	65	59	67	148
Bending, twisting or reaching					2		1	1	1	2	2			2		2	1	1	2	1		1			1	1						2	2		1				2		2
Breathing																																							1		
Carrying or holding												2			1						1								1		1	1		1						1	
Chemical exposure																																1									
Cuts or punctures							1			1	1		2	2		2	1	1	1	1		1			1	1		2	1	1		1				1			1	1	
Falling object						1									1																							1			
Lifting or lowering												2									1		1											1					1	1	
Noise			1																															1							
Pushing, pulling or striking					2		1		2					1		1					1	1						1		1	1		1					2	2	1	1
Slipping, tripping or falling			1																													2	1		1			1			
Stressed animal		1			2	1	1																																		
Overall risk rating	**N**	**1**	**1**	**0**	**2**	**1**	**1**	**1**	**2**	**2**	**2**	**2**	**2**	**2**	**1**	**2**	**1**	**1**	**2**	**1**	**1**	**1**	**1**	**0**	**1**	**1**	**0**	**2**	**1**	**1**	**1**	**2**	**2**	**1**	**1**	**1**	**0**	**2**	**2**	**1**	**2**

Rating	**Statement**	**Action**
4	Acute risk	Urgent action required
3	High risk	Put in place steps to reduce risk
2	Moderate risk	Consider changes to current procedures
1	Low risk	Okay for now

N	Task not observed
	Higher due to irregular procedure
	Innovative procedures in place
	Lower due to changeable control measures
	Higher due to changeable control measures

Risk rating chart – pork processing at Kemp Meats, Sarina

	Tasks																								
Hazards	**147**	**92**	**94**	**93**	**95**	**96**	**97**	**98**	**99**	**100**	**102**	**103**	**106**	**107**	**108**	**109**	**105**	**110**	**113**	**104**	**101**	**114**	**115**	**117**	**148**
Bending, twisting or reaching	2	1	2	1						1					1	1	2	2			1			1	1
Burns or scalds	3					2	1													1					2
Carrying or holding	2		1																					2	2
Cuts or punctures			2								3		2	1	1	2	2	1	1						
Electrical shock	1	1																							1
Extreme temperature exposure	1						1																		
Falling object												2													
Lifting or lowering	1											1				1								1	2
Noise		2	1		1	1	1	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	
Pushing, pulling or striking	2			2	1	1	1			2	2	2	1		1		1						2	2	2
Slipping, tripping or falling				1						1	1	1	1										1	1	
Stressed animal		1	1		1																				
Other									2																
Overall risk rating	**3**	**2**	**2**	**2**	**1**	**2**	**1**	**2**	**2**	**2**	**3**	**2**	**2**	**2**	**1**	**2**	**2**	**2**	**1**	**1**	**1**	**1**	**2**	**2**	**2**

Rating	Statement	Action
4	Acute risk	Urgent action required
3	High risk	Put in place steps to reduce risk
2	Moderate risk	Consider changes to current procedures
1	Low risk	Okay for now

N	Task not observed
	Higher due to irregular procedure
	Innovative procedures in place
	Lower due to changeable control measures
	Higher due to changeable control measures

Low risk (1) tasks
The following tasks observed at Kemp Meats are considered to involve a low level of risk:
- **Beef processing:** 29, 30, 34, 35, 37, 40, 43, 45, 47, 48, 50, 51, 53, 49, 60, 55, 56, 61, 62, 63, 67
- **Pork processing:** 95, 97, 108, 113, 104, 101, 114

Moderate risk (2) tasks
The following tasks observed at Kemp Meats are considered to involve a moderate level of risk:
- **Beef processing:** 32, 36, 44, 38, 39, 66, 41, 42, 46, 57, 68, 58, 65, 59, 148
- **Pork processing:** 92, 94, 93, 96, 98, 99, 100, 102, 103, 106, 107, 109, 105, 110, 115, 117, 148

High hazard tasks
The following tasks observed at Kemp Meats are considered to involve 6 or more hazards:
- **Pork processing:** 117

High risk (3) tasks
The following tasks observed at Kemp Meats are considered to involve a high level of risk
- **Pork processing:**

TASK 147: Set up
Involved hazards:
- Bending, twisting or reaching
- **Burns or scalds**
- Carrying or holding
- Electrical shock
- Extreme temperature exposure
- Lifting or lowering
- Pushing, pulling or striking

	Risks	**PPE in Regular Use**	**Risk Assessment**
No photograph available	- Bending, carrying, holding, lifting, lowering, pushing and pulling scalding tank and dehairer into place - Electrical shock when connecting dehairer to power source - Extreme temperature exposure and possible burns or scalds when connecting the steam pipe to the scalding tank	- Steel cap rubber boots	**Likelihood** Unlikely **Consequences** Major

TASK 102: Toenail removal
Involved hazards
- **Cuts or punctures**
- Noise
- Pushing, pulling or striking

- Slipping, tripping or falling

	Risks	PPE in Regular Use	Risk Assessment
No photograph available	- A cut or puncture from the boning hook if the hook slips out from behind the toe nail during the action of pulling off the toe nail and catches the employees on the arm or body - Twisting and pulling while removing the toe nail	- Steel cap rubber boots	**Likelihood** Unlikely **Consequences** Major

Acute risk (4) tasks

There were no acute risks observed at Kemp Meats, Sarina.

3.10.4 General Notes

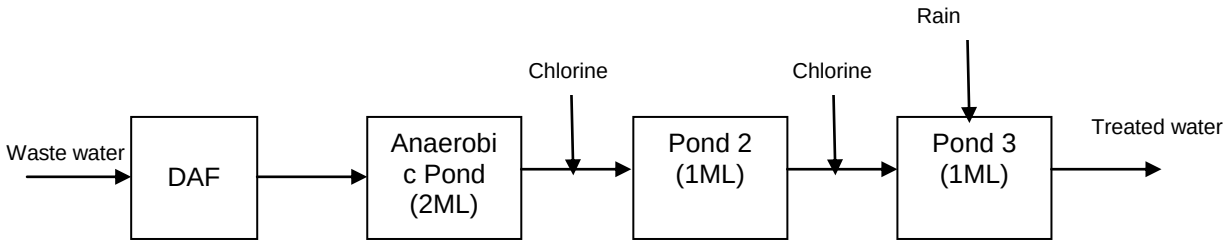
Knocking box
The knocking box used in the stunning of cattle is different to those used elsewhere. The main difference in the box is that it opens by lifting one wall of the box up rather than out. The floor of the box is inclined, resulting in the stunned animal falling onto its side with its feet facing outward rather than below the body or on the less accessible side of the body. The platform that the employee stuns the animal from is also impressive, with steps all the way to the platform, with the platform being almost completely surrounded by guard rails. A similar knocking box can be found at Carey Brothers Meats in Warwick

Transfer from scalding tank to dehairer
During pig processing, most processing sites visited transferred the body from the scalding tank to the dehairer using a chain basket and a winch or a metallic basket that pulled manually. At Kemp Meat the metal basket arrangement is used but the bar is lifted mechanically making the task safer than the alternatives.

3.10.3 Effluent Treatment

Solid waste treatment
Solid waste produced on the slaughter floor is treated in the rendering plant located on site. The rendering plant forces the water out of the water out of the waste during the cooking process. Meat and bone is then separated from the tallow before the meat and bone is milled into meat and bone meal. Paunch contents collected on site are emptied into a back hoe and disposed of on the land in the surrounding paddocks.

Waste water treatment
Waste water produced at Kemp Meats is sent to a series of waste water ponds on site. The pond system had recently been subject to an environmental assessment. This assessment states that pond setup is as shown in the following diagram.



PFD waste water treatment at Kemp Meats, Sarina

During cattle processing, blood is collected during the sticking process. This removes blood from the waste water treatment system and allows the ponds to treat the water more effectively.

3.11 Barcoo Butchery, Blackall

External view of slaughter yard at Barcoo Butchery

3.11.1 Description

Barcoo Butchery is located in Blackall in Central Western Queensland, on the banks of the Barcoo River. The butchery is operated by the Davison family and consists of a butcher shop on the main street in town and a slaughter yard on the outskirts of town.

3.11.2 Processing Overview

The slaughter yard at Barcoo Butchery processes approximately 140 bodies a week including 135 sheep and lambs and five cattle. Hides removed from these cattle are salted on site by hand while sheep skins are disposed of with the animal waste. Water used on site is obtained from the town water system and does not undergo any sort of treatment before use on site.

3.11.3 Risk Analysis

Risk rating chart – lamb processing at Barcoo Butchery, Blackall

	Tasks																															
Hazards	**147**	**2**	**3**	**X1**	**8**	**11**	**4**	**X2**	**12**	**7**	**15**	**9**	**X3**	**12**	**13**	**14**	**26**	**20**	**5**	**36**	**X4**	**6**	**16**	**18**	**25**	**19**	**20**	**X5**	**21**	**22**	**23**	**24**	**148**
Bending, twisting or reaching		2	2	2	2	1	2		1		1	2	1	1	2	2			1			2		1	1			2	1	1		2	2
Carrying or holding		1	1														1								2						2		
Cuts or punctures			1	1	1	1			1	1	1		1	1		1				1		1	1	2		1			1			
Falling object							1					1							1		1							1					1
Lifting or lowering		2					2					2					1		2		2			2	2			2		2			2
Pushing, pulling or striking		3	1	1	1	1	2	1	1	1	2	1	2	1	2	3			1	1	1	2	1	1	2	1		1	2			3	
Slipping, tripping or falling		1	1	2	2	1											2								2				1	1			1
Stressed animal		2	2	1																													
Other																																2	
Overall risk rating	**N**	**3**	**2**	**2**	**2**	**1**	**2**	**1**	**1**	**1**	**2**	**2**	**2**	**1**	**2**	**3**	**2**	**0**	**2**	**1**	**2**	**2**	**1**	**2**	**2**	**1**	**0**	**2**	**2**	**2**	**2**	**3**	**2**

Rating	Statement	Action
4	Acute risk	Urgent action required
3	High risk	Put in place steps to reduce risk
2	Moderate risk	Consider changes to current procedures
1	Low risk	Okay for now

N	Task not observed
	Higher due to irregular procedure
	Innovative procedures in place
	Lower due to changeable control measures
	Higher due to changeable control measures

Risk rating chart - beef processing at Barcoo Butchery, Blackall

	Tasks																																													
Hazards	**147**	**29**	**30**	**31**	**32**	**33**	**34**	**X6**	**35**	**44**	**36**	**37**	**38**	**39**	**66**	**24**	**40**	**45**	**42**	**41**	**43**	**46**	**47**	**49**	**48**	**50**	**60**	**51**	**52**	**53**	**54**	**52**	**55**	**56**	**57**	**60**	**58**	**59**	**67**	**61**	**X7**	**62**	**63**	**64**	**65**	**68**	**148**
Bending, twisting or reaching	1		2	1	2	2		2	1	2	1	1	2	1		2	1	1	1	1	1	2	2	1	2	2	1	1		1	2		1	2	1	1	2	2	1	2	1	1	1		1	1	1
Carrying or holding					1	1								1		1	1																					2	2	2						1	
Chemical exposure																																														1	
Cuts or punctures									1	1			2		2	2		1	1	1	1	1	1	1			2			1	3		1		2	2		2	1		2		1				
Falling object							1	1						1			1												1										1		1	1					
Lifting or lowering	1													2													1							2	1	1		3	2	1						2	
Noise			1																																					4							
Pushing, pulling or striking	2	1	2	2	1	1		2	1		2	1	1		1	3	1	1	2	2	1	1	1		3	2	1	1		1	2	1	1	2	1	1	2		1	2	2				2		1
Slipping, tripping or falling			1																															2			2	2							2	2	
Stressed animal		1		1	2	2	1																																							1	
Other																2																															
Overall risk rating	**2**	**1**	**2**	**2**	**2**	**2**	**1**	**2**	**1**	**2**	**2**	**1**	**2**	**2**	**2**	**3**	**1**	**1**	**2**	**2**	**1**	**2**	**2**	**1**	**3**	**2**	**2**	**1**	**1**	**1**	**3**	**1**	**1**	**2**	**2**	**2**	**2**	**3**	**2**	**4**	**2**	**1**	**1**	**0**	**2**	**2**	**1**

Rating	Statement	Action
4	Acute risk	Urgent action required
3	High risk	Put in place steps to reduce risk
2	Moderate risk	Consider changes to current procedures
1	Low risk	Okay for now

N	Task not observed
(cyan)	Higher due to irregular procedure
(yellow)	Innovative procedures in place
(grey)	Lower due to changeable control measures
(magenta)	Higher due to changeable control measures

Low risk (1) tasks
The following tasks observed at Barcoo Butchery, Blackall, were considered to be low risk:
- **Lamb processing:** 11, X2, 12, 7, 36, 16, 19
- **Beef processing:** 29, 34, 35, 37, 40, 45, 43, 49, 51, 52, 53, 55, 62, 63, 148

Moderate risk (2) tasks
The following tasks observed at Barcoo Butchery, Blackall, were considered to be low risk:
- **Lamb processing:** 3, X1, 8, 4, 15, 9, X3, 13, 26, 5, X4, 6, 18, 25, X5, 21, 22, 23, 148
- **Beef processing:** 147, 30, 31, 32, 33, X6, 44, 36, 38, 39, 66, 42, 41, 46, 47, 50, 60, 56, 57, 58, 67, X7, 65, 68

High hazard tasks
The following tasks completed at Barcoo Butcher, Blackall, have 6 or more involved hazards:
- **Lamb processing:** 2, 3
- **Beef processing:** 67, 68

High risk (3) tasks
The following tasks observed at Barcoo Butchery, Blackall, were considered to be high risk:
- **Lamb processing:**

TASK 2: Transfer to plant
Involved hazards:
- Bending, twisting or reaching
- Carrying or holding
- Lifting or lowering
- **Pushing, pulling or striking**
- Slipping, tripping or falling
- Stressed animal

	Risks	**PPE in Regular Use**	**Risk Assessment**
	- Bending and reaching to pick up animal by front legs - Carrying upper body of animal whilst dragging it into the plant - Lifting animal off the ground to drag - Pulling animal into plant - Tripping or falling off platform whilst dragging animal into plant - Injury obtained from stressed animal striking out	- Steel cap rubber boots	**Likelihood** Likely **Consequences** Moderate

TASK 14: Pull off hide
Involved hazards:

- Bending, twisting or reaching
- Cuts or punctures
- **Pushing, pulling or striking**

	Risks	**PPE in Regular Use**	**Risk Assessment**
	- Bending and twisting during pulling action - Cuts from knife used to cut hide away from feet - Pulling off hide	- Steel cap rubber boots	**Likelihood** Unlikely **Consequences** Moderate

TASK 24: Brain removal
Involved hazards:

- Bending, twisting or reaching
- **Pushing, pulling or striking**
- Other

	Risks	**PPE in Regular Use**	**Risk Assessment**
	- Bending and kneeling down to break skull - Injury obtained whilst striking skull on ground - Injury caused by projectiles coming off of skull when struck	- Steel cap rubber boots	**Likelihood** Possible **Consequences** Moderate

- **Beef processing:**

TASK 24: Brain removal
Involved hazards:

- Bending, twisting or reaching
- Carrying or holding
- Cuts or punctures
- **Pushing, pulling or striking**
- Other

	Risks	PPE in Regular Use	Risk Assessment
	- Bending and twisting whilst striking skull - Carrying skull to brain removal area - Cuts from coarse edges of skull when putting fingers in to remove brain - Injury obtained whilst striking skull - Injury caused by projectiles coming off of skull when struck	- Steel cap rubber boots	**Likelihood** Possible **Consequences** Moderate

TASK 48: Splitting brisket
Involved hazards:
- Bending, twisting or reaching
- **Pushing, pulling or striking**

	Risks	PPE in Regular Use	Risk Assessment
	- Bending whilst cutting brisket - Pushing and pulling saw whilst splitting brisket	- Steel cap rubber boots	**Likelihood** Possible **Consequences** Moderate

TASK 54: Removing ox-tail
Involved hazards:
- Bending, twisting or reaching
- **Cuts or punctures**
- Pushing, pulling or striking

	Risks	PPE in Regular Use	Risk Assessment
	- Bending and twisting during pulling action and to attach boning hook - A cut or puncture from the boning hook if it were to become free from the ox-tail during the pulling action - Pulling the ox-tail off of the tail hide	- Steel cap rubber boots	**Likelihood** Unlikely **Consequences** Major

TASK 59: Emptying paunch
Involved hazards:

- Bending, twisting or reaching
- Carrying or holding
- Cuts or punctures
- **Lifting or lowering**
- Slipping, tripping or falling

	Risks	**PPE in Regular Use**	**Risk Assessment**
	- Bending to lift paunch - Holding paunch at waist height - Cuts from knife used to cut open paunch - Lifting paunch from ground to waist height - Slipping or tripping on the tray of the utility	- Steel cap rubber boots	**Likelihood** Possible **Consequences** Moderate

Acute risk (4) tasks
The following task observed at Barcoo Butchery, Blackall, was considered to pose an acute risk:

- **Beef processing**

TASK 61: Splitting carcase
Involved hazards:

- Bending, twisting or reaching
- Carrying or holding
- Lifting or lowering
- **NOISE**
- Pushing, pulling or striking

	Risks	**PPE in Regular Use**	**Risk Assessment**
	- Reaching whilst splitting carcase - Holding reciprocating saw when in use - Lifting and lowering saw in use - Noise generated by saw in operation - Pushing saw during use	- Steel cap rubber boots	**Likelihood** Almost certain **Consequences** Moderate

3.11.4 General Notes

Hind legs hide removal in lamb processing

When removing the hide down the hind legs of sheep, the employee performing the task connects a special metal hook around one of the ankles of the lamb and then connects the other end into their belt. This allows the employee to keep the leg in tension, while also allowing the use of two hands to cut away the hide. A similar system was used in lamb processing at Mundubbera Butchering Co.

Steadying carcase while hung upside down by winch

When the carcase is lifted up off of the ground after stunning, the carcase is suspended using the winch and a chain wrapped around both the fore and hind legs. To steady the carcase when being hung in this position, the employee wraps the tail of the animal around a metal bar overhead and secures the tail to the bar using a clip.

Reciprocating saw

The saw used during the splitting of the sides of the carcase is very load when in operation. The piece of machinery is not used in conjunction with any type of personal protective equipment and the use of it is quite hazardous following current practices.

3.11.5 Effluent Treatment

Solid waste treatment

Solid waste generated on site is collected is stored on the tray of the utility and then disposed of at the end of the day. The waste is transported to a pit on the property and burnt, with sheep skins being burnt in a separate pit. Paunch contents are emptied onto a pile and left to evaporate and break down naturally.

Solid waste treatment at Barcoo Butchery

Waste water treatment

Waste water produced on site is collected in a blood pit next to the kill floor and pumped away and released onto pasture in the paddocks surrounding the abattoir.

3.11.6 Retail Display

Display case at Barcoo Butchery, Blackall

3.12 Waste Water Treatment

At each site, information was collected in relation to processing numbers and water usage. From this information and data available from previous studies, it is possible to calculate an approximate COD level for waste water released from the kill floor. All calculations are based on the only pollutant in the water being blood which is not the case, as there are many other sources of waste water in a processing plant.

Using figures gathered from Kemp Meats in Sarina, the following data was used and assumptions were made to calculate the COD level of the waste being transferred to the effluent ponds.

- The weight of blood in cattle is 0.053 kg blood/kg cwt.
- The weight of blood in sheep is 0.069 kg blood/kg cwt.
- Weight of blood in pigs and goats would be similar values. Values of 0.06 kg blood/kg cwt and 0.07 kg blood/kg cwt for pigs and goats respectively, have been used to obtain representative values.
- The COD of cattle blood is 290 000 mg COD/L while sheep blood is 273 000 mg COD/L.
- Pig and goat values would be of a similar order of magnitude. Values of 280 000 mg COD/L for pigs blood and 270 000 mg COD/L for goats blood has been assumed.
- Only COD resulting from the volume of blood in waste water is considered.
- A basic waste water system consists of an anaerobic pond followed by an aerobic pond
- An anaerobic pond can remove 0.2 kg COD/m^3/day, removing 80% of COD.[2]
- An aerobic pond can remove 0.02 kg COD/m^3/day, also removing 80% of COD. [2]
- It is assumed that raw municipal sewage contains a loading in the order of 500 mg COD/L.
- All of the water used on site ends up in the effluent ponds.

Calculations were completed assuming that the site did not collect blood during processing and that all blood was included in the waste water. This was not true for Kemp Meats, but was assumed to be to give a representation that can be applied to all sites.

Kemp Meats process, on average, 150 animals a week including 50 cattle and 100 pigs. The processing site uses 30 000 L water/week resulting in approximately 31 000 L of waste water per week. This waste water has an approximate COD loading of 9250 mg/L. To put it in perspective, this waste water has approximately 18 times the COD load of raw municipal sewage.

This water would then ideally goes though a screening process to remove solids and then flow on to the anaerobic ponds. To achieve 80% removal in the anaerobic pond, a retention time of 37 days is required, along with a pond that is at least 230 m^3 in volume. Treated water leaving the anaerobic pond would have a COD loading of 1850 mg/L. This water still has about three times the COD loading of raw municipal sewage.

To achieve a further 80% removal in an aerobic pond, a retention time of 75 days is required. This would require a pond with a volume of at least 460 m^3. The water leaving this pond should, theoretically, leave with a COD loading of about 370 mg/L.

By collecting blood during the sticking process, it is assumed that approximately 70% of the blood can be prevented from leaving the kill floor as part of the waste water. If this were done, the COD loading of the processing plant waste water would be reduced to about 2840 mg/L.

To achieve 80% removal in an anaerobic pond, a retention time of 12 days would be required, in a pond volume of 70 m^3. Treated water leaving this pond would have a COD loading of 570 mg/L. After a further 80% reduction in an aerobic pond, this COD loading would be reduced to 113 mg/L.

Currently, the effluent ponds at Kemp Meats have a volume of 2ML for the anaerobic pond, 2ML for the first aerobic pond and then 1ML for the final aerobic pond. This equates to a total effluent pond volume of 5000 m^3, which is more than sufficient for expected effluent treatment to occur.

A table showing these values for all sites is included as appendix IV.

4 Discussion

From discussion with business owner during the site visit, the main consensus was that as individual businesses and the QCMPA group as a whole, need to find way to deal with occupational health and safety issues in a manner that is easy to follow. Risk is inherent in a business such as meat processing, yet finding ways to reduce this risk and improve employee safety is and must be an important aspect of any employer's or business owner's plans. Very few of the sites performed hazardous tasks that are certain to cause harm. However, all of the sites visited performed tasks that were likely to cause harm.

Across the majority of the sites visited it was clear to see that most employees working in the abattoir on the kill floor were highly skilled at their trade. It is likely that having skilled employees has reduced the risks associated with this vocation. Future business goals must focus on safety by retaining skilled employees and implementing training programs. These initiatives must be instrumental in altering the unyielding mindset the majority of employees in relation to workplace health and safety.

One limitation of highly skilled and highly experienced employees is their reluctance to change their operating procedures to include personal protective equipment. This mindset seems to flow down from the older employees and is adopted by younger employees and trainees. The result of this is the limited use of personal protective equipment in all of the processing sites visited.

The limited usage of personal protective equipment on site promotes or gives rise to risk and hazards occurring. From this it can be assumed that employers running these businesses may not be fully aware of their legal requirements and responsibilities under the Workplace Health and safety Act. Making sure that employers completely understand what the consequences of not enforcing a change in practice may be is a requirement.

A few of the sites visited were located more than 20 minutes away from the nearest local centre. When located this far away from important services such as fire and ambulance, it is important that employees know how to manage emergency situations. Very few of the sites had a well known procedure for employees to follow in case of emergency. Also, alarmingly, at some sites it was not known for certain whether any person on site had completed first aid training, or whether first aid certification was up-to-date.

At most processing sites there was very little signage indicating what occurred on-site, and the dangers that can be found. Very few sites had signs indicating the kill floor and the hygiene requirements a visitor or employee must meet before entering. A number of sites had current induction procedures for new staff, which do state the requirements that each employee must meet on-site. There was also an indication that businesses that did not have set induction procedures which were working towards measures to remedy this.

Although most chemicals used on these sites are non-toxic, sound chemical handling and storage should be practiced. In the majority of sites visited the chemical storage areas were well defined yet chemicals were not always clearly marked or securely stored. The importance of keeping material safety data sheets for all chemicals used on site, in a readily accessible place, should also be stressed.

Interestingly there was close to an equal split between sites putting raw waste water onto pasture or releasing it straight into the environment and those who treated the water through a series of

ponds. Before any conclusion is made on each of these solutions, further information on what long term impact releasing raw waste water to land is having on the local environment, and whether or not water passing through these pond systems are being effectively treated.

Almost none of the sites visited captured blood during processing. By collecting blood and removing it from waste water, a great deal of the polluting potential of the waste water is removed. Removing some of the blood from the waste water treatment systems in place may make systems that are currently underperforming work to a more acceptable level.

Retail butcher shops visited appeared to be in good order. A fair number of sites had a wide variety of value added products available to the public, with some businesses going as far as to offer value added products in their own delicatessen. Photographs of display cases at each of the butcher shops visited were taken and will be put to better use in future work.

Improvements can be made to current practices through the sharing of ideas that are already being put to use by fellow members of this association. Since few of these businesses compete against each other in the market place, it offers more freedom for these companies to follow that path. During some of these site visits it was pleasing to see and hear that the sharing of ideas is already an important part of the QCMPA.

The limitation of these risk assessments is that hazards and their likely consequences were not assessed based on personal experience in the industry or in a similar industry. The conclusions reached and the ratings given were based on perceived danger and accounts of previous injuries given by employees working on the kill floor. By asking an employee what he or she believes to be of risk or whether or not a hazard is likely to cause harm give greater insight into how injuries do occur, and also how employees view risky actions in the workplace.

Additionally, from discussions from business owners, some employers see the benefit of having someone from outside of the business to perform these tasks to offer a different perspective. In the future further support must be offered to assist these businesses moving forward and, if desirable to the business owners, to bridge the gap between current practices and the practices adopted by the current industry leaders.

This industry should realise the importance of keeping smaller, community aware businesses in rural areas. By improving the operating standards across the board, it should help in some way to ensure that these businesses continue in the long term. This fact underlines the importance of associations like the QCMPA working together for the benefit of all the members. Furthermore it is essential that this association receives adequate support from larger members of the industry to ensure that future challenges can be overcome.

5 Conclusions

From observing QCMPA business in operation, the following conclusions have been drawn

- Owners and employees at these processing plants are aware of the risks associated with the tasks they perform, however, most owners and employees alike seem too ready to accept that risk is part of the job. The practices, in terms of personal safety, employed at the processing plants visited varied across the differing members of the groups. There seems to be the opportunity to develop a “best practice” model across all members of the QCMPA and to also compare practises with larger meat processors.

- There seems to be a lack of awareness of the consequences and personal liability of the owners and directors of the businesses should a serious injury occur.

- Most hazards on site relate to manual handling or cuts or punctures to the employee

- Further effort is needed to ensure that the use of personal protective equipment is in use where it is required.

- Waste treatment in some cases is done with little regard for the effect it may have on the surrounding environment. With future changes to laws concerning carbon emissions, further information on what current emissions needs to be discovered.

6 Recommendations

The results and observations gather during this project, lead to the following recommendations.

- QCMPA members may require assistance from an external source to deal with issues that may become problems in the future. These issues include legal responsibilities, environmental responsibilities and safety issues in and around their businesses.

- The QCMPA is a strong organisation that needs to sell the benefits of being an active member. Associations such as this should be viewed as an essential support network for associates and must receive on-going assistance from industry organisations to ensure that practices are in line with businesses of a similar size.

- Active membership should lead to a greater level of collaboration between businesses with a view to solve common problems with simple solutions already in place at processing plants run my other members. In addition, a collection and review of injury data and statistics across all members of the association would allow an insight into common areas of risk.

- Members need to look to reduce the number of manual handling tasks performed on site such pushing, carrying or lifting heavy objects.

- Processing sites should ensure that no processing occurs on-site without employees being fully aware of emergency procedures. Nor should processing occur at a site when there is no one competent in applying first aid, particularly when the processing site is located away from emergency services.

- An investigation into current carbon emission levels following procedures current in place needs to be investigated to see whether wide scale changes to waste treatment systems are needed and how significantly impacted these businesses would be if current practices are retained. Any study into this field should also consider if current practices on proposed changes are socially and environmentally responsible.

- QCMPA members should continue the work that this project has started to develop a “Best Practice” handbook for both Workplace health and Safety issues and Environmental considerations. There would be some benefit in also comparing this “best Practice” to that which occurs in larger meat processing facilities.

7 References

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2. Keller J, 2008, 'Part 3: Biological Treatment Processes,' CHEE 4012 – Wastewater and Solid Waste Management, The University of Queensland, unpublished.
3. McRae T, Jones K, Weekes P, 2009, 'Australian Cattle and Sheep Industry Projections 2009, Meat and Livestock Australia, North Sydney
4. MLA, 2008, '*MLA and Australia's Red Meat Industry*,' Meat and Livestock Australia, North Sydney
5. Queensland Government, 2008, '*Workplace Health and Safety Regulation 2008*,' Queensland Government Department of Employment and Industrial Relations, Brisbane.
6. Queensland Government, 2007, '*Workplace Health and Safety Queensland – Risk Management Code of Practice 2007 – Supplement 1 – Hazard Identification*,' Queensland Government Department of Employment and Industrial Relations, Brisbane.
7. Queensland Government, 2007, '*Workplace Health and Safety Queensland – Risk Management Code of Practice 2007 – Supplement 2 – Risk Assessment*,' Queensland Government Department of Employment and Industrial Relations, Brisbane.
8. Queensland Government, 2007, '*Workplace Health and Safety Queensland – Risk Management Code of Practice 2007 – Supplement 3 – Control*, *Implement, Monitor and Review*' Queensland Government Department of Employment and Industrial Relations, Brisbane.

8 Appendices

8.1 Appendix I – Project Brief

5 November 2008

Dear Member

Expressions of interest are being sought from QCMPA members who attended the Toowoomba General Meeting and Workshop and participated in the Meat and Livestock Australia (MLA) exercise to establish several issues which are of interest to QCMPA members.

A program has been developed to deliver the following:

a) **An OH&S Risk Analysis for Retail Shops and small unit Processing**
An MLA resource will work with the QCMPA member in a joint exercise using AMIC documentation to complete a risk to complete Risk Assessment for the business. The Risk Assessment would be completed with a prioritized list of risks to be addressed and each of the Risk Assessments and Risk Lists would be discussed at the May QCMPA Workshop.

b) **OH&S Photographs**
As a part of the Risk Assessment the MLA resource would also take a range of photographs on areas of high risk. The purpose of these is to discuss at the May Workshop practical solutions to the observed risks. The solutions must be practical and fit with the business being operated.

c) **Effluent Treatment**
Information on effluent treatment will be gathered by photograph and observations recorded in relation to odor, appearance, any special features. A presentation at the May meeting would allow comparison of different treatments and the issues they are faced with.

d) **EPA/Water Treatment Requirements**
EPA/Water Treatment Requirements and restrictions will be recorded for comparison site to site. A presentation at the May meeting on the effluent issues facing the members with discussion on possible alternatives will be considered.

e) **Photographs of the Shop, Counter, Meat Display, Value Added Products.**
Photographs of the shop, counter, meat display, value added products will be taken. The MLA Retail group to prepare a presentation for the May meeting on ideas and recommendations.

To participate in this project you are requested to complete the attached form and **fax** it back to AMIC Queensland on **07 3352 4755 by 14 November 2008**.

If you wish to discuss this project please call Kevin Cottrill on 02 9086 2211 or 0438 100 226.

8.2 Appendix II – Site Questionnaire

Plant Name and Location:

Name of Manager and Contact Details:

Number of Employees

Maximum Number of Employees On Site?

Past Injury and Near Misses Records Supplied?
Yes/No
Are There Emergency Procedures In Place?
Yes/No
If yes, describe:

Is there first aid available? Are there any employees trained in first aid procedures?

How far away are nearest fire & ambulance services?

Is there an electrician on-site or nearby?

Type and Number of Animals Processed Per Week:

How is trade waste treated? Include a diagram.

If rendering is completed on site, how is it done?
Wet/Dry and Hot/Cold

What happens to the products of the rendering plant?

Effluent treatment area (pond dimensions, area of land etc):

Water Usage:

Where is water sourced from?
Bore/Town

If bore, how deep is the bore?

Has the water been tested?

Who tested ?

Was the test conducted by a registered laboratory?

Is there any pre-treatment for the water before it is used on-site? If so describe treatment

Refrigeration systems, what refrigerant is used?

Are any of the products frozen for transport, if so, what is the refrigerant?

Are there any chemicals used in the plant used for cleaning etc? List.

Machinery/tools used in the plant:

Staff training records kept?
Yes/No
If yes, give details.

Are employees trained to maintain their own equipment?

Are there any OHS procedures in place?

Are MSDS's kept on site?

Have any previous risk assessments been completed?

Are all staff tested for Q-fever, and is there a Q-fever register in place?

Is there a designated maintenance manager on site?

8.3 Appendix III - List of tasks

The list of tasks covers all tasks that were assessed during the project and are included in the results of the report. The tasks are listed in a logical order and the numbers assigned to each task correspond to the task number used in the risk rating charts that make up a majority of the results section of the report.

The following tasks were observed during sheep and lamb processing.

1. **Stun**
2. **Transfer to plant**
3. **Sticking**
4. **Lift to rail**
5. **Lift into fore-quarter sling**
6. **Remove fore-feet**
7. **Remove hind feet**
8. **Remove head**
9. **Transfer carcase to gamble**
10. **Split hide**
11. **Remove hide around neck and fore-legs**
12. **Remove hide down rear legs**
13. **Punching down hide on back**
14. **Pull off hide**
15. **Bunging out**
16. **Opening abdomen**
17. **Split brisket**
18. **Viscera removal**
19. **Offal removal**
20. **Clean**
21. **Transfer to cold room**
22. **Offal sorting**
23. **Transferring offal to cold room**
24. **Brain removal**
25. **Viscera transfer**
26. **Hide transfer**
27. **Hide salting**
28. **Emptying paunch**

The following tasks were observed during cattle processing.

29. **Transfer to knocking box**
30. **Stun**
31. **Open door to knocking box**
32. **Shackle – rear legs**
33. **Shackle – front legs**
34. **Raise off ground**
35. **Cut throat**
36. **Tie and free weazand**
37. **Electrically stimulate**
38. **Head removal**
39. **Hanging up head**
40. **Lowering into dressing bed**

41. **Front hoof removal**
42. **Rear hoof removal**
43. **Splitting hide**
44. **Hide removal – head**
45. **Hide removal – rear legs**
46. **Hide removal – ribs and stomach**
47. **Hide removal – front legs**
48. **Splitting brisket**
49. **Opening abdomen**
50. **Splitting h-bone**
51. **Connecting hook bar**
52. **Lifting out of dressing bed**
53. **Bunging out**
54. **Removing ox-tail**
55. **Hide removal – back**
56. **Hide transfer**
57. **Viscera removal**
58. **Viscera transfer**
59. **Emptying paunch**
60. **Offal removal**
61. **Splitting carcase**
62. **Transfer to rails**
63. **Trimming**
64. **Washing**
65. **Shifting to cold room**
66. **Cutting out cheek and tongue**
67. **Offal washing, sorting and transport**
68. **Hide salting**

The following tasks refer to veal processing.

69. **Stun**
70. **Transfer to plant**
71. **Sticking**
72. **Tying weazand**
73. **Shackling**
74. **Raise off ground**
75. **Front hoof removal**
76. **Head removal**
77. **Lower into dressing bed**
78. **Rear hoof removal**
79. **Splitting hide**
80. **Hide removal – rear legs**
81. **Hide removal – ribs and stomach**
82. **Hide removal – front legs**
83. **Split brisket**
84. **Transfer to rails**
85. **Bunging out**
86. **Viscera removal**
87. **Offal removal**
88. **Hide removal – back**
89. **Washing**

90. Transfer to cold room
91. Offal washing, sorting and transport

The following tasks cover pork processing.

92. Stun
93. Transfer to plant
94. Cut throat
95. Shackle
96. Transfer to scalding tank
97. Scalding
98. Transfer to dehairer
99. Dehairing
100. Transfer to shaving table
101. Shaving
102. Toe nail removal
103. Transferring to rails
104. Sealing
105. Fore trotter removal
106. Rear trotter removal
107. Bunging out
108. Splitting brisket
109. Viscera removal
110. Ear removal
111. Head removal
112. Cutting out neck flesh (cheeks?)
113. Checking thickness of back fat
114. Washing
115. Transfer to cold room
116. Offal washing, sorting and transport
117. Viscera transfer

The following list includes the processes followed during back fatter slaughter.

118. Transfer to plant
119. Stun
120. Open knocking box
121. Sticking
122. Shackle
123. Lift up
124. Transfer to dressing bed
125. Split skin down centre
126. Front trotter removal
127. Rear trotter removal
128. Skin removal – rear legs
129. Skin removal – stomach and ribs
130. Skin removal – forelegs
131. Splitting brisket
132. Splitting h-bone
133. Bunging out
134. Lifting out of dressing bed
135. Skin removal – back

136. **Viscera removal**
137. **Offal removal**
138. **Head removal**
139. **Transfer to rails**
140. **Splitting carcase**
141. **Washing**
142. **Trimming**
143. **Transfer to cold room**
144. **Viscera transfer**
145. **Offal washing, sorting and transfer**
146. **Waste transfer**

The following list covers general tasks that were performed at all sites.

147. **Set up**
148. **Pack up**
149. **Sharpening knives**
150. **Hook cleaning**

The following list includes miscellaneous tasks that were observed, as well as the site in which they were observed.

151. **Remove small section of skin along lamb brisket (Warwick)**
152. **Switching hanging orientation (Warwick)**
153. **Transferring carcase to hanger (Warwick)**
154. **Transferring and emptying blood tub (Jimbour)**
155. **Waste transfer (Jimbour)**
156. **Place hook behind brisket and lift carcase slightly using winch (Chinchilla)**
157. **Raise carcase off shaving table (Chinchilla)**
158. **Remove shackle, leave carcase hanging from fore-quarter sling (Millmerran)**
159. **Drop carcase out of forequarter sling (Millmerran) (Blackall)**
160. **Connecting rear legs to front of dressing bed (Plainland)**
161. **Quartering sides (Plainland) (Blackall)**
162. **Boning out forequarter (Plainland)**
163. **Boning out hind-quarter (Plainland)**
164. **Splitting pig carcase into sides (Plainland)**
165. **Cutting trotters (Plainland)**
166. **Connect rear trotters to dressing bed (Plainland)**
167. **Viscera cleaning (Maclagan)**
168. **Connect rear leg to belt (Mundubbera) (Blackall)**
169. **Cutting out tongue (Mundubbera) (Blackall)**
170. **Transfer carcase to rail (Mundubbera)**
171. **Putting docking ring on weazand rodder (Kuttabul)**
172. **Changing hanging style (Kuttabul) (Blackall)**
173. **Pulling off strip of sheep skin along abdomen (Blackall)**
174. **Wrap tail around bar (Blackall)**

8.4 Appendix IV – Waste water calculations

Kill numbers and estimated water usage for each site visited

Site	**Kill Numbers**				**Water usage**
	Sheep	**Cattle**	**Pigs**	**Goats**	(Litres/week)
Warwick	450	180	125	15	206500
Jimbour	6	30	500	0	55000
Chinchilla	140	35	30	0	77000
Millmerran	13	17	7	1	27000
Plainland	0	12	20	0	27000
Maclagan	65	40	40	0	50000
Mundubbera	8	6	7	0	9950
Monto	0	4	4	0	6600
Kuttabul	0	40	100	2	30000
Sarina	0	50	100	0	30000
Blackall	135	5	0	0	23000

Initial COD loadings of raw waste water

Site	**Volume of Waste Water** (L/week)	**Initial COD Loading** (mg COD/L)	**Comparison to raw sewage** ((g COD/L waste water)/(g COD/L sewage))
Warwick	210149	4939	9.9
Jimbour	57248	11058	22.1
Chinchilla	77829	3015	6.0
Millmerran	27268	2822	5.6
Plainland	27226	2377	4.8
Maclagan	50781	4391	8.8
Mundubbera	10067	3332	6.7
Monto	6665	2820	5.6
Kuttabul	30880	8139	16.3
Sarina	31002	9257	18.5
Blackall	23329	3899	7.8

Sizing of anaerobic ponds

Site	**Anaerobic Treatment**		
	Retention Time (days)	**Volume** (m3)	**Final Loading** (mg COD/L)
Warwick	19.8	830.4	987.9
Jimbour	44.2	506.4	2211.5
Chinchilla	12.1	187.7	602.9
Millmerran	11.3	61.6	564.5
Plainland	9.5	51.8	475.4
Maclagan	17.6	178.4	878.1
Mundubbera	13.3	26.8	666.4
Monto	11.3	15.0	564.1
Kuttabul	32.6	201.1	1627.8
Sarina	37.0	229.6	1851.3
Blackall	15.6	72.8	779.7

Sizing of aerobic ponds

Site	Aerobic Treatment		
	Retention Time (days)	**Volume** (m3)	**Final Loading** (mg COD/L)
Warwick	39.5	1660.8	98.8
Jimbour	88.5	1012.8	221.2
Chinchilla	24.1	375.4	60.3
Millmerran	22.6	123.1	56.4
Plainland	19.0	103.5	47.5
Maclagan	35.1	356.7	87.8
Mundubbera	26.7	53.7	66.6
Monto	22.6	30.1	56.4
Kuttabul	65.1	402.1	162.8
Sarina	74.1	459.2	370.3
Blackall	31.2	145.5	78.0

Effect of capturing blood 70 percent of blood

Revised initial COD loadings of raw waste water

Site	**Volume of Waste Water** (L/week)	**Initial COD Loading** (mg COD/L)	**Comparison to raw sewage** ((g COD/L waste water)/(g COD/L sewage))
Warwick	210149	1500	3.0
Jimbour	57248	3411	6.8
Chinchilla	77829	911	1.8
Millmerran	27268	852	1.7
Plainland	27226	717	1.4
Maclagan	50781	1332	2.7
Mundubbera	10067	1008	2.0
Monto	6665	852	1.7
Kuttabul	30880	2491	5.0
Sarina	31002	2841	5.7
Blackall	23329	1181	2.4

Revised sizing of anaerobic ponds

Site	Anaerobic Treatment		
	Retention Time (days)	**Volume** (m3)	**Final Loading** (mg COD/L)
Warwick	6.0	249.0370286	12.5
Jimbour	13.6	151.9235794	7.6
Chinchilla	3.6	56.31152	2.8
Millmerran	3.4	18.46524114	0.9
Plainland	2.9	15.53142857	0.8
Maclagan	5.3	53.51134857	2.7
Mundubbera	4.0	8.050258286	0.4
Monto	3.4	4.511542857	0.2
Kuttabul	10.0	60.30742857	3.0
Sarina	11.4	68.87428571	3.4

Blackall	4.7	21.82910857	1.1

Revised sizing of aerobic ponds

Site	**Aerobic Treatment**		
	Retention Time (days)	**Volume** (m3)	**Final Loading** (mg COD/L)
Warwick	12.0	498.1	30.0
Jimbour	27.3	303.8	68.2
Chinchilla	7.3	112.6	18.2
Millmerran	6.8	36.9	17.0
Plainland	5.7	31.1	14.3
Maclagan	10.7	107.0	26.6
Mundubbera	8.1	16.1	20.2
Monto	6.8	9.0	17.0
Kuttabul	19.9	120.6	49.8
Sarina	22.7	137.7	113.7
Blackall	9.5	43.7	23.6