



Australian Government

Rural Industries Research and
Development Corporation

Kangaroo Industry Wild Game Training Initiative

RIRDC Publication No. 11/123

A photograph of a kangaroo sitting upright in a grassy field, looking towards the right. The image is overlaid with a semi-transparent blue filter.

RIRDC Innovation for rural Australia



Australian Government

**Rural Industries Research and
Development Corporation**

Kangaroo Industry Wild Game Training Initiative

by Mandy Mawson - Safe Food Production Queensland

December 2011

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Foreword

The Queensland Government convened a Kangaroo Industry Development Committee (KIDC) following the export market suspension of Australian kangaroo meat by Russia in 2009. The loss of the export market for kangaroo meat has impacted significantly on Australia's rural communities, particularly through a loss of regional jobs. Additionally, significant capital investment had been made in processing plants, which were not being used to capacity. This committee comprised representatives of industry and government agencies. As part of the response to regaining the Russian market for kangaroo meat, this committee recommended that the immediate and long term training needs of the industry required attention. In particular, the committee recognised that there was a need to immediately address the skills and capabilities of field harvesters, as well as focussing on strategies to improve training in the longer term. The recommended project would be an extension of the Rural Industries Research and Development Corporation's (RIRDC) current kangaroo harvester training program.

As a result of representations to the Federal Government, a project was formulated in 2010 to address these training needs. This project was funded by the Department of Agriculture Forestry and Fishing (DAFF) through RIRDC. The project was managed by Safe Food Production Queensland (SFPQ) with guidance from an advisory group including representatives from:

- DAFF
- RIRDC
- The Kangaroo Industry Association of Australia (KIAA)
- The National Meat Industry Training Advisory Council (MINTRAC)
- State Regulators (including SFPQ The Department of Primary Industries and Resources South Australia (PIRSA) and New South Wales Food Authority (NSWFA)).

The investment in improved skills for wild game harvesters was designed to produce a better product for export which would assist, not only in regaining access to the market in Russia, but also underpin the opportunity to export meat to potential new markets such as China. The training was designed to ensure that kangaroo harvesters had the skills to meet international requirements and changing market conditions.

The project also aimed to establish a sustainable training system within the industry through:

- Alignment with the national competency standards framework (recognised training within the national Vocational Education and Training (VET) system)
- Better capacity to resource the VET system and industry to provide quality training
- Development of Field Depot Operations and Procedures Templates for use in 'on the job' training.

The project had three stages aligned with its key deliverables, which were:

1. The development and conduct of a national training program for accredited wild game harvesters to meet the need for improved hygienic dressing practices in the field.
2. The development of an assessment tool to assess field harvester performance. Conduct of pilot assessments of field harvesters.
3. The development of national competency standards in field harvesting, depot operations and some roles within industry processor establishments.

This project is supported by funding from the Australian Government, Department of Agriculture, Fisheries and Forestry under and the Rural Industries Research and Development Corporation.

This report, an addition to RIRDC's diverse range of over 2000 research publications, forms part of our New Animal Products R&D program, which aims to accelerate the development of viable new animal industries.

Most of RIRDC's publications are available for viewing, free downloading or purchasing online at www.rirdc.gov.au. Purchases can also be made by phoning 1300 634 313.

Craig Burns
Managing Director
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About the Author

Mandy Mawson is the General Manager Corporate Services at Safe Food Production Queensland. Mandy was appointed as the Project Manager in September 2010 following the retirement of Kerry Bell.

Acknowledgments

The project was greatly assisted by the active involvement of a range of industry and regulatory organisations. In particular we should acknowledge the contributions of:

- the Kangaroo Industry Association of Australia (KIAA)
- staff from Safe Food Production Queensland
- New South Wales Food Authority
- Primary Industry & Resources – South Australia
- Australian Quarantine and Inspection Service
- The Southern Queensland Institute of TAFE consortium

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Executive Summary

Background

This report summarises the purpose and results from the National Kangaroo Industry Wild Game Training Initiative. Industry stakeholders (convened as part of a Queensland Government group) and the Kangaroo Industry Development Committee (KIDC), identified the need for an enhanced training program focussed on hygienic dressing of kangaroo carcasses, the development of national competencies aligned with the VET system and associated training materials which could be used in the longer term.

Aims / Objectives

The training initiative arose as part of a Government and industry response to the suspension of export of kangaroo meat to the Russian market. A refresher training program in hygienic field dressing was developed and delivered to existing licensed harvesters. Two additional training resources were developed; a competency based program and materials through national Vocational Education and Training (VET) system and training resources, which could be used 'on the job'.

Industry size and spread

At the time of commencement of the project (March 2010) there were some 3600 accredited harvesters in the three states that provide such accreditation:

- 2500 in Queensland (QLD)
- 1000 in New South Wales (NSW)
- 100 in South Australia (SA)

As well as 3600 kangaroo harvesters, there were more than 450 field depots operators who received, and stored, kangaroo carcasses prior to their transport to one of 23 processing establishment. Ninety percent of carcasses are processed in Queensland and South Australia where the processing establishments are accredited to the standard required for human consumption. The industry therefore supports hundreds of employees in Queensland, New South Wales and South Australia. The loss of the market led to a severe downturn in employment in the industry, and the closure of a number of processing establishments.

Methodology

The project was managed by Safe Food Production Queensland, with collaboration from other regulators and industry representatives through an advisory committee. Achievement of the outcomes required the contracting of specialists in industry and the vocational education sector to develop materials which would meet the project objectives.

Results

The project has achieved its objectives as follows:

- Short term / refresher training
 - 2736 accredited harvesters received refresher training in 81 locations throughout Australia. All harvesters attending also undertook an assessment and passed at the first, or subsequent, attempt. The course has been well received and anecdotal evidence suggests it has played an important role in lifting standards within the industry.
- Long term training

- National competency standards for the critical occupations of Harvester, Depot Manager and Meat Inspector at processing plants have been established and are awaiting registration in the National Meat Industry Training Package. In addition, substantial support materials have been developed to support the quality of training in these competencies, and these are usable not only by Registered Training Organisations (RTO) but also industry organisations or individuals wanting access to such materials.
- Field Depot Operations and Field Depot Templates for use in ‘on the job’ training have been developed for use by Depot Operators and Processors.

Implications

The industry and regulators report an improvement in the hygienic dressing of kangaroo carcasses and hence a reduction in bacterial contamination as a result of the completion of the training programs. The industry is in a much stronger position to re-gain market access based on product quality standards.

The industry is also now in a much better position to manage the training of its participants for these key occupations of the industry. In the long term, however, as with many rural industries, access to quality training in rural and remote localities remains problematic. While not achievable through this project, the skills of hygienic dressing lend themselves to being delivered through the use of simulation technologies.

Introduction

The Queensland Government convened a Kangaroo Industry Development Committee (KIDC) following the export market suspension of Australian kangaroo meat by Russia in 2009. This suspension was based, in part, on the quality of the product on arrival in Russia. The loss of the export markets for kangaroo meat meant a reduction in jobs in some regional communities. Additionally, significant capital investment had been made in processing plants, which were not being used to capacity. This committee comprised representatives of industry and government agencies. As part of the response to regaining the Russian market for kangaroo meat, this committee recommended that the immediate and long term training needs of the industry required attention. In particular the committee recognised that there was a need to immediately address the skills and capabilities of field harvesters as well as focuss on strategies to improve training in the longer term. The recommended project would be an extension of the Rural Industries Research and Development Corporation's (RIRDC) current kangaroo harvester training program.

As a result of representations to the Federal Government, a project was formulated in 2010 to address these training needs. This project was funded by the Department of Agriculture Forestry and Fishing (DAFF) through RIRDC. The project was managed by Safe Food Production Queensland (SFPQ) with guidance from an advisory group including representatives from:

- DAFF
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- State Regulators (including SFPQ, The Department of Primary Industries and Resources South Australia (PIRSA) and New South Wales Food Authority (NSWFA)).

The investment in improved skills for wild game harvesters was designed to produce a better product for export, which would assist, not only in regaining access to the market in Russia, but also underpin the opportunity to export meat to potential new markets such as China. The training was designed to ensure that kangaroo harvesters had the skills to meet international requirements and changing market conditions.

The project also aimed to establish a sustainable training system within the industry through:

- Alignment with the national competency standards framework (recognised training within the national Vocational Education and Training (VET) system);
- Better capacity to resource the VET system and industry to provide quality training; and
- Development of Field Depot Operations and Field Depot Templates for use in 'on the job' training.

The project had three stages aligned with its key deliverables. The stages and associated deliverables were:

Table 1 - Project Stages and Deliverables

Stage	Key Deliverables
1	The development and conduct of a national training program for accredited wild game harvesters to meet the need for improved hygienic dressing practices in the field.
2	The development of an assessment tool to assess field harvester performance. Conduct of pilot assessments of field harvesters.
3	The development of national competency standards in field harvesting, depot operations and some roles within industry processor establishments.

Objectives

The project objectives were:

1. To provide extension training for wild game field harvesters and field depot operators on hygienic dressing and storage and handling of carcasses that links into a competency based framework for demonstration of skills and knowledge;
2. To develop and implement an on-the-job assessment framework for assessment and verification of wild game field harvester skills and knowledge; and
3. To identify national wild game field harvester and field depot operator competencies / identified industry Skill Sets to be used as the basis for future training programs and industry development.

There was an expectation that achieving these objectives would assist the industry to gain, or regain, export markets, and assist industry development.

Methodology

Safe Food Production Queensland delivered the project through a series of sub-contracts with consultation and involvement from industry and government representatives. In summary the delivery method for each stage of the project was:

Table 2 - Project Methodology Summary

Stage	Delivery	Materials developed
1. Short course – hygienic field dressing	A nationally advertised tender resulted in awarding of a contract to a consortium led by the Southern Queensland Institute of Technology (SQIT) and including TAFE colleges in NSW and SA. This consortium developed and conducted the training program and associated manuals under the guidance of an advisory group including state food regulators, industry members and AQIS.	<ul style="list-style-type: none"> • A training program (short course) of 4-5 hours duration. This course built on some existing materials within the TAFE network but with added focus on hygienic field dressing • An associated National kangaroo Harvester Field Dressing Manual – which supported the course materials • Participants also received a copy of the Kangaroo Industry Association of Australia’s DVD on hygienic field dressing
2. Assessment Tool	Two separate contracts resulted in the development of a broad range of resources including: <ul style="list-style-type: none"> • A harvester assessment tool (guidance for assessors in the assessment of correct field dressing techniques) • Training and assessment resources to support key competencies developed in stage 3 	No prior materials existed for this stage of the project. Completed materials include: <ul style="list-style-type: none"> • Industry assessment tool for Wild Game Harvesters • Training resource materials to support the achievement of key competencies of field harvesters including : MTMG 301A – Operate a game Harvesting Vehicle, MTMG302A- Eviscerate, inspect and tag wild game carcass in the field and MTMG306A - Use firearms to humanely harvest wild game

- Resource materials (good practice procedure guides and templates) to support key field depot and processor operations

The resource materials (good practice guides) being produced for Depot and Processor operations are subject to final consultation processes. Materials appended to the project report for this component are therefore still in draft format. (see Field Depot Operations and Templates in Appendix 1)

Deliverables from these contracts were reviewed and approved by advisory groups which included regulators and industry members.

3. National competency standards

A contract was let to MINTRAC to develop the national competency standards and to register same on the national register.

Again this deliverable involved consultation with regulator and industry members.

No national competency standards existed prior to this project. The project developed and gained Industry approval for the competency standards listed at Table 5.

Results

4.1 National Harvester Training program (field dressing refresher skills)

A training program to provide refresher training for all nationally accredited wild game harvesters was developed by the SQIT consortium under the guidance of the advisory group. A nationally agreed harvester field dressing manual was also developed to support the training program. The pilot of the program was conducted in May 2010 in Toowoomba, and some adjustments were made based on feedback from industry participants and regulators who attended the pilot, and subsequent programs. Key features of the program included:

- A focus on market requirements and the requirements of the appropriate Australian Standard, regulations and AQIS notices
- Face to face format in locations near harvesters to maximize participation
- The use of the DVD on hygienic field dressing which had been produced by the KIAA under the auspices of RIRDC
- Participants being given both the Field Dressing Manual and the DVD to supplement and reinforce the training.

Towards the end of the project an online version of the training program was offered to harvesters who had been unable to attend the face to face program.

The final program was conducted in March 2011. At that point:

- 2736 accredited harvesters had attended the program in 81 locations in Qld, NSW and SA
- Of these, 20 had participated in the online program.

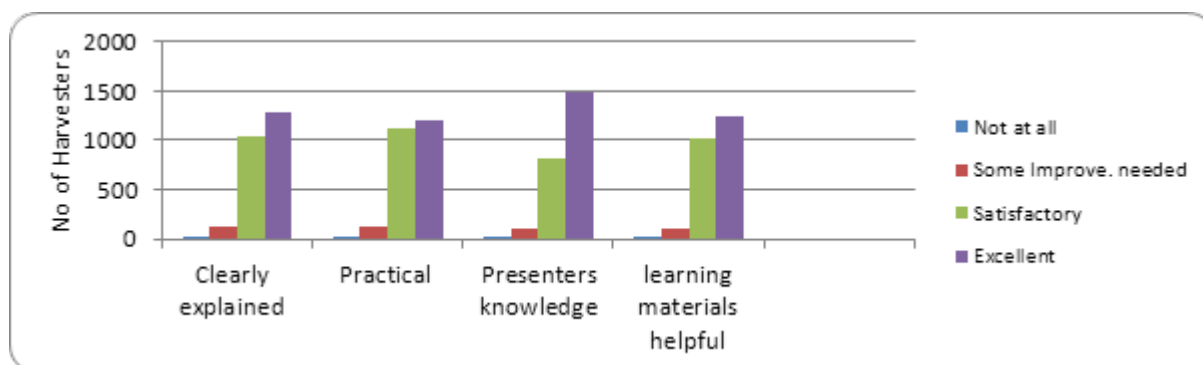
All participants undertook a written assessment at the end of the training and those who did not pass at the first attempt undertook further training until a satisfactory result was achieved.

The program was well received by participants, regulators and industry. Those participants surveyed rated the program against the following criteria:

- The extent to which the program was:
 - Clearly explained
 - Practical
 - Presented by trainers with good knowledge of the subject matter
 - Supported by appropriate learning materials

The Program rated very highly across all these criteria (summary at Table 3 below).

Table 3 - Harvesters' Evaluation of National Refresher Training Program



Industry and regulators believe that the program has been helpful in improving food hygiene standards in the industry. The overall improvement in meat quality, as evident by testing procedures, is a result of this project.

4.2 Development of a Harvester Assessment Tool

The deliverables of this stage of the project were refocussed during the implementation to provide a more sustainable product for the industry. These changes are outlined below.

Table 4 - Changed Deliverables - Phase 2

Original Deliverables	Changed Deliverables
A harvester assessment tool and training program for assessors	Harvester assessment tool Additional assessment tools for other roles in the supply chain
Pilot of the tool on some excluded harvesters	Additional training materials to support attainment of national competency standards usable by both Registered Training Organisations (RTO's) and industry Good practice guides (procedures and templates) to support key tasks at depot and processor establishments

All materials apart from the Field Depot Procedures and Templates have been developed and approved. The completed materials are available to RTOs and regulators via MINTRAC, and the good practice guides will be distributed via State Regulators and KIAA when completed in May 2011.

These materials are at Appendix 1.

4.3 Development of National Competency Standards

National competency standards for the following key roles have been developed, approved by industry reference groups, and are awaiting recognition in the forthcoming revised national meat industry training package:

- Wild game harvester
- Depot manager
- Predressing inspectors at a processing plant

In each case the key skill and knowledge requirements have been defined as national competency standards and integrated with the National Training Package. Further, these have been aggregated into defined 'skill sets'. This term is shorthand within the VET sector and means that these skill requirements, while not sufficient to be awarded a qualification on their own, have a recognised status in the industry. This 'skill set' status facilitates funding within the VET system beyond the formal qualification framework.

A list of the competencies developed includes:

Table 5 - List of National Competencies

MTMG306A	Use firearms to harvest wild game
MTMCOR202A	Apply hygiene and sanitation practices
MTMG300A	Overview Wild Game Meat Industry
MTMG201A	Receive and inspect game shot carcasses at a field depot
MTMG301A	Operate a game harvesting vehicle
MTMG302A	Eviscerate, inspect and tag game shot carcass in the field
MTMG303A	Receive and inspect wild game shot carcasses from the field
MTMG304A	Perform pre-dressing inspection of wild game carcasses at a processing plant
MTMP2132B	Load-out meat product
MTMP305A	Store wild game carcass
MTMPS204B	Maintain production records
MTMPSR203A	Sharpen knives

Implications

While at time of writing the industry has not yet re-gained lost export markets or gained new ones, this project has ensured that there is now evidence that kangaroo harvesters have been retrained in hygienic field dressing practices, and that there are national training tools available. Improvements in the quality of carcasses have been reported by industry and regulators. The industry also has two training tools, one competency based, and one for 'on the job training' to support future training in the industry.

The industry is now in a much better position to manage the training of its participants for these key occupations. In particular the following benefits should accrue:

1. The benefits of the short term (refresher) training program include:
 - a. More consistent approach to field dressing among harvesters nationwide
 - b. Improved standard of hygienic field dressing
 - c. Reference materials which will continue to reinforce important hygiene and regulatory requirements.
2. The benefits of the resource materials developed at stage 2 of the project include:
 - a. Improved consistency and quality of training among Training Organisations nationally;
 - b. Opportunity for industry and individuals to develop their own skills in the context of national standards by accessing these materials
3. A clearly defined set of national competencies will facilitate:
 - a) Consistency in training across Australia
 - b) Better access to National VET funding for training in the industry
 - c) Improved confidence by local and overseas markets in workforce capability.

Recommendations

While the project has achieved its objectives, maximising value from the project for the long term benefit of the industry would be enhanced by:

5.1 Further Training programs

The occupations of depot manager and pre-dressing inspector at processing facilities are important components of the food quality supply chain. In addition to training for harvesters, it would be beneficial to see the development of national training programs for these occupations.

5.2 Development of a simulation program for field dressing

While the DVD and the national refresher training program have been helpful in lifting standards, ultimately field dressing is a practical skill best learnt by doing. Unfortunately the small size of the industry and the distances involved mitigate against holding practical programs for groups of harvesters. It may however be possible to simulate hygienic field dressing requirements using modern simulation methods such as those employed in the health sector, potentially using game console technologies as the delivery platform. While expensive to develop, this methodology has the advantage of being precise, long lasting, unaffected by distance, and of course, with built-in feedback and assessment.

The development of such technology in the wild game industry would provide a useful test bed for other similar industries such as beef and sheep.

5.3 Providing information sessions and materials

A range of useful training and assessment resources have been developed by the project and while these will be used by the VET sector (RTOs), there is a risk of them not reaching their full potential without adequate information and promotion among industry members. A series of face to face workshops would assist in improving industry understanding of phase 2 and 3 materials.

Appendix 1 – Examples of Training Materials Developed

Stage 1 Short Course - Training Materials

**National
Kangaroo Harvester
Hygienic Field Dressing Manual**

Acknowledgement

The national Kangaroo Wild Game Harvester Training project has been funded by the Commonwealth Department of Agriculture, Fisheries and Forestry through the Rural Industries, Research and Development Corporation (RIRDC) and is managed by Safe Food Production Queensland (SFPQ).

The authors would like to acknowledge RIRDC for making the funds available for the production of these learning materials.

SFPQ is also acknowledged for its support and technical advice in the production of these learning materials.

Copyright

Materials from the Southern Queensland Institute of TAFE, OTEN NSW and Regency College of TAFE South Australia learning guides and images from the KIAA video production were used in the development of these learning materials.

All other material is subject to copyright – RIRDC 2010.

Summary and Reference Pages

Section	Summary of section	Page
Industry Overview	<ul style="list-style-type: none">The reasons behind this training	8
Course Overview	<ul style="list-style-type: none">How the course is structured	12
Contamination	<ul style="list-style-type: none">Contamination explained	13
	Types of	
	<ul style="list-style-type: none">Microbiological (bacteria)	14
	<ul style="list-style-type: none">Physical (dirt, faeces, ingesta)	22
	<ul style="list-style-type: none">Chemical (cleaning agents, lubricants, agricultural)	24
Bacteria	<ul style="list-style-type: none">Food spoilageFood poisoning	15
What do bacteria need to grow	<ul style="list-style-type: none">FoodMoistureWarmthTimeAirpH	17-19
Ways to control bacterial growth	<ul style="list-style-type: none">Clean plant & equipment to remove food for bacteriaDry surfaces after cleaning & dry surface of meat during chilling to limit moisture which bacteria need to growChill carcasses down to 7°C or below because bacteria do not grow / are limited below thisLimit the time carcasses are at temperatures that bacteria like to grow 7°C - 60°CChill carcasses down to 7°C or below ASAP (must be 7°C or below within 24 hours of being placed under refrigeration)	21

Prevent contamination by	<ul style="list-style-type: none"> • Wearing clean clothing 	21-22
	<ul style="list-style-type: none"> • Practicing good person hygiene <ul style="list-style-type: none"> - Washing hands regularly or when ever they become contaminated - Cover all wounds and cuts - Do not operate if affected by infectious disease • Using hygienic dressing procedures • Washing and sanitising knives etc after each opening cut or when ever they become contaminated • Comply with the time/temperature requirements • Having an effective cleaning program 	31-32
Cleaning program	<ul style="list-style-type: none"> • Clean vehicle & equipment after each day's operation • Use chemicals that are suitable for the food industry & for their intended use • Have a cleaning procedure <ul style="list-style-type: none"> - dismantle equipment - dry clean by removing pieces of meat, fur, skin etc - rinse with cold water - scrub with detergent and then sanitise (avoid using combined agents) - rinse with drinking water 	27-30

Vehicle and equipment	<ul style="list-style-type: none"> • Constructed of material suitable for the purpose • durable to withstand normal day to day wear and tear • non-toxic • smooth surfaces to make it easy to clean • corrosion resistant • impervious and will not absorb moisture • resistant to, or protected from, impact • easily cleaned and, where necessary, drained to prevent ponding of water and blood, and capable of being dismantled for cleaning; 	33-34
Facilities	<ul style="list-style-type: none"> • Adequate supply of drinking quality water sufficient to wash hands and equipment throughout a whole day and/or night of processing • (Qld Minimum: 1 litre per spike with a minimum of 20 litres) • Adequate supply of a suitable agent for sanitising hands; • A supply of disposable paper towel for drying hands during processing; • hand wash facilities located near processing area • facilities for cleaning and sanitising equipment used during processing operations should contamination occur; and sufficient lighting (Qld Minimum: 50 watt) 	35-36
Pre-harvest inspection	<ul style="list-style-type: none"> • Only harvest healthy animals • Do not harvest from restricted areas or areas suspected of being affected by chemicals 	37-38

Animal welfare	<ul style="list-style-type: none"> • Shooter must hold a gun licence and be competent and use a rifle suitable for the purpose • Rifles must be “sighted in” before harvesting commences • Kangaroos must be shot in the head 	39-43
Dogs	<ul style="list-style-type: none"> • In Queensland NO DOGS allowed when engaged in harvesting kangaroos. 	44
Hygienic dressing	<ul style="list-style-type: none"> • Bleed within 3 minutes of shooting • Use spear cutting (opening up from inside out) • Wash hands before contacting exposed meat • Sanitise knives & equipment when they become contaminated (eg cutting through the skin, intestines and weasand) • Eviscerate (gut) animals within 20 minutes of bleeding • Keep open cuts to a minimum (minimise the area of meat exposed to contamination) • Use procedures that prevent spillage from the weasand and the intestines 	45-58
Post-harvest inspection	<ul style="list-style-type: none"> • Inspect for contamination or diseases • Carcasses affected by disease and gross contamination must be discarded 	59-61
Identification and traceability	<ul style="list-style-type: none"> • Two tags need to be securely attached to kangaroos <ul style="list-style-type: none"> (i) The tag required by Natural Resource Management Authority (ii) The tag required by SRA administrating the Wild Game Meat Industry • The tag required by the SRAs must contain:- <ul style="list-style-type: none"> - Harvester name or Harvester accreditation number - Date killed - Time killed - Place of harvest - A signed declaration, as required 	62-64 62-63

Transport to field depot or game meat processing premises	<ul style="list-style-type: none"> • Carcasses must be hung no more than one to a hook & be spaced to enable air circulation • Kangaroos are to handled & stored separately to wild boar • Delivered within strict time frames <ul style="list-style-type: none"> (i) If killed during daylight the carcass has to be transported to a field depot or wild game meat processing establishment within 2 hours of harvest. (ii) If killed between sunset and sunrise the carcass has to be transported to a field depot or wild game meat processing premises no later than 2 hours after sunrise with a maximum of 12 hours between killing and placing into a field depot or game meat processing premises. 	65-66
Unloading	<ul style="list-style-type: none"> • Care must be taken not to cause cross contamination • Do not touch exposed meat with hands • Do not allow carcasses to contact floor or other surfaces • Unload kangaroos & wild boar separately 	67-68
Record keeping	<ul style="list-style-type: none"> • Must keep records for trace back purposes • Records must be available during audit 	69-70

Field depots & game meat processing premises	<ul style="list-style-type: none"> • Operators will check product at receipt to make sure it meets requirements. • The SRA will be advised of harvesters who have carcasses rejected because of disease or contamination. • Carcasses have to be chilled to 7°C or below within 24 hours of being placed under refrigeration. • Operators will use data loggers to verify that they are complying with the time and temperature requirements • Can only process carcasses that comply with: <ul style="list-style-type: none"> - Free of contamination & disease - Only head shot - Have a tag attached which contains all the required information - Has a temperature of 7°C or below - Is accompanied with evidence that it has met all the time / temperature requirements - If it has NOT BEEN KILLED WITHIN THE LAST 14 days 	71-76
Transport to game meat processing premises	<ul style="list-style-type: none"> • The temperature of carcasses during transport must be kept at 7°C or below • Transporter will use data loggers to verify that they are complying with the temperature requirements 	77
Approved arrangements	<ul style="list-style-type: none"> • Current approved arrangement will need to be revised and amended to reflect the recent requirements. • Harvesters will need to provide evidence that they have attended “gap” training in hygienic dressing requirements before they will be issued a 2011 accreditation/ licence. 	78

Overview of industry and background on reasons for this training

The national kangaroo wild game harvester training project has been developed and supported by both industry and Government to ensure the quality of the product produced.

Kangaroo competes in a global market in which importing country authorities require the product and its production system meet their standards.

Over the last 18 months, the Australian wild game field harvesting, field depot chilling, and wild game meat processing sectors of the industry have been subjected to audits by importing countries, AQIS and State Food Authorities. These audits have identified the need to make some changes to current procedures

Kangaroo meat has to compete with meat from a variety of other destinations and must be able to demonstrate similar standards. The industry must strive to continually improve its systems and maintain its competitiveness. Following significant consultation with industry, a range of measures have been introduced including:

- Advanced training for kangaroo harvesters and field depot operators;
- Improved carcass tagging;
- Enhanced monitoring of field chilling;
- Increased verification of cold chain management;
- Enhanced assessment of carcass suitability for processing;
- Increased microbiological testing of kangaroo carcasses and meat; and
- A mandated maximum time period of 14 days from the time of harvesting to processing (that is, processed product).

An industry wide training package has also been developed to improve the field dressing skills of harvesters and help maximize product quality – this training program. Many harvesters have successfully provided quality product for many years, however, this is not always the case and this finding is confirmed by research. It is therefore important to improve all aspects of the kangaroo meat production chain from harvester to processor.

This program has been developed to reinforce the standards required for hygienic dressing in the field.

Australia's Response

The State and Federal Governments have implemented a number of initiatives to assist industry. Among these initiatives, a kangaroo industry development committee was formed which recommended that training be provided to all harvesters and depot operators focusing on the skill requirements needed to meet the *Australian Standard for the Hygienic Production of Wild Game Meat for Human Consumption AS 4464:2007 (Australian Standard)* and export market requirements.

A review was conducted of the *Australian Standard* which identified that it **re-enforces the key issues for hygienic dressing and wild game harvesting.**



AQIS developed two new Meat Notices (2010/02 and 2009/18) to ensure compliance with the *Australian Standard* and importing country requirements. These require the implementation of:

- Enhanced wild game carcass tagging procedures;
- Enhanced field depot temperature monitoring and recording (air & meat temperature data logging);

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- Air temperature loggers for carcass transport from field depot to processing establishments;
 - Improved pre-dressing inspection and reporting of significant dressing deficiency;
 - Microbiological verification to ensure adequacy of field dressing techniques and field depot chilling and storage procedures;
 - A mandatory carton coliform testing program which supplements the carcass microbiological monitoring program, which includes coliform testing; and
 - A mandated maximum period from time of harvesting to processing.

State Regulatory Authorities (SRA's) response



To compliment the AQIS Meat Notices the SRA's have made changes to accreditation/ license requirements for Field Harvesters, Field Depots and Processors, such as

- Moving to a Management Statement/Food Safety Program which individualises each Game Harvester's operation
- Requiring gap training in hygienic field dressing as a condition of accreditation/ licence requirements
- Harmonising standards for domestic and export
- Having a stronger focus on skills and knowledge of the person performing pre-dressing inspection

SRAs have worked closely with AQIS and the wild game industry on all initiatives to support the Australian Standard and market requirements. This training program focuses on 5 key areas identified as concerns nationally and agreed with by key stakeholders including AQIS, SRA's and Industry bodies. Broadly speaking these issues cover time and temperature controls, identification and traceability requirements, hygienic dressing, handling and storage requirements.

Australian Standard for the hygienic production of wild game meat for Human Consumption

Wild Game Meat must be produced according to the *Australian Standard for the Hygienic Production of Wild Game Meat for Human Consumption - AS4464:2007*, which requires all activities by Field Harvesters and others involved in the production and processing of wild game to comply with the human consumption standard. The relevant parts of the Standard will be referred to in this Manual. Any decision on the disposition of the carcass must be made by the wild game processor. All activities undertaken by the Field Harvester must be done to human consumption product standards.

Course Overview

This course is designed to refresh the knowledge of field harvesters and to provide additional information pertaining to new requirements implemented.

When participants have successfully completed this course and associated assessment, they will receive a Statement of Attendance from the Southern Queensland Institute of TAFE (SQIT), which they will need when making application for re-accreditation/ license to field process wild animal carcasses in 2011. All State Regulatory Authorities will want to sight this certificate for the purpose of registration / accreditation.

Course Structure

At the start of each unit the following headings are used:

- **Topic heading:** brief descriptor of what is covered in the section
- **Outcomes,** states the anticipated level of understanding gained in the section.
- **Reference,** identifies specific sources of information.
- **How,** contains the information you are required to know and understand, to enable you to comply with the requirements.

Contamination

OUTCOME

Harvesters understand what contamination is, the sources of contamination and the measures required to control contamination

Reference

AS4464:2007 Australian Standard for the Hygienic Production of Wild Game Meat for Human Consumption - Parts 4 and 5

What is contamination?

Contamination is anything on or in a meat product that should not be there. There are 3 main types of contamination:

- **microbiological** – e.g. any microorganisms or bacteria that gets on the meat from unclean hands, dirty equipment, faeces, ingesta or the skin of the animal during field harvesting operations.
- **physical** – e.g. dirt, dust, hair, leaves, faeces, ingesta.
- **chemical** – e.g. agricultural chemicals used on farms, or cleaning chemicals not properly rinsed off equipment that could get into the meat.

Microbiological contamination



What are micro-organisms?

Micro-organisms are too small to be seen with the naked eye and can only be seen under a microscope. Millions of bacteria fit on a pinhead.

There are a number of types of micro-organisms. These include:

- **Yeasts** – usually feed on sugar, resulting in the production of alcohol and carbon dioxide gas. They are used to make beer & wine
- **Viruses** – grow in living things such as people, animals and plants. Viruses are carried from people to people (e.g. colds & flu) via insects (e.g. Ross River fever) and occasionally by food (e.g. hepatitis)
- **Moulds** – are made up of ‘strands’ which spread over and through whatever they are growing on. Some moulds may produce toxins which may be very poisonous. Moulds can sometimes grow on meat surfaces which have become too dry for bacteria. Eg: Mould on kangaroo carcasses due to incorrect storage.



Figure 1. Mould inside a carcass

- **Bacteria** – are found in three basic types:
 - Harmless (used in the production of cheese, beer, wine, salami)
 - Food spoilage (Sour milk, slimy meat)
 - Food poisoning (Salmonella, E coli)

Bacteria are the **main** cause of food poisoning in humans and can be found everywhere; on the skin and in the gut, nose and throat of animals and humans.

How do bacteria multiply?

Bacteria multiply by simply *splitting or dividing*. This allows them to reach **incredibly large numbers** very quickly.

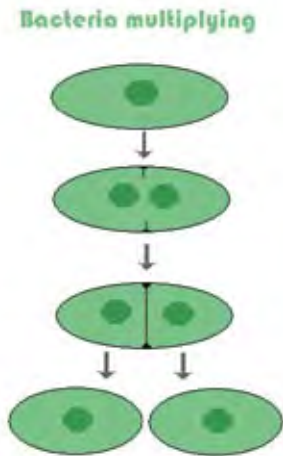


Diagram 1. How bacteria grow by splitting or dividing.

A single bacterium may not pose a great threat to human health, but as it multiplies and generates a large bacterial population then there is a risk of food poisoning or product spoilage.

In the environment where harvesting occurs, there is never just one bacterium; most surfaces will have a high number of bacteria normally.



Even though bacteria are invisible to the naked eye, we transfer millions of bacteria every day without even realising it.

The reason for sanitary dressing is to minimise the number of bacteria on the exposed surfaces of the meat and therefore prevent food spoilage and maximise shelf life.

Conditions required for bacterial growth

Temperature

The food poisoning bacteria that are a major concern with harvesting and initial chilling of wild game animal carcasses grow between the temperatures of 7°C and 60°C. Very rapid growth occurs between 20°C and 45°C – the high danger zone. During further processing of wild game animal carcasses other food poisoning bacteria become a concern and can grow down to lower temperatures for example 5°C.

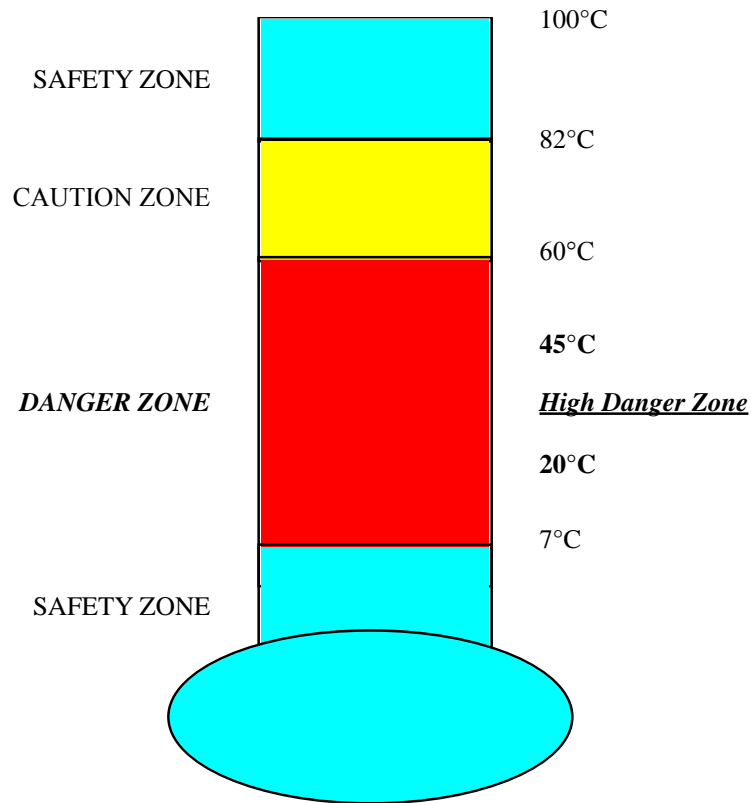


Diagram 2. Temperature zones for food safety.

Normal body temperature of a living animal is around 37°C which is an ideal temperature for rapid bacterial growth.

It is very important that the temperature of a carcass is reduced as quickly as possible following harvesting to a temperature within the safety zone (0-7°C) to minimise bacterial growth.

Fortunately most of the food poisoning bacteria are easily killed by heat above 60°C.

Oxygen

Some bacteria need oxygen. Some food poisoning bacteria can grow with or without oxygen (facultative). In the field, operators cannot keep oxygen away from meat unlike where processed meat can be placed in an airtight vacuum plastic bag. **Therefore the numbers of bacteria need to be minimised from the beginning** (ie: from the point of field dressing).

Water

Most bacteria require moisture to absorb their food through their cell walls. Therefore, dry food has a reduced risk of bacterial contamination. For example, fresh meat is more susceptible to contamination than is beef jerky. In field depots, provided there is sufficient spacing and cold air flow, the surface of meat dries out considerably and this helps it last longer.

Spacing carcasses in the field depot not only:

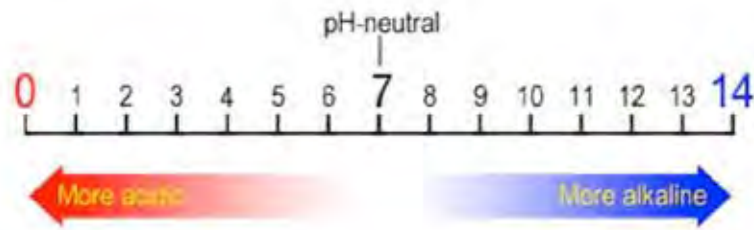
- **allows them to cool down more quickly, but**
- **also allows the exposed surfaces to dry out more quickly thus reducing the growth rate of micro-organisms.**

Food Source

Most food is a suitable breeding ground for bacteria, especially protein foods such as meat. Bacteria don't usually like acid foods (eg fruit).

pH

The pH is a measure of the level of *acidity or alkalinity* of a substance. It is measured on a scale of 0 to 14, with 7 being neutral (pure water). Generally food poisoning bacteria prefer a neutral pH. Meat has a pH range of 5.7 to 6.2 which is close to neutral and therefore ideal for bacterial growth.

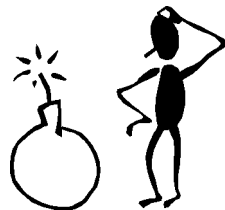


Vinegar Coke Fruit	Live animals Fresh meat Eggs	Detergents Caustic soda
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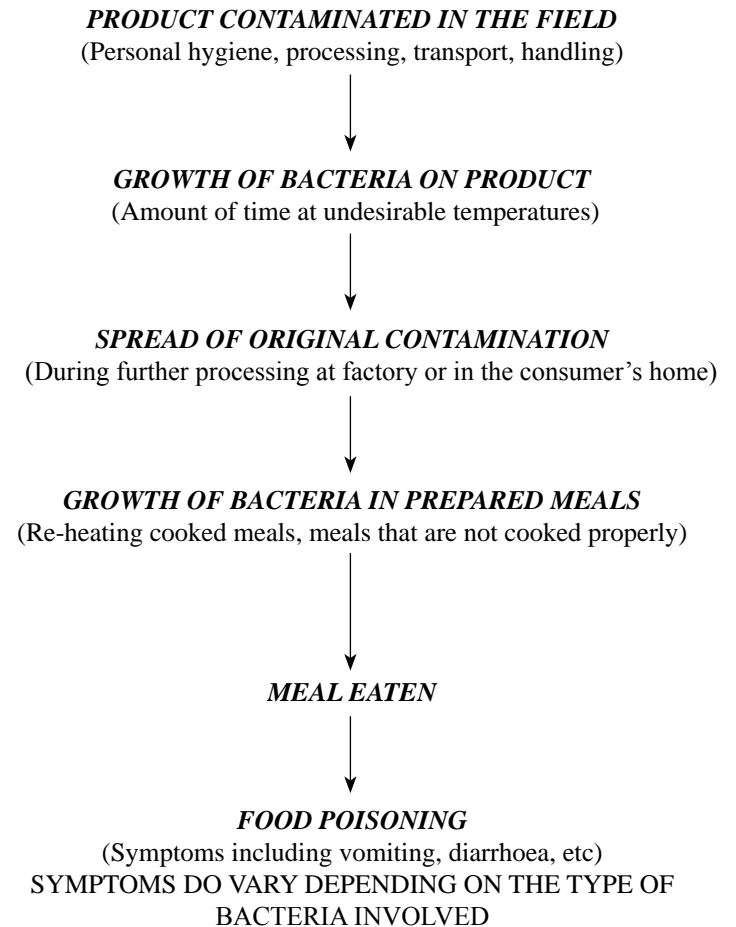
Diagram 3. pH scale and examples of everyday items.

Time

Bacteria act like a *time bomb*. The bomb goes off if the carcasses that are carrying harmful bacteria are kept between 5- 60°C for longer than four to six hours. Given that bacteria can double their numbers every twenty minutes, it takes only five hours for one bacterium to reach sufficient numbers to cause carcass spoilage and possible food poisoning.



AN EXAMPLE OF HOW FOOD POISONING COULD OCCUR



How can we control bacterial contamination?

During any skinning operation, it is practically impossible to avoid some bacteria getting onto the meat surface. However, bacterial contamination can be minimal if operators have hygienic procedures in place.

Prevention

- Use only *clean equipment*.
- Maintain good *personal hygiene*



Figure 2. Acceptable clothing for harvesting.

Think Clean

Control

- Hygienically dress carcasses
- Hang carcasses individually
- Comply with the time / temperature requirements
- Have an effective cleaning program (i.e. hand washing and sanitation procedure during processing)

Physical contamination

The main source of physical contamination of wild game animal carcasses is due to poor field dressing and handling procedures. The following are examples of **how the product can be come contaminated:**

- **Not using the spear cutting method** (cutting from inside to out) when opening up the skin and dragging bits of hair, dirt and other extraneous matter onto the meat.
- **Not freeing the bung correctly** and allowing faeces to spill onto the meat surface in the pelvic channel or around the anus.
- **Not freeing the weasand correctly** and allowing ingesta to spill inside the chest cavity or over the brisket meat.
- **Making incorrect dressing cuts** and exposing unnecessary amounts of meat surfaces. These can then be contaminated from hair, dust, etc or contact from the skin/fur of other carcasses.
- **Not gutting out correctly** and leaving remnants of organs that should have been removed.
- **Allowing condensation (containing dust and dirt) to drip down** off the ceiling of field depots onto the meat.
- **Overcrowding of carcasses** on the harvesting vehicle
- **Hanging carcasses of the outside** of the harvester vehicle

What are the main sources of physical contamination and how are they controlled?

People

Most people do not want to deliberately contaminate meat. Harvesters can reduce the risk of accidentally contaminating the product by following good field dressing procedures. Using industry agreed hygienic dressing procedures will ensure that physical contamination is minimised. These procedures will be explained in depth in the national training program.

Plant & Equipment

To enable wild game animal carcasses to be processed hygienically suitable plant (vehicle, field depot, etc) and equipment (hand wash facilities, equipment storage facilities, etc) are needed. The Australian Standard for the Hygienic Production of Wild Game Meat for Human Consumption outlines these requirements. These requirements will be explained in depth in the training program.

Animals

The animal itself can be a major source of contamination which is why the hygienic dressing procedures were developed. Because wild game animals are free to run unrestricted there is no control on the cleanliness of the skin or fur. Therefore extra care must be taken during processing to minimise

Chemical contamination

What are the main types and sources of chemical contamination?

Agricultural chemicals

Farmers use agricultural chemicals such as insecticides and herbicides to control pest that affect their business. These chemicals can find their way into the food chain and end up in meat products.

Examples of how wild game animals could be exposed to these chemicals include:

- Foraging on grass in a paddock sprayed with herbicides to kill the weeds.
- Foraging on crops sprayed with insecticides to control insects from eating the crop.
- Foraging on grain that has been treated with insecticide to prevent weevil infestation.
- Wild boar foraging on dead animals in an area subject to a baiting program (1080) to control dingos, wild dogs or foxes.

It is therefore important that harvesters talk to property owners to find out if there are any chemical issues that could affect the wild game animals they plan to harvest from that property.

Local Refuse Tips or Dumps

Rubbish from numerous sources finds its way to the local refuse tip. It is highly probable that some of this rubbish may contain chemicals or substances that could be harmful to humans. Wild animals foraging around tips/dumps could be exposed to these substances. They are therefore not be harvested.

Cleaning chemicals

Detergents and sanitisers are used to clean harvesting vehicles, field depots and processing premises after operation. Only chemicals approved by the government for use in the food industry can be used in and around these facilities. All chemicals are required to be labelled to indicate their correct use and storage conditions. If these chemicals are not used properly, they can leave residues on surfaces which will contaminate the game meat. All operators must have strict procedures for using and storing chemicals.

Lubricants

Oils and grease can contaminate carcasses leaving black or brown smears on the meat. This has to be trimmed off. Faulty or poorly maintained machinery will drip grease and oil onto the product. Where possible, biodegradable (vegetable based) oils and lubricants should be used in conjunction with harvesting and processing equipment.

Fuel

Harvesters occasionally carry additional fuel in containers on the backs of vehicles. Care is to be taken not to allow fuel to leak or spill and contaminate the product.

Why is chemical contamination a problem?

If meat is contaminated by chemicals it may make people sick either in the short term or in the long term.

Consumers expect to eat foods that are wholesome and free of dangerous chemicals. For this reason the Australian Government and governments overseas regularly check meat products for chemical residues. It is important for the game meat industry to always supply meat that complies with the standards set for chemical residues. In the past, the export of Australian meat has been put at risk due to unacceptable levels of chemical contamination. The meat industry in conjunction with the Australian Government is doing a great deal of proactive work to ensure this does not happen again.

The Commonwealth Government conducts a National Residue Survey (NRS) to sample meat products. This helps to make sure that the domestic and export industries are supplying meat free of chemicals.

Hygiene and sanitation

OUTCOME

Harvesters understand why hygiene and sanitation is important in the control of microbial growth and the measures required to be in place to control their growth

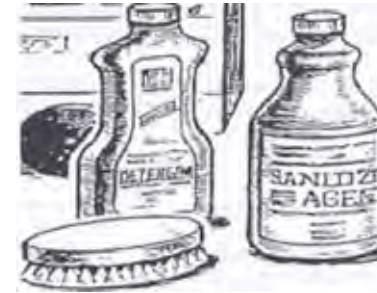
Reference

AS 4464:2007 Australian Standard for the Hygienic Production of Wild Game Meat for Human Consumption – Parts 4 and 5



How to comply with the hygiene and sanitation requirements

Cleaning and sanitising



Cleaning is the removal of unwanted visible material, e.g. blood, food, dust, rust, grease, stains and other contamination.

Sanitising is the process of killing bacteria. This may be achieved with either chemicals or the use of hot water. In the game meat processing industry, sterilization of equipment is achieved by dipping knives etc in hot water at 82 °C for eight seconds. During field harvesting, by immersing and/or applying sanitiser solution to knives, steel, hands etc.

All vehicles and equipment need to be cleaned and sanitised regularly to prevent bacterial cross-contamination.

To ensure everything that needs to be cleaned, is cleaned, it is wise to have work instructions. A work instruction outlines **who** is responsible for cleaning the vehicle and equipment, as well as **when** and **how** they are supposed to do it.

Example:

The field harvester (**WHO**) at the end of each day/night processing (**WHEN**) will clean the (**WHAT**):

- harvesting vehicle
- hooks
- knives, pouch and steel
- saw
- dehorner
- other equipment



Field harvesters are to use the following procedure when cleaning equipment (**HOW**):

- **dismantle** the equipment;
- **dry clean** by removing large pieces of matter;
- **rinse** using cold water;
- **scrub** down using a detergent and then a sanitiser or a combination chemical;
- **rinse** using potable water (drinking water)

Note: Regular cleaning with chemicals can cause coatings on steel surfaces to wear away and rust to appear, therefore operators must ensure that all equipment is **to be maintained rust free.**

Use of Cleaning Chemicals

All chemicals, if not used correctly, can be harmful to humans and the environment. Also, if not correctly used, they may not achieve their purpose.

The correct way to use cleaning chemicals is to pick the right chemical for the job and use it as per the manufacturer's instructions.

Some of the cleaning agents and sanitisers used in the meat processing industry are:

- **chlorine** based products such as sodium hypochlorite;
- **quaternary** ammonia compounds;
- **acid-based** (phosphoric acid) metal cleaners;
- **iodine-based** products; and
- **methylated** spirits. (70% Metho/30% water)

You should contact a supplier of cleaning chemicals regarding the most suitable cleaner or sanitiser for your situation and the precautions that must be taken.

Points to discuss with your supplier may be:

- **suitability for use** on meat processing equipment;
- **what** you want the chemical to be able to do, e.g. detergent cleaner, sanitizer to kill micro-organisms or both;
- **what volumes** you wish to deal in;
- **how long** the chemical will last (i.e. use by date);
- is the **chemical corrosive**;
- **compatibility** with other chemicals used;
- **dilution rates**;
- **methods of application** (i.e. foam, liquid, powder); and
- **suitability** for use with hot or cold water.

Chemicals carried on the field harvesting vehicle are to be:

- labelled correctly
- stored so as to prevent misuse or any contamination of carcasses.



Personal hygiene

Personal hygiene relates to the cleanliness of an individual.

People can be the greatest source of contamination of food without even being aware of it. A common work practice to improve personal hygiene includes washing your hand. Effective hand washing involves the following key points:

- Wet hands
- Apply hand cleaner
- Lather well
- Wash both front and back, as well as between the fingers. Keep going for as long as it takes to sing two verses of “happy birthday”
- Work cleanser under nails using monkey grip
- Don’t miss between the thumb and forefinger
- Concentrate on cracks in the palm of both hands
- Rinse well
- Dry with paper towel



Hands must be washed:

- *before* commencing work and every time they become contaminated;
- *after* going to the toilet;
- *after* blowing your nose;
- *after* having a cigarette;
- *after* handling contaminated product;
- *in* between carcasses; and
- *after* subconscious body habits, eg wiping perspiration from your body, rubbing your finger under a runny nose, picking pimples and scratching your body.

HANDS!!
SHOULD BE WASHED REGULARLY DURING PROCESSING TO
PREVENT CROSS-CONTAMINATION

Harvesters must:

- **always** start work with clean outer clothes of a light colour which will show any contamination;
- **not** work if they are suffering from an infectious disease, boils or ring worm; and
- cover all wounds and cuts with an appropriate, secure and waterproof dressing. If injured during harvesting operations, dress the wound or cut to prevent cross-contamination before recommencing work.

Cross contamination

Cross contamination is the term used to describe the transfer of contamination from one surface to another.

Examples include:

- **unclean hands** contacting meat (handling the skin and then touching the exposed meat surface);
- **unclean equipment** contacting meat (cutting through the skin and then cutting exposed meat); and
- **unclean clothing** contacting meat (clothes of person changing a tyre becoming muddy and then coming in contact with meat).

Vehicles and Equipment

OUTCOME

Vehicle and equipment used in the harvesting of wild game animals must comply to the standard, be suitable for the purpose and not a source of contamination to the product

Reference

AS 4464:2007 Australian Standard for the Hygienic Production of Wild Game Meat for Human Consumption – Part 8

How to comply with structural requirements

The hanging frame, floor and equipment of a vehicle used in field harvesting wild game animals should be:

- **durable** (to withstand day to day operations without deterioration other than normal wear and tear);
- **non-toxic** (no lead solder, no cold galvanised paint);
- **smooth** surfaced (no hard to clean corners, crevices or cracks that would inhibit effective cleaning);
- **corrosion resistant** (galvanised steel, aluminium, stainless steel);
- **impervious** (wooden handled knives, saws, axes, knife steel and wooden floor trays are not acceptable);
- **resistant to**, or protected from, impact (material that will not easily crack or break under normal operating conditions);
- **easily cleaned** and, where necessary, drained to prevent ponding of water and blood, and capable of being dismantled for cleaning;
- **resistant to** chipping, flaking or fraying (no flaking paint), and
- **of a finish** that makes contamination clearly visible (no dark colours).



Figure 3. Field harvesting constructed of suitable materials.

The vehicle shown in figure 3 demonstrates how suitable materials can be used to in constructing a field harvesting rack

How to comply with the requirements

The following facilities must be provided in every vehicle used in field processing:

- a **supply of drinking quality water** sufficient to wash hands and equipment throughout a whole day and/or night of processing

NOTE:

Qld	This equates to 1 litre per spike
SA	The supply should be sufficient, with a minimum supply of 20 litres
NSW	No further definition

- an **adequate supply** of a suitable **agent for sanitising** the hands;
- a **supply of disposable paper towel** for drying hands during processing;
- **hand wash facilities** equipped with taps and located near the normal processing area. Taps which are not operated by hand (eg: ball tap with lever, button, hip/thigh operated) are preferred as they minimise cross contamination;
- **facilities for cleaning and sanitising** equipment used during processing operations should contamination occur; and
- **sufficient lighting** which is adequate to ensure hygienic processing at night.

NOTE:

Qld	Minimum of a 50 watt bulb
SA	Minimum of a 50 watt bulb
NSW	No further definition

Important questions to ask yourself regarding your harvesting equipment

How many animals you are going to process and **how often you are going to process?** Is the vehicle structure adequate to handle the number of animals that you propose to harvest?

Does your vehicle structure allow you to process quickly and hygienically? For example, is your water, hand sanitising solution, equipment sanitising method and light source located in the one area where you will do all your processing?

Does your vehicle structure allow air to circulate around hanging carcasses? Good air flow is a major factor in reducing the temperature of your product and minimising bacterial growth that cause spoilage and food poisoning. Adequate distances between spikes and the design of the rack so carcasses are not hard up against a solid wall of a dog box or vehicle tray. This will provide space for air to pass through and thus lower the body temperature of the carcasses

During processing when you are not using your knife, where do you store it so that it does not become contaminated? The floor of the processing rack is not a suitable place to store your knife whilst processing. Consideration should be given to installing a container with an approved sanitiser for this purpose.

The less equipment in the processing area, the less there is to clean each day. It would be a lot easier to have spare tyres out of the processing area rather than have to scrub their covers every day.

It is important that your vehicle is designed to make it as easy as possible for you to **process hygienically** (i.e. washing and sanitising hands and knives regularly) without losing shooting time.

Pre-harvest inspection

OUTCOME

To ensure only healthy wild game animals that can be legally procured in the wild are harvested.

Reference

AS 4464:2007 Australian Standard for the Hygienic Production of Wild Game Meat for Human Consumption - Parts 6 and 8

How to comply with sourcing of wild game animals requirements

One of the main factors affecting the wholesomeness of the finished product is the health of the living animal.

As mentioned earlier, chemical contamination can occur if the wild game animal has been foraging in areas treated or contaminated by chemicals.

Harvesters should talk to property owners to find out if there are any areas on the property that have been treated with chemicals or which are contaminated by chemicals. You must avoid harvesting in those areas.

Harvesters should also not source wild game animals from around local government refuse tips or dumps.

As you are the only person who will see the animal before it is shot, it is your responsibility to observe the animal before you shoot it to see that it looks normal.

Animals that display following conditions must **not** be harvested for either human or animal food.

- Has an **abnormal gait** (walk, hop, staggers);
- Is **weak** or **lethargic** (lack of energy, looks tired);
- Lacks **alertness**;(slow to react)
- Sits in an **unusual way**;
- **Holds its head** on an unusual angle;
- Has any **discharge** from the nose or mouth;
- Has any skin **abnormalities**;
- Is **poorly fleshed** (very skinny); or
- **Injured** or **suffering from an abnormality** that may render the meat derived from it unwholesome.

Remember, if you wouldn't eat it because you think it may not be quite right, don't harvest it!



Observe the animals



Ideal

Past it!

Animal welfare

OUTCOME

To ensure wild game animals are killed with the minimal risk of injury, pain, suffering and the least disturbance to the animal.

Reference

AS 4464:2007 Australian Standard for the Hygienic Production of Wild Game Meat for Human Consumption – Part 7

National Code of Practice for the Humane Shooting of Kangaroos and Wallabies for Commercial Purposes (2008)

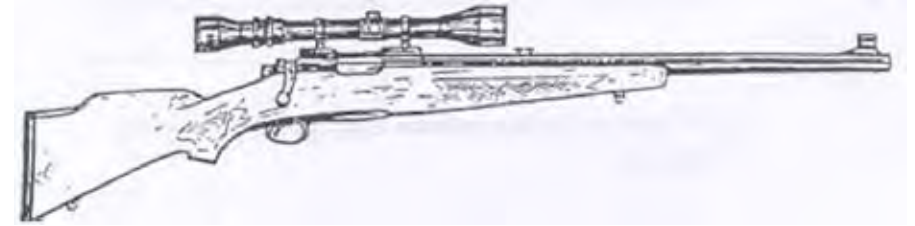
How to comply with the animal welfare requirements

Persons involved in shooting wild animals are to be **suitably qualified** in the use of firearms. These qualifications must include *a practical test of marksmanship*.

Sighting the rifle

Regular sighting of rifles is necessary and important because ammunition batches vary in strength. Vibrations and bumps during transport in the shooting vehicle may also move sights “off target”. You can avoid wounding kangaroos by ensuring that your rifle is accurately sighted before you start each night’s shoot.

It is a requirement of the Code of Practice that you “sight the rifle in” against an inanimate (non-living) target at the beginning of each night’s shoot and that you sight the rifle in against an inanimate target for each new batch of ammunition.



Wild animals should not be shot from a moving vehicle.

A bullet should destroy the brain if one of the following methods is adopted:

Frontal method:

aim horizontally at the point of intersection of lines taken from the base of each ear to the opposite eye. This method is preferred for younger animals.

Temporal method:

aim horizontally from the side of the head at a point midway between the eye and the base of the ear. This approach is preferred for mature or old animals:

Poll method:

aim behind the head at a point midway along a line drawn from the base of each ear.

After being shot the animal should be checked to ensure that it is dead. Wounded animals are to be humanely destroyed in accordance with the National Code of Practice for the Humane Shooting of Kangaroos and Wallabies for Commercial Purposes (2008).

All reasonable action should be taken immediately to **locate** and **destroy** any **wounded animals**.

Pouch Young

If a female kangaroo has been killed the pouch must be searched for young as soon as the harvester reaches the carcass. If a pouch young is found it must immediately be humanely killed as outlined in the Code of Practice. It is also important to wash and sanitise the hands after undertaking this activity.

Humane destruction of wild game animals

Kangaroos

The humane destruction of kangaroos must be carried out in accordance with the requirements of the code of practice and comes under the control of the State Departments of Natural Resource Management. They are as follows:

Qld Department of Environment, Resource Management (DERM)

SA Department of Environment & Heritage (DEH)

NSW Department of Environment, Climate Change & Water (DECCW)

Rifles of .224 calibre with a cartridge size of .222R, .223, .22/250 or larger, either soft or hollow point using 50 grain or heavier are suitable.

Rifles of .204 calibre with a cartridge size .204 Ruger, either soft or hollow point using 40 grain ammunition are also suitable.

Wild Boar

- **Rifles** of .308 calibre using 150 grain silver tip, hollow or soft point ammunition, and .30/30 calibre with 150 grain soft point ammunition are suitable.

-
- For **smaller pigs** (<40kg), .243 calibre rifles with 80 or 100 grain soft nose projectiles are suitable. **In competent hands** smaller calibre rifles such as .222, .223 may be satisfactory (**head shot**).



Humane killing of all animals is a mandatory requirement.

Professional harvesters understand the importance of being
“on target”.

Conditions suitable for shooting kangaroos

To shoot at kangaroos from the closest possible range, with the greatest accuracy, and greatest probability of obtaining a clean and quick kill you must:

- Only shoot when both the shooting **vehicle and kangaroo are stationary**.
- The kangaroo must be **clearly visible and within 200 metres from you**.

- You must **not shoot on windy nights** when kangaroos are restless and difficult to hold in a spotlight, as the probability of clean kills is reduced.
- You **must never have dogs with you** when you are shooting. Apart from disturbing the kangaroos, dogs could contaminate the carcasses and transfer disease organisms onto the carcasses.
- Shooting during the daytime is *not recommended* as it is more difficult to get close to the kangaroos during daylight. **Also carcasses taken from kangaroos shot during the day spoil more quickly. If shot during the day, carcasses must be delivered to a field depot within 2 hours of shooting.**



Dogs

Poorly managed dogs can:

- Cause injury to wild animals and be a serious welfare concern
- Cause bruising and affect meat quality
- Be a source of contamination to field dressed carcasses if any of their bodily fluids (saliva, urine etc) come into contact with the meat.

Dogs and kangaroos

Trained dogs can also be used to locate kangaroos shot in paddocks with long grass or tall crops and the dead animal is lying flat and hard to find.

NOTE: In Queensland, dogs ARE NOT PERMITTED on harvester vehicles whilst engaged in kangaroo harvesting.

Dogs and wild boar

Trained dogs can be used to **locate** and **flush** wild boar out of scrub or dense bush and to **bail** these animals. However it only takes one irresponsible owner and their actions to project a poor image of all harvesters.

While external wounds may appear minor the damage to underlying muscle can be extensive, resulting in condemnation of product.



Figure 4: Wild boar legs badly affected by dog bites

Hygienic field dressing

OUTCOME

To ensure wild game animals are field dressed in a manner that does not jeopardise the wholesomeness and safety of the product.

Reference

AS 4464:2007 Australian Standard for the Hygienic Production of Wild Game Meat for Human Consumption – Part 8

How to comply with the hygienic dressing requirements:

Remember cleanliness is essential. (**Think Clean!**)

Dressing Procedures

Correct dressing procedures are essential to ensure that only *wholesome* meat is produced.

Good hygienic dressing procedures involve being able to *shoot, bleed and eviscerate* animals in accordance with your Approved Arrangement and customer specifications.

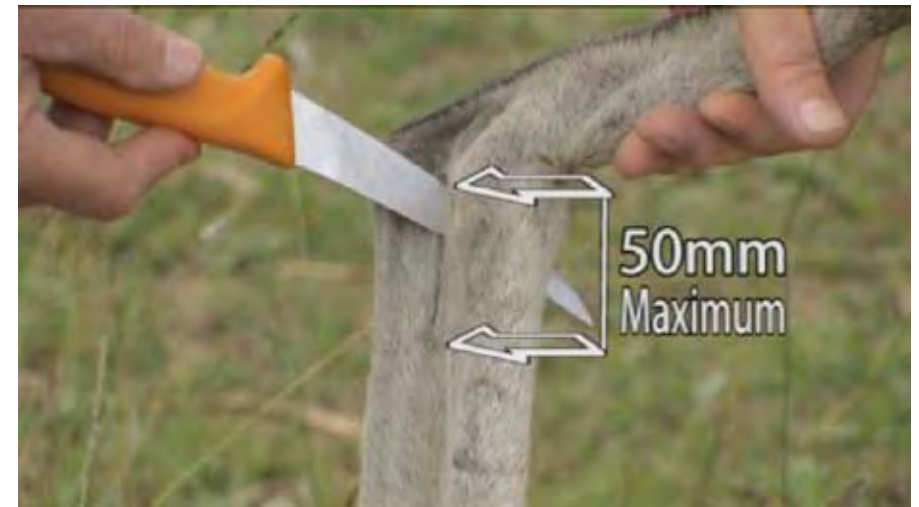


Kangaroo dressing procedure and sequence

To ensure kangaroo carcasses are processed in a way to prevent contamination, the dressing procedure and sequence outlined below should be followed. The animal should be **bled within 3 minutes** of being shot and **gutted within 20 minutes** of being bled.

1. Place slit in hock of RIGHT LEG to hang the body

- This will be a maximum of 50mm in length and the cut made by cutting toward the hock.
- No further dressing is to be done whilst on the carcass is on the ground.
- **Rinse knife** and place carcass on dressing hook.



2. Sanitise knife before sticking/bleeding

- Stick the animal by driving the knife through the base of the throat and draw knife upwards to break the collar bone creating an opening of 50 – 75mm.



3. Cut and remove hopper from the leg the body is hanging on

- Leave about 25mm and a maximum of 50mm between where the hook is positioned in the hock to the point where the hopper is removed. Dehorner or pruners are very useful to perform this task.



4. Hanging leg is not to be broken

- If your buyer requires the 'other leg' to be removed, mark the skin around the leg about 50mm below the hock and slide the skin down to expose bone.
- Remove the leg about 50mm below the leg muscle. Again pruners or dehorner are very effective for this task. (Note: the aim is to leave minimal amount of bone without exposing the leg muscle whilst leaving sufficient skin to cover the bone.)



5. Remove the tail

- Tails are to be removed at the 4th tail joint / knuckle if directed to by your processor.



6. Remove the head as close as possible to the head itself

- Leave a collar of skin around the neck.



These next stages 7-11 are critical with a potential risk of exposure to unwanted bacteria if not performed correctly.

7. Commencing with a sanitised knife make abdomen incision:

For Bucks

- From 25mm below the hanging position of the testes to 25 – 50mm above the breast bone in the hanging body.



For Does

- Place your hand inside the pouch and grasp the lining and pull the pouch inside out then remove the lining by cutting around the lining at the junction where it meets the outer skin.
- Open back under the overhanging hide about 50mm below the pelvic bone down to a point 25 – 50mm above the breast bone.



8. Without placing hand inside incision, pull gut slightly out of cavity and leave hanging

- Do not remove the gut entirely from the cavity at this time.
- Sanitise **knife**.



9. Bunging

- Commencing **with a sanitised knife, slit hide from a point at base of tail to the bung**
- This cut will need to be 75 – 100mm depending on the size of the animals.
- Do not **cut the faecal tube at this time**.
- Insert the blade inside the cut just made and using a half to full blade and with the blade pushed firmly against the left hand side of the pelvic cavity, make a semi-circle cut from the bottom to top of the cavity.
- Do the same style cut on the right hand side of the cavity but this time when reaching the top of the cavity, swivel the blade so that the cutting edge is facing towards you and cut the intestinal and urinary tubes as close to the bung as possible.
- Sanitise **knife**.



10. Gut removal

- Prior to commencement of this task, the hand and arm (to elbow) must be thoroughly sanitised
- At no time should an unsanitised hand come into contact with any meat surface.
- Pull the intestines leading to the bung, bladder and connective tubes from pelvic cavity and place on outside of stomach incision.
- On each occasion visually check all parts have been removed.
- The gut is now rolled out of the stomach incision with the sanitised arm and left hanging.
- As long as you do not contaminate this arm / hand other intestines from other carcasses can be removed without a re-sanitise. If they become contaminated they will have to be re-sanitised before continuing.



11. Rolling out of the stomach

- Take the weasand near the diaphragm between two fingers (not finger nails) and pull back towards the stomach with a medium pressure. This will clear the weasand of any contents before removal.
- Cut the weasand through between the opening of the gut cavity and the diaphragm and remove.



12. Open the diaphragm

- Commencing with a sanitised knife,
- Make a cut in the diaphragm alongside the rib cage approximately 75 – 100mm in length taking care not to touch inside the cavity with the hand. This should enable fluid to drain from the cavity and heat to escape from the chest area. This task may be performed without a rinse between animals.
- Sanitise **knife** at completion of this task.

13. The natural resources tag

- Must be positioned in the line of the cut **in the genital area using a small straight cut.**
- It must be as close to the edge of the skin as possible and using the smallest cut possible.



14. Knives must be sanitised on each occasion prior to replacing in knife pouch.

- Steels must be washed and sanitised at the completion of each dressing 'run'.
- If at any time during dressing procedure the knife or hand come in contact with ingesta or faecal material they must be immediately re-sanitised.

15. If any gut or bladder content is spilled at any point in the dressing the entire kangaroo body must be disposed of.

Wild boar dressing procedure and sequence

1. The carcass should be suspended to ensure effective bleeding. Sanitise knife before placing a slit in hock of right leg and slip a hook through the tendon or use rope to hang the body. The cut will be a maximum of 50mm in length and made by cutting toward the hock. No further dressing is to be done whilst the carcass is on the ground.
2. The wild boar should be bleed within 5 minutes of shooting. Sanitise knife before sticking. To bleed insert the knife in front of the breastbone with the knife point toward the tail. Push the knife blade deep enough to reach the backbone, taking care to keep the knife in the centre to avoid a shoulder stick. Pull the knife point slightly to the front and remove the knife. No sideway knife cuts should be made. Some wind pipe can be removed through this opening. Do not stab wild boar through the ribs
3. Sanitise knife before commencing opening cut. Insert the knife, near the pelvic bone,
 - In males, free the pizzle by using a knife to free the pizzle away from the belly and removing it by severing it at a point closest to the pelvic bone. Do not remove the testicles.
 - In females do not remove udders.
4. Sanitise knife before commencing opening the cavity. Make a small cut, at the rear set of teats, just large enough to put your hand and the handle of the knife through. Place the handle of the knife inside the cavity with the blade facing out. Push down to commence opening up the belly by cutting along the midline. Take care not to cut the gut and contaminate the exposed tissue.
5. Allow the guts to hang out of the opening. Always wash you hands and sanitise your knife before going back inside the carcass.

-
6. Sanitise knife before commencing to remove the bung. Slit the skin from a point at base of tail to the bung. This cut will need to be 75 – 100mm depending on the size of the animals. Insert the blade inside the cut just made and using a half to full blade and with the blade pushed firmly against the left hand side of the pelvic cavity, make a semi-circle cut from the bottom to top of the cavity, insert your finger here (Do not insert your finger into the rectum) to apply tension for the next cut. Do the same style of cut on the right hand side of the cavity. The important issue is not to expose meat around this area
 7. Wash hands before placing them inside the carcass and pulling the bung down through the channel by grasping the neck of the bladder between the thumb and forefinger and cutting the attachments. You may need to free the bung some more before it finally drops out. Place the bladder and bung outside the carcass and below the level of the front legs before you let it go.
 8. Remove the intestinal tract including the weasand making sure not to spill any fluid inside the carcass. If procedures are adopted that do not involve removing the weasand with the intestinal tract, sealing of the weasand is required.
 9. Sanitise knife before commencing to free the pluck. Kidneys remain in the carcass. To free the pluck cut through the diaphragm and sever the large artery along the backbone leaving enough tissue to hold the heart, lungs and liver securely attached. The pluck must be attached to the carcass for inspection purposes.

-
10. Knives must be sanitised on each occasion prior to replacing in knife pouch. Steels must be washed and sanitised at the completion of each dressing 'run'. If at any time during dressing procedure the knife or hand come in contact with ingesta or faecal material they must be immediately re-sanitised.
 11. If any gut or bladder content is spilled at any point in the dressing the entire body must be disposed of.

Post-harvest inspection

OUTCOME

Wild animal carcasses are inspected and an accurate post-mortem disposition is applied to ensure only carcasses fit for the purpose of human consumption are harvested

Reference

AS 4464:2007 Australian Standard for the Hygienic Production of Wild Game Meat for Human Consumption – Part 8



How to comply with the post-harvest inspection requirements

Field harvesters are required to inspect the internal organs and body surfaces of wild animal carcasses during field processing, to identify any abnormalities.



Figure 5. Viscera of wild boar

Because the intestines are removed and discarded in the field you will be the *only person to see them*, therefore it is important that you observe all surfaces thoroughly.

Harvesters must observe the **intestines, spleen, kidneys, heart, lung, liver** and any **exposed meat surface** of the carcass to ensure that they look *normal*. If they look *normal*, the carcass can be further processed.



Figure 6. Kangaroo carcass with viscera removed
Courtesy of Macro Meat

Harvesters are not to remove any serous (internal) membrane, remove or obliterate any evidence of disease or defect in a wild animal carcass or organ. Contamination generated at the time of field harvesting is to be removed from the wild animal carcass by trimming.

If any condition is seen which has **grossly contaminated the carcass** or appears **abnormal** like a disease, the carcass **must be discarded** immediately. For example a jaundiced carcass will appear yellow and a fevered carcass will appear bright red in colour. Carcasses affected such as this should be discarded.

If the condition is thought to be **minor** (such as a healed broken bone or a healed dog bite) and does not pose a risk to the **wholesomeness** of **other carcasses** being handled, you may wish to have it **inspected** in more detail at the processing premises. In this case the carcass is to be **clearly identified by tag** so that it can be easily seen. The field depot operator to whom you deliver the carcasses must also be informed and given all the details about the abnormality.

When determining suitability, ask yourself “**Would I process this carcass for my own use?**”

IF IN DOUBT, THROW IT OUT!

Identification and Traceability

OUTCOME

To ensure carcasses are identified to enable trace back to place of death in the event of disease, chemical residue and additionally, in the case of kangaroos, the management of the resource.

Reference

AS 4464:2007 Australian Standard for the Hygienic Production of Wild Game Meat for Human Consumption - Parts 6 and 12

How to comply with identification and traceability requirements

Identification and traceability is required for two basic reasons:

1. To control the harvesting of a natural resource through the **allocations of tags in a quota system** (for kangaroos).
2. To ensure the production of a wholesome product through the **identification of carcasses for trace back purposes** and the use of information to verify compliance with **time requirements** (for all wild game).

This section relates to tags approved by the SRAs. For information regarding the Natural Resource Management legislation, harvesters should contact the relative department in their State.

Tags are to be approved by the controlling authority and must be:

- reliable
- securely attached
- information on them readable at all times (doesn't smudge, fade, wash off)
- tamper evident (shows if information has been altered)

Tags must be attached at the point of harvest

<p>Harvester Name.....</p> <p>Harvester Accreditation Number</p> <p>Date killed.....</p> <p>Time killed.....</p> <p>Place of Harvest.....</p>
<p>Declaration signed by me stating that:-</p> <p>i. No abnormal behaviour was observed before killing</p> <p>ii. No abnormal characteristics were observed during the examination of the body and any removed viscera</p> <p>iii. There is no suspicion of environmental contamination</p> <p>iv. If killed during daylight the carcass was transported to a field depot or wild game meat processing establishment within 2 of harvest. If killed between sunset and sunrise it was transported to a field depot or wild game meat processing establishment no later than 2 hours after sunrise with a maximum of 1 2 hours between killing and placing into a field depot.</p> <p>Signature.....</p>

Figure 7. AQIS tag requirements

	<p>SPECIES: KANGAROO BOAR DEER</p> <p>NAME & ACCREDITATION NO.:</p>
	<p>SEX: _____ SEXUAL NO. _____</p>
	<p>WEIGHT LOCATION OR PROPERTY:</p>
	<p>DATE OF HARVEST: _____ TIME OF HARVEST: _____</p> <p>SEX NO. _____ WEIGHT _____</p>
	<p>SHOOTER DECLARATION</p> <p>i. NO ABNORMAL CHARACTERISTICS WERE OBSERVED DURING AN EXAMINATION OF THE BODY AND ANY REMOVED VISCERA</p> <p>ii. NO ABNORMAL BEHAVIOUR WAS OBSERVED BEFORE KILLING</p> <p>iii. THERE IS NO SUSPICION OF ENVIRONMENTAL CONTAMINATION</p> <p>iv. IF KILLED DURING DAYLIGHT THE CARCASS WAS TRANSPORTED TO A FIELD DEPOT OR WILD GAME MEAT PROCESSING ESTABLISHMENT WITHIN 2 HOURS OF HARVEST. IF KILLED BETWEEN SUNSET & SUNRISE IT WAS TRANSPORTED TO A FIELD DEPOT OR WILD GAME MEAT PROCESSING ESTABLISHMENT NO LATER THAN 2 HOURS AFTER SUNRISE WITH A MAXIMUM OF 1 2 HOURS BETWEEN KILLING AND PLACING INTO A FIELD DEPOT.</p> <p>SIGNATURE: _____</p>
	<p>NO: _____</p>

Figure 8. This is an example of a company supplied tag

Transportation to field depot or processor

OUTCOME

To ensure carcasses are handled and transported in manner that will not jeopardise the wholesomeness of the product.

Reference

AS 4464:2007 Australian Standard for the Hygienic Production of Wild Game Meat for Human Consumption – Part 10

How to comply with the handling and transportation requirements

Environmental contamination

Once the wild game animal has been field dressed it must be placed within the confines of the hanging rack. **Harvesting vehicles must not be driven around with field dressed carcasses hanging from the processing rail.** This exposes the carcasses to dust and other environment contaminants.



Figure 9. Carcasses are not to be hung on the processing rail for transport.

Hanging

Carcasses are to be hung:

- **one to a hook** and
- **at sufficient spacing to enable air circulation** and allow the carcasses to lose body heat.

Cross contamination

AQIS and SRAs have conducted microbiological studies and have found that kangaroos have very low prevalence levels of Salmonella (less than 1%). The wild boar average is much higher at 20 to 30%. To minimize the transfer of bacteria from wild boar to kangaroo, carcasses of different species are to be handled and stored separately.

Time

If bacteria are given sufficient time at ideal temperature they will grow rapidly. To control the growth of bacteria the following time requirements apply:-

- a) If killed during **daylight** the carcass has to be **transported** to a field depot or wild game meat processing premises **within 2 hours of harvest.**
- b) If killed between **sunset and sunrise** the carcass has to be transported to a field depot or wild game meat processing premises **no later than 2 hours after sunrise with a maximum of 12 hours** between killing and placing into a field depot or game meat processing premises.

Always use common sense in the hotter months to ensure that the time from harvesting to unloading in the field depot (ie: to refrigeration) is as short as possible. Do not wait until the last minute or go and have a meal before unloading etc.

Unloading

OUTCOME

Carcasses are handled and unloaded in a manner that will protect them from contamination and ensure effective cooling of the product

Reference

AS 4464:2007 Australian Standard for the Hygienic Production of Wild Game Meat for Human Consumption - Parts 5 and 8

How to comply with the handling and unloading requirements

Cross contamination is major concern during the unloading process. While the carcasses have not been totally skinned, significant areas of meat have been exposed as part of the field dressing process. Care must be taken not to cross contaminate exposed meat surfaces by hands that have been in contact with the skin/fur or other unclean surfaces.

The normal practice is to lift and carry the field dressed carcass by

- grasping the **hock of one leg in one hand** and **the trunk of the carcass in the other hand** (do not allow this hand to contact exposed meat or enter the body cavity)
- Lifting the carcass high enough to **prevent the carcass coming into contact with floor** of the vehicle or loading dock during the unloading process.

Personal hygiene

Before commencing the unloading process, people involved must have:

- suitable clothes (that will not be a source of contamination to the carcasses) and
- clean **dry** hands.

Hanging carcasses – including spacing of carcasses

Chilling carcasses down to 7°C or below is one of the most important measures in controlling bacterial growth. To enable effective chilling, carcasses must be sufficiently spaced apart to allow air circulation.

To achieve this carcasses are required **to be hung one to a hook**.

Separation of species

As mentioned previously, different species are contaminated by different types of bacteria. To minimise the risk of cross contamination by these bacteria, you must:

- handle, transport and store separately carcasses of different species eg kangaroos are to be kept separate from wild boars.

Harvester record keeping

OUTCOME

To ensure records are kept so as to ascertain that the wild game animal carcass can be traced back to place of harvest (killing), is wholesome (time/temperature requirements) and traceback requirements are met

Reference

AS 4464:2007 Australian Standard for the Hygienic Production of Wild Game Meat for Human Consumption - Parts 12 and 14

How to comply with the record keeping requirements

For trace-back, market requirements, consumer expectations and audit purposes, field harvesters are required to keep records relating to the wild game animals they have harvested. The carcass identification tag provides trace back while the product is in carcass form, however, records are required for trace back after the carcass has been processed and sold. Records are also required to provide evidence that the time restriction between time of killing and delivery to field depot or game meat processing premises has been met.

To comply with these requirements harvesters are to keep records of the following and have them available for audit purposes:

- date of harvest;
- time each animal was shot;
- property name or property owner's name;
- the number of animals and species;
- time of arrival at depot; and
- who the product was supplied to.

Most harvesters keep a book in the glove box of their vehicle. This should be ruled up with the necessary headings so that all they need to do is fill it out while they are harvesting. The Australian Standard requires records to be kept for at least two years after they were made.

For traceback purposes, harvesters are to supply the following information with each consignment of wild game animal carcasses they deliver to a field depot operators or game meat processors:

- The date of harvest
- The place of harvest
- The harvester's name or accreditation/licence number

This information may already be contained in documentation that the State Departments of Natural Resource Management requires to be supplied to field depot operators or game meat processors.

Receival at the field depot

OUTCOME

Carcasses received at the field depot are wholesome and comply with other regulatory requirements

Reference

AS 446:2007 Australian Standard for the Hygienic Production of Wild Game Meat for Human Consumption – Parts 5 and 12

How to comply with the field depot receival requirements

When a harvester delivers wild game animal carcasses to a field depot, it is important to realise that the field depot operator will:

- check harvester's accreditation to see that the harvester has a current accreditation;
- check to ensure only wild animal carcasses are from species that can legally be harvested;
- check that the harvester has transported kangaroos separately from wild boar;
- check that the harvester has transported the carcass by hanging no more than one carcass to every spike or hook;
- check that each carcass is tagged with an approved tag and all the necessary information supplied;
- check the carcass arrival time at the field depot is within the required timeframe between killing and placement within the field depot and record the time;
- identify carcasses that the field harvesters have separated for detailed assessment;

-
- check that each carcass has the kidney and pluck (heart, liver and lungs) attached by their natural attachments.
 - assess the inside of the carcasses cavities and pluck for abnormalities such as:
 - signs of faeces, ingesta, milk, urine, intestines, bladders, disease and other foreign material
 - incompletely removed pouches
 - view the external surfaces of the carcass for disease and to establish that it was humanely head shot.

Field depot operators will **reject kangaroo carcasses** found to be shot other than in the head and with other abnormalities that present a risk to the wholesomeness of the carcass including contamination (disease, ingesta, faeces).

Field harvesters need to be aware that if they supply product which requires rejection or condemnation by the field depot operator, the field depot operator is required to notify the SRA.

Field depot operations

OUTCOME

Carcasses are chilled within the time temperature parameters to ensure product wholesomeness.

Reference

AS 4464:2007 Australian Standard for the Hygienic Production of Wild Game Meat for Human Consumption – Part 12

AQIS Meat Notice Number 2009/18

How to comply with handling & storage requirements at the field depot

After receipt inspection, the field depot operator will place the carcasses **without delay** into the chillers for initial chilling to minimise the time carcasses are exposed to temperatures where bacterial growth can occur.

- To minimise cross contamination, **carcasses from different species are to be handle and stored separately.**
 - Ideally they should be stored in separate chillers however where this is not possible they are to be stored on separate rails.
- To enable air circulation and effective chilling, **carcasses are to be hung one to a hook** and spaced so there is separation of carcasses.
 - Care should be taken not to cause cross contamination of the exposed meat surfaces by the skin/fur of other carcasses or by hands that have come into contact with the skin/fur.

Placing large numbers of newly harvested carcasses into chillers containing chilled carcasses will cause:

- the ambient air temperature of the chiller to rise **and**
- condensation to form on the cold internal surfaces of chiller on exposed meat surfaces.

Raised temperatures and moisture are two ingredients for bacterial growth. To avoid this, **the use of two chillers is ideal** as one chiller could be used to initially chill the carcasses and the other chiller could be used for the storage of the chilled carcasses.

The Australian Standard requires the point of microbial concern on carcasses to be reduced to a temperature of 7°C as soon as possible but no later than 24 hours after being placed under refrigeration. To achieve this, chillers will need to maintain an ambient air temperature of 0°C to 2°C. Carcasses must not be frozen as this will require them to be thawed out before processing. Thawing will involve raising the temperature and this causes moisture to form on the exposed meat surfaces which again creates ideal conditions for bacterial growth.

It is a requirement that field depot operators verify that their product is meeting the time temperature requirements. This is achieved in a number of ways:-

1. Immediately after the first carcasses are placed in the chiller a **data logger is to be activated to record the ambient air temperature** of chiller for the period of time the carcasses are stored within the chiller. The time this carcass was received into the depot should be noted on the approved tag.

2. **One of the first carcasses loaded into the chiller is to be randomly selected for deep muscle temperature monitoring using a data logger** using the following method.

- (i) Sanitizing the exposed meat surface near the base of the tail stub where the data logger probe is going to be inserted, with an alcohol swipe
- (ii) Sanitizing the probe with an alcohol swipe before inserting through the exposed meat near the base of the tail stub into the deep muscle of the hind quarter

This data logger will stay in place and record time and deep muscle temperature information for the period the carcasses are stored at the field depot.

3. Randomly select at least 2 carcasses that have been delivered 24 hours prior and record a deep muscle temperature reading to verify that the carcasses are being chilled to 7°C or below within 24 hours of being received at the field depot.

Note: The same method for taking the deep muscle temperature as what was described in 2 is to be followed.

A record of all the temperature monitoring is to be kept for audit purposes.

A printout of the time temperature graphs (ambient & deep muscle) must be supplied to the processor (emailed, faxed or given to the truck driver) before the carcasses can be processed. In lieu of this the data logger can be sent to the processor and be downloaded before the carcasses are processed.

To ensure only carcasses with a deep muscle temperature of 7°C or below are loaded out for delivery to the processor, field depot operators are required to randomly select 2 carcasses from the front, middle and back of the chiller and take a deep muscle temperature

using the method described in 2 above. These temperature recordings are to be entered on the consignment note that accompanies the carcasses to the processor or included on the manual temperature record sheet. Carcasses that do not meet this temperature requirement are not to be loaded out.

Should the monitoring identify that **the time temperature requirements have not been met**, the field depot operator is to:

- notify the processor **and** the SRA immediately and
- follow instruction from processor and the SRA on what to do with the product.

It should be noted that AQIS and SRA's currently require all carcasses that are harvested for human consumption to be processed (boned out and the meat placed in a carton) within 14 days from the time the animal was killed.

To achieve this requires all sections of the wild game industry to adhere to the timeframes stipulated in the legislation.



Figure 10. Temperature monitoring using a data logger

Transport from field depot to processor

OUTCOME

The temperatures of wild game animal carcasses are maintained at 7°C or below from field depot to the game meat processing premises and verification records are kept.

Reference

AS 4464:2007 Australian Standard for the Hygienic Production of Wild Game Meat for Human Consumption – Part 10

AQIS Meat Notice Number 2009/18

How to comply with the transport requirements to the game meat processing premises

Meat transport vehicles used to carry wild game animal carcasses from field depots to processing premises are to be fitted with data loggers. These data loggers record time and air temperature information from the time of loading at the field depot until the time of unloading at the processing premises.

To minimise the growth of bacteria the air temperature of the meat carrying compartment must not exceed 7°C and to verify that this requirement has been met, data loggers are to be used. A copy of the time/temperature recordings for each consignment must be delivered to the processor at the time of unloading.

Approved arrangement

OUTCOME

Management and production practices are documented and ensure the production of wholesome products.

Reference

AS 4464:2007 Australian Standard for the Hygienic Production of Wild Game Meat for Human Consumption – Part 3

AQIS Meat Notice Number 2009/18

Legislation requires all persons wishing to become accredited/licensed to harvest wild game animals for human food, to operate in accordance with their approved arrangement (Management Statement, Food Safety Program) approved by the relevant SRA.

How to comply with the State Regulatory Authority's (SRA) approved arrangement requirements

To develop an approved arrangement, operators have to examine their harvesting operation and document what they do to comply with the legislation in order to produce a wholesome product. The SRAs have developed guides to show harvesters what things they need to address in their documented program. All programs have to be approved by the SRA. Ideally, field harvesters should develop their own documented program, as all field harvesters operate slightly differently and, if the person doing the harvesting writes the program, then that person will understand it and will follow what is written in it. **A person who follows what is written in their approved arrangement will pass an audit.**

With the introduction of a number of new wild game meat harvesting and processing requirements, all current documented approved arrangements will need to be reviewed and updated.

Important Note

For audit purposes, a harvester must carry the approved program in their vehicle when harvesting wild game animals.

Ongoing compliance and continuous improvement

The SRAs will continue to audit field harvesters, field depot operators and game meat processors to verify that they, and their products, are complying with Australian Standards and the latest AQIS Meat Orders. Additionally, the wild game industry has adopted on a voluntary basis a “three strikes rule” for harvesters who continuously submit carcasses that do NOT comply with the standard.

It is envisaged that in future an assessment form will be developed for use by industry personnel and regulators to assess product and aid in determining the skills and knowledge of field harvesters. Field harvesters who have been identified as not having the required skill and knowledge to produce a wholesome product will be required to undertake further training and an “on-the-job” assessment where they must demonstrate that they can comply with the requirements. This training and on-the-job assessment will be provided by a suitably qualified person from the wild game industry who has completed training in on-the-job assessment of field harvesters.

Nationally recognised qualification

In future it is planned to have competencies for jobs or “Skills Sets” that relate to field harvesters, field depot operators and wild game carcass disposition assessors in processing establishments. These “Skill Sets” will form part of a nationally registered training package. People wishing to find out more details on the development of these Wild Game Industry Skill Sets should contact MINTRAC (Toll free 1800 817 462).

Field Harvesters Checklist

Prior to commencing work			
	Item to Check :	Key Points	Field Manual Reference
	You are ready for harvesting	Clean clothes, no open wounds, infectious diseases	P31
	Vehicle is suitable for harvesting	Clean, adequate supplies of water, paper towel, hand wash, sanitiser, lighting , cleaning chemicals Knives are sharpened	P33-36
Pre harvest			
	Rifle	Rifle is sighted correctly	P39
	Location & conditions	Know the risk of chemical contaminants. Are conditions suitable? (wind, visibility etc)	P37 P42-43
	Roo	Animal is suitable for human consumption / No abnormalities / Animal appears healthy	P37-38
Harvest			
	Animal	Head shot, no obvious disease, animal welfare of wounded and young. Avoid Cross contamination, record time and location. Apply identification Tag.	Code of Practice & P45-55

Post harvest			
	Timing	3 minutes to bleed 20 minutes to dressing	P46
	Hygienic dressing	Check hygiene of self and equipment Dress as per DVD and Manual	P45-55 KIAA DVD
	Verify that Roo is suitable for HC	Abnormalities, errors in dressing,	P59-61
	Records meet requirements	Identification and traceability requirements (tagging) / Vendor Declarations	P62-64, 69-70
	Roo is hung on vehicle correctly	Hygienic handling, separation of species, one to a hook – well spaced!	P65-66
	Roo is delivered to depot within times	Daylight shot - 2 hours Night shot – 2 hours from dawn and within 12 hours from kill	P66

Stage 2 - Assessment Tool and competencies developed for Stage 2

MTMG301A	Operate a game harvesting vehicle
Unit descriptor	This unit covers the skills and knowledge required to operate a game harvesting vehicle safely and hygienically.
Employability skills	This unit contains employability skills.
Prerequisite units	
Co-requisite units	
Application of the unit	This unit is suitable for vehicle operators who are harvesting wild game for commercial purposes. Operators will have responsibility for the operation and maintenance of the game harvesting vehicle, the loading and unloading of carcasses and the safe handling of cleaning chemicals and equipment.
Competency field	
Unit sector	

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
1. Prepare and maintain vehicle and equipment	1.1. Clean vehicle and check hygiene prior to harvesting operation 1.2. Check and replenish consumables as required 1.3. Check and maintain equipment
2. Load, transport and deliver to depot or processing works	2.1. Load carcasses according to management plan and regulatory requirements 2.2. Load and transport carcasses to avoid contamination 2.3. Plan delivery times to meet regulatory and company requirements
3. Unload game shot carcasses	3.1. Unload carcasses according to management plan and regulatory requirements 3.2. Unload carcasses to minimise contamination 3.3. Plan and achieve delivery times at field pots or processing plants meet regulatory and company requirements
4. Clean truck and equipment	4.1. Clean vehicle to meet regulatory requirements 4.2. Use cleaning chemicals that meet regulatory requirements in accordance with manufacturers' instructions 4.3. Clean kit and hanging pins in accordance with the management plan 4.4. Store kit and hanging pins so as to avoid contamination

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Ability to:

- clean vehicle and equipment to a required standard
- maintain the vehicle
- operate the vehicle safely
- avoid contamination of carcasses during loading and unloading
- hang carcasses according to regulatory and corporate requirements

REQUIRED SKILLS AND KNOWLEDGE

- plan transport to the depot to meet company and regulatory requirements
- complete required paperwork to a satisfactory standard
- use communication skills applicable to communicating with depot managers and/or processing company personnel and regulatory representatives
- clean and sanitise vehicle
- avoid contamination of kit and equipment in storage.

Required knowledge

- regulations covering game harvesting vehicles
- supply of required consumables
- relevant sections of the Australian Standard
- potable water supply requirements
- lighting requirements
- hanging requirements
- importance of air flow
- regulations associated with transport, loading and unloading of carcasses
- causes of contamination during loading, transport and unloading
- methods for minimising contamination
- time requirements for refrigeration after death and sunrise
- regulatory requirements for identification and traceability of carcasses
- reporting and documentation requirements
- hygiene and sanitation during unloading
- personal hygiene Standard Operating Procedures (SOP)
- work instruction for carcass receipt
- depot requirements for receipt of carcasses
- OH&S hazards associated with handling carcasses
- Ways of minimising OH&S hazards associated with handling carcasses
- hygiene and sanitation requirements for game harvesting vehicles
- the purpose and uses of particular cleaning and sanitising chemicals
- importance of sanitising
- suitability of chemicals
- OH&S hazards associated with cleaning chemicals
- storage requirements for kit and hanging pins.

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Consumables may include:

- sanitisers
- cleaning chemicals
- tags
- paper towels (if used)
- disposable rubber gloves if used?
- delivery receipt books as required.

Equipment may include:

- knives
- scabbards
- wash tubs
- buckets
- hooks.

RANGE STATEMENT	
Regulatory requirements include State and Federal regulations administered by authorised bodies such as:	<ul style="list-style-type: none"> • Food Authorities • Australian Quarantine inspection Service (AQIS) • Parks and Wildlife Authorities • State Government Departments • AS 4464:2007 <i>Australian Standard for hygienic production of game meat for human consumption</i>
Game refers to all vertebrate animals (but not fish) that are not farmed but are legally harvested and killed in the field for commercial use including:	<ul style="list-style-type: none"> • kangaroos • Wallabies • wild boar • wild deer • rabbits and hares • wild goats.

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	<p>The meat industry has specific and clear requirements for evidence. A minimum of three forms of evidence is required to demonstrate competency in the meat industry. This is specifically designed to provide evidence that covers the demonstration in the workplace of all aspects of competency over time.</p> <p>These requirements are in addition to the requirements for valid, current, authentic and sufficient evidence. Three forms of evidence means three different kinds of evidence – not three pieces of the same kind. In practice it will mean that most of the unit is covered twice. This increases the legitimacy of the evidence.</p> <p>All assessment must be conducted against Australian meat industry standards and regulations.</p>
Critical aspects for assessment and evidence required to demonstrate competency in this unit	This competency has to be demonstrated under actual work conditions while harvesting game animals.
Context of and specific resources for assessment	The assessment must represent a report on the candidate's ability to maintain, operate, load and unload carcasses during a game harvesting exercise.
Method of assessment	<p>Recommended methods of assessment include:</p> <ul style="list-style-type: none"> • video record • on-the job observation by an assessor • third party such as a regulator or depot manager • oral or written test.
Guidance information for assessment	Resource materials available from MINTRAC, telephone 1800 817 462.

MTMG302A	Eviscerate, inspect and tag wild game carcase in the field
Unit descriptor	This unit covers the skills and knowledge required to partially or fully eviscerate a game animal in the field.
Employability skills	This unit contains employability skills.
Prerequisite units	
Co-requisite units	MTMPSR203A Sharpen knives
Application of the unit	This unit is applicable to game harvesters who are required to partially or fully eviscerate game animals in the field prior to delivery of game carcasses to a depot or processing plant. Tagging will be carried out according to company and regulatory requirements.
Competency field	
Unit sector	

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
1. Eviscerate carcase	1.1. Perform post harvesting inspection for abnormality and disease 1.2. Eviscerate carcasses hygienically to company and regulatory requirements 1.3. Consistently follow a set routine for evisceration 1.4. Identify <i>abnormal conditions</i> and identify <i>conditions that exclude carcasses</i> 1.5. <i>Hygiene between carcasses</i> is maintained.
2. Inspect carcase	2.1. Perform post evisceration inspection for contamination Identify <i>diseases and conditions that exclude carcasses</i> are identified 2.2. Comply with trimming requirements
3. Tag animal and complete documentation (where applicable to the species and State Regulations)	3.1. Accurately complete tagging requirements (harvester and wildlife authority) 3.2. Identify <i>property</i> by name and/or Property Identification Code (PIC) 3.3. Identify species for the purposes of completing tags

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Ability to

- eviscerate carcasses hygienically and avoid contamination
- consistently follow a set routine for evisceration
- handle knives safely and hygienically
- identify species
- read and interpret required workplace documentation
- apply numeracy skills to workplace requirements

REQUIRED SKILLS AND KNOWLEDGE

- develop practical solutions to workplace problems
- adapt to new situations
- manage time and priorities
- be open to learning and new ideas and techniques

Required knowledge

- types and causes of contamination
- trimming requirements
- relevant State Regulations
- relevant sections of the Australian Standard
- rejection and disposal processes
- hygiene and sanitation requirements
- company and regulatory requirements
- causes of contamination and cross contamination
- time requirements for evisceration
- OH&S hazards associated with the field during evisceration of game carcasses
- corporate requirements for tagging procedures
- state wildlife/conservation authority requirements for tagging
- property/ location identification protocols.

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Abnormal conditions may include:

-

Maintenance of ***hygiene between carcasses*** will include:

-

Diseases and conditions that exclude carcasses may include:

Property refers to:

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	<p>The meat industry has specific and clear requirements for evidence. A minimum of three forms of evidence is required to demonstrate competency in the meat industry. This is specifically designed to provide evidence that covers the demonstration in the workplace of all aspects of competency over time.</p> <p>These requirements are in addition to the requirements for valid, current, authentic and sufficient evidence. Three forms of evidence means three different kinds of evidence – not three pieces of the same kind. In practice it will mean that most of the unit is covered twice. This increases the legitimacy of the evidence.</p> <p>All assessment must be conducted against Australian meat industry standards and regulations.</p>
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Candidates must be able to demonstrate competent evisceration of carcasses without guidance or supervision. Ability to recognise diseases and abnormal conditions must also be demonstrated.
Context of and specific resources for assessment	This competency has to be demonstrated under actual work conditions either at a game depot or at a processing works receiving carcasses straight from the field
Method of assessment	<p>Methods of assessment may include:</p> <ul style="list-style-type: none"> • recognition of diseases and conditions from photographic records or preserved samples • demonstration of evisceration in the presence of an assessor • video record of evisceration
Guidance information for assessment	Resource materials available from MINTRAC, telephone 1800 817 462.

MTMG306A	Use firearms to harvest wild game
Unit descriptor	This competency covers the skills and knowledge required to harvest animals humanely and defines the standard required to: <ul style="list-style-type: none"> • identify the species to be harvested • prepare and handle ammunition and weapons safely • ensure the harvesting area is clear and notifications have been made where necessary • harvest the animal using a shot to a body site appropriate to the target species that causes instant death and is prescribed in the relevant code of practice.
Employability skills	This unit contains employability skills.
Prerequisite units	
Co-requisite units	
Application of the unit	This Unit is applicable to field harvesters who are harvesting wild game for commercial purposes.
Competency field	Wild game animals
Unit sector	

ELEMENT	PERFORMANCE CRITERIA
1. Plan harvesting of <i>wild game</i> animals	<ol style="list-style-type: none"> 1.1. Confirm anatomy and physical features identifying location of vulnerable organs of target animal 1.2. Identify location of habitats, habits and range of movement of target animal 1.3. Determine timing of the harvest based on the activity patterns of the target animal 1.4. Identify hazards associated with the harvest in accordance with OHS standards 1.5. Identify environmental and public safety risks associated with the harvest
2. Prepare for the harvesting job	<ol style="list-style-type: none"> 2.1. Determine location and boundaries for the harvest in accordance with the animal management plan 2.2. Check time and duration of the harvest and notify any relevant personnel where applicable 2.3. Take precautions to minimise hazards associated with the harvest in accordance with OHS standards. 2.4. Take precautions to minimise environmental risks associated with the harvest 2.5. Confirm firearm licences, harvesting permits or exemptions are current in accordance with statutory requirements. 2.6. Select firearm and ammunition types to comply with those recommended for the target animal in accordance with regulatory requirements and animal ethics guidelines 2.7. Zero and test fire firearm in accordance with industry practice 2.8. Stow firearm for transport unloaded and in safety mode.
3. Harvest animals	<ol style="list-style-type: none"> 3.1. Use personal protective and safety equipment in accordance with OHS standards and statutory

ELEMENT	PERFORMANCE CRITERIA
	<p>requirements.</p> <p>3.2. Carry firearm safely with muzzle pointing in safe direction at all times in accordance with statutory requirements and industry practice</p> <p>3.3. Load, discharge and unload firearm \safely in accordance with regulatory requirements</p> <p>3.4. Inspect target animal pre-harvest for suitability</p> <p>3.5. Aim firearm at vulnerable sites on the animal according to target species</p> <p>3.6. Kill each target animal using a minimum of shots</p> <p>3.7. Check each target animal to ensure it is dead prior to selecting the next target animal</p> <p>3.8. Destroy target animals that have not been killed cleanly in a humane manner in accordance with animal welfare regulations and statutory requirements</p> <p>3.9. Bleed carcasses in accordance with industry practice.</p>
4. Clean and store equipment and material	<p>4.1. Maintain and store firearms in accordance with manufacturer's instructions and statutory requirements</p> <p>4.2. Store ammunition in accordance with statutory requirements.</p>

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Ability to:

- identify hazards and implement safe operating procedures
- plan own work activities
- manage own time
- maintain and store weapons
- handle weapons
- ability to assess viability of shot
- use weapons to harvest accurately
- minimise animal trauma.

Required knowledge

- OHS, environment, public risk and animal welfare legislative and enterprise requirements
- common law principles relating to property, stock, duty of care and due diligence
- animal life cycles and behaviours
- anatomy and physical features of the animal
- firearms safety
- suitable firearms and ammunition for target species
- emergency procedures appropriate to the firearms handling.

RANGE STATEMENT

The range statement relates to the unit of competency as a whole.

Wild game animals may include

- kangaroos
- wallabies
- wild deer
- wild goat
- wild boar

RANGE STATEMENT	
	<ul style="list-style-type: none">• possum• rabbits and hares• wild game birds

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	<p>The meat industry has specific and clear requirements for evidence. A minimum of three forms of evidence is required to demonstrate competency in the meat industry. This is specifically designed to provide evidence that covers the demonstration in the workplace of all aspects of competency over time.</p> <p>These requirements are in addition to the requirements for valid, current, authentic and sufficient evidence. Three forms of evidence means three different kinds of evidence – not three pieces of the same kind. In practice it will mean that most of the unit is covered twice. This increases the legitimacy of the evidence.</p> <p>All assessment must be conducted against Australian meat industry standards and regulations.</p>
Critical aspects for assessment and evidence required to demonstrate competency in this unit	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy holistically all of the requirements of the performance criteria and required skills and knowledge and include achievement of the following:</p> <ul style="list-style-type: none"> • confirm the species to be harvested • prepare and handle ammunition and weapons safely • ensure the harvesting area is clear and notifications have been made where necessary • shoot the animal in a body site appropriate to the target species that causes instant death and is prescribed in the relevant code of practice
Context of and specific resources for assessment	Competency requires the application of work practices under work conditions. Selection and use of resources for some worksites may differ due to the regional or enterprise circumstances.
Method of assessment	<p>This Unit may be assessed holistically with other units. The assessment strategy for this unit must verify required knowledge, skill and application using the following assessment methods:</p> <ul style="list-style-type: none"> • field assessment of harvest skills • oral/written questions • professional conversations • direct observation
Guidance information for assessment	Resource materials available from MINTRAC, telephone 1800 817 462.

Stage 3 - National Competency Standards

MTMCOR202A	Apply hygiene and sanitation practices
Unit descriptor	This unit covers the skills and knowledge required to apply the personal hygiene and sanitation practices required of workers in a meat operation. It also covers cleaning equipment and immediate work areas during operations.
Employability skills	This unit contains employability skills.
Prerequisite units	
Co-requisite units	
Application of the unit	This unit is applicable to workers in abattoirs, boning rooms, smallgoods plants, wild game harvester operations, wild game depots, game processing plants, knackeries, food services premises, wholesale and retail meat establishments.
Competency field	
Unit sector	

ELEMENT	PERFORMANCE CRITERIA
1. Clean own work area and equipment during operations	1.1. Work site is hygienically cleaned during operations to OH&S, workplace and regulatory requirements. 1.2. Equipment and surfaces hygienically cleaned to regulatory and workplace requirements 1.3. Cleanliness of work area is monitored according to workplace requirements.
2. Identify sources of contamination and spoilage	2.1. Contamination and cross-contamination risks are identified and steps taken to reduce the risk . 2.2. Corrective action is taken when contamination is identified, in accordance with workplace and regulatory requirements.
3. Follow workplace's hygiene and sanitation requirements	3.1. Personal hygiene practices are followed to workplace requirements. 3.2. Product is handled in accordance with workplace, and hygiene and sanitation requirements. 3.3. Individual's work is conducted hygienically in accordance with workplace requirements. 3.4. Products are processed in accordance with regulatory requirements.

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Ability to:

- consistently follow workplace, hygiene and sanitation procedures
- work effectively as an individual and as part of a team to keep work areas clean
- demonstrate basic hygiene and sanitation practices in all activities undertaken in the workplace
- take action to improve own work performance as a result of self-evaluation, feedback from others, or in response to changed work practices or technology
- use **communication** skills relevant to the task

REQUIRED SKILLS AND KNOWLEDGE

- use and mix cleaning chemicals (if used) according to manufacturers' specifications, regulatory and workplace requirements

Required knowledge

- hygiene and sanitation requirements for own area
- reporting procedures for contamination as appropriate
- chemical contamination risks to product and how they are controlled
- consequences of contaminated or spoiled meat leaving the establishment
- consequences of failing to follow workplace requirements for hygienic handling and processing of meat
- time, temperature and moisture requirements for microbial growth
- causes of food spoilage and poisoning
- possible sources of contamination and cross-contamination in the work site
- visual evidence of contamination
- microbes which may affect meat
- the scope and coverage of AS 4696:2007 Australian Standard for the Hygienic Production and Transportation of Meat and Meat Products for Human Consumption.
- sources of physical and microbiological contamination in meat establishments and how these hazards are controlled
- monitoring methods – e.g. visual, looks clean, smells clean, use of protein sticks.

RANGE STATEMENT

The range statement relates to the unit of competency as a whole.

OH&S requirements may include:

- enterprise OH&S policies, procedures and programs
- OH&S legal requirements
- Personal Protective Equipment (PPE) which may include:
 - coat and apron
 - ear plugs or muffs
 - eye and facial protection
 - head-wear
 - lifting assistance
 - mesh apron
 - protective boot covers
 - protective hand and arm covering
 - protective head and hair covering
 - uniforms
 - waterproof clothing
 - work, safety or waterproof footwear
- requirements set out in standards, codes of practice etc.

Workplace requirements may include:

- enterprise-specific procedures
- OH&S requirements
- Quality Assurance requirements
- Standard Operating Procedures (SOPs)
- the ability to perform the task to production requirements

RANGE STATEMENT	
	<ul style="list-style-type: none"> work instructions.
Regulatory requirements may include:	<ul style="list-style-type: none"> Export Control Act federal and state regulations regarding meat processing hygiene and sanitation requirements relevant Australian Standards relevant regulations requirements set out in AS 4696:2007 'Australian Standard for Hygienic Production and Transportation of Meat and Meat Products for Human Consumption'. <p><i>AS 4464:2007 Australian Standard for hygienic production of wild game meat for human consumption</i></p>
Sources of contamination may include:	<ul style="list-style-type: none"> chemical agents, which may include chemicals such as insecticides, cleaning agents foreign bodies microbiological and biological agents physical agents which may include ingesta, excreta, dust, grease, etc.
Steps taken to reduce the risk may include:	<ul style="list-style-type: none"> good housekeeping practices hand washing maintaining clean clothes and PPE.
Corrective action may include:	<ul style="list-style-type: none"> disposing of contaminated product trimming product.
Hygiene and sanitation requirements may include:	<ul style="list-style-type: none"> relevant government regulations workplace requirements.
Communication may:	<ul style="list-style-type: none"> be spoken, written, non-verbal and include signs and signals be with people from a range of cultural, social and ethnic backgrounds or with colleagues, superiors, customers, clients and external parties.

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	<p>The meat industry has specific and clear requirements for evidence. A minimum of three forms of evidence is required to demonstrate competency in the meat industry. This is specifically designed to provide evidence that covers the demonstration in the workplace of all aspects of competency over time. These requirements are in addition to the requirements for valid, current, authentic and sufficient evidence.</p> <p>Three forms of evidence means three different kinds of evidence – not three pieces of the same kind. In practice it will mean that most of the unit is covered twice. This increases the legitimacy of the evidence.</p> <p>All assessment must be conducted against Australian meat industry standards and regulations.</p>
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Competency must be demonstrated over time during the normal operations of a meat establishment.
Context of and specific resources for assessment	Assessment must involve in part a demonstration of on-the-job competency while performing a task in the workplace.
Method of assessment	<p>Recommended methods of assessment are:</p> <ul style="list-style-type: none"> • quiz of underpinning knowledge • workplace demonstration of competency for the assessor • workplace referee or third party report of performance over time. <p>Assessment practices should take into account any relevant language or cultural issues related to Aboriginality, gender, or language backgrounds other than English. Language and literacy demands of the assessment task should not be higher than those of the work role.</p>
Guidance information for assessment	A current list of resources for this Unit of Competency is available from MINTRAC www.mintrac.com.au or telephone 1800 817 462.

MTMPSR203A	Sharpen knives
Unit descriptor	This unit covers the skills and knowledge required to maintain knives for safe and effective use in a meat establishment.
Employability skills	This unit contains employability skills.
Prerequisite units	Nil
Co-requisite units	
Application of the unit	This unit is applicable to any worker who is required to sharpen a knife to use in a processing, wholesaling or retail meat establishment. This unit is a pre-requisite for any other unit where a knife is used to perform a task.
Competency field	
Unit sector	

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
1. Sharpen <i>knives</i>	1.1. Knives are sharpened according to <i>workplace requirements</i> . 1.2. Knives are sharpened to maintain bevel edge. 1.3. <i>Steel</i> is used correctly to maintain bevel edge and to meet OH&S requirements.
2. Work safely with others	2.1. Knives are used in ways which minimise the risk of injury. 2.2. Knives are used safely at all times in accordance with <i>OH&S, hygiene and sanitation</i> , and food safety requirements.
3. Maintain knives and associated equipment	3.1. Knives are maintained to hygiene and sanitation, and workplace requirements. 3.2. <i>Knife-sharpening equipment</i> is maintained, cleaned and stored to hygiene and sanitation, and workplace requirements.

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
Ability to: <ul style="list-style-type: none"> steel a knife correctly use safe techniques of knife sharpening to workplace, hygiene and sanitation, and OH&S requirements.
Required knowledge
<ul style="list-style-type: none"> steps in steeling a knife to maintain edge technique to sharpen a knife with an appropriate bevel edge theory of knife sharpening sterilisation, and hygiene and sanitation requirements related to knife sharpening OH&S issues related to the use and sharpening of knives relevant <i>regulatory requirements</i>.

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Knives include:	<ul style="list-style-type: none"> • boning • steak • skinning.
Workplace requirements may include:	<ul style="list-style-type: none"> • enterprise-specific requirements • OH&S requirements • Quality Assurance requirements • Standard Operating Procedures • the ability to perform the task to production requirements • work instructions.
Different methods of preparing steel may apply.	
OH&S requirements may include:	<ul style="list-style-type: none"> • enterprise OH&S policies, procedures and programs • OH&S legal requirements • Personal Protective Equipment (PPE) which may include: <ul style="list-style-type: none"> ◦ coat and apron ◦ ear plugs or muffs ◦ eye and facial protection ◦ head-wear ◦ lifting assistance ◦ mesh apron ◦ protective boot covers ◦ protective hand and arm covering ◦ protective head and hair covering ◦ uniforms ◦ waterproof clothing ◦ work, safety or waterproof footwear • requirements set out in standards, codes of practice etc.
Hygiene and sanitation requirements may include:	<ul style="list-style-type: none"> • relevant government regulations • workplace requirements.
Knife sharpening equipment includes:	<ul style="list-style-type: none"> • sharpening stone • steels.
Regulatory requirements may include:	<ul style="list-style-type: none"> • Export Control Act • federal and state regulations regarding meat processing • hygiene and sanitation requirements • relevant Australian Standards • relevant regulations • requirements set out in AS 2336-1992 Australian

RANGE STATEMENT	
	<p>Standard: Meat Industry – hand held knives'</p> <ul style="list-style-type: none"> requirements set out in AS 4696:2007 Australian Standard for Hygienic Production and Transportation of Meat and Meat Products for Human Consumption.
EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	<p>The meat industry has specific and clear requirements for evidence. A minimum of three forms of evidence is required to demonstrate competency in the meat industry. This is specifically designed to provide evidence that covers the demonstration in the workplace of all aspects of competency over time. These requirements are in addition to the requirements for valid, current, authentic and sufficient evidence.</p> <p>Three forms of evidence means three different kinds of evidence – not three pieces of the same kind. In practice it will mean that most of the unit is covered twice. This increases the legitimacy of the evidence.</p> <p>All assessment must be conducted against Australian meat industry standards and regulations.</p>
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Competency must be demonstrated in conjunction with a skill or task requiring the use of a knife.
Context of, and specific resources for assessment	Assessment can be carried out in an actual or simulated workplace.
Method of assessment	<p>Recommended methods of assessment are:</p> <ul style="list-style-type: none"> quiz of underpinning knowledge workplace demonstration of competency for the assessor workplace referee or third party report of performance over time. <p>Assessment practices should take into account any relevant language or cultural issues related to Aboriginality, gender, or language backgrounds other than English. Language and literacy demands of the assessment task should not be higher than those of the work role.</p>
Guidance information for assessment	A current list of resources for this Unit of Competency is available from MINTRAC www.mintrac.com.au or telephone 1800 817 462.

MTMG303A	Receive and inspect wild game carcasses from the field
Unit descriptor	This unit describes the skills and knowledge required to receive and inspect fresh field shot game carcasses directly from the harvester at a depot or processing plant
Employability skills	This unit contains employability skills.
Prerequisite units	
Co-requisite units	
Application of the unit	This unit applies to the receipt and inspection of fresh field shot wild game carcasses at field depots or straight to a processing works. The receiver will have responsibility for the inspection of carcasses and make a disposition on the carcasses including the rejection of carcasses not suitable for processing. They will check that the tagging and time requirements are also met.
Competency field	
Unit sector	

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
1. Receive wild game meat carcasses at a depot	1.1. Manage receipt of carcasses according to depot management plan 1.2. Inspect tags to ensure compliance with company and regulatory requirements 1.3. Check and store paperwork associated with carcasses from each harvester's load received.
2. Inspect game meat carcasses	2.1. Inspect carcasses for contamination and accept or reject according to company and regulatory requirements 2.2. Explain rejection of carcasses to game harvester 2.3. Prepare relevant records of receipt of carcasses.
3. Weigh carcasses (where applicable)	3.1. Prepare scales in accordance with company and regulatory requirements 3.2. Weigh carcasses 3.3. Complete and store records in accordance with company and regulatory requirements.

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Ability to:

- inspect carcasses and make accurate dispositions
- identify
 - faecal material
 - abnormal carcasses
 - enlarged or discoloured kidneys
 - slimy or smelly meat surface
 - emaciated carcasses
 - abnormal animals
 - fly strike
 - mould
 - unacceptable contamination by other foreign matter
 - inadequate dressing (bladder left in, pluck missing, kidney(s) missing etc)
 - evidence of animal welfare issues (brain shot etc)
- receive and record harvester's paperwork (where applicable)
- check tags for compliance
- prepare records of carcase receipt
- communicate with game harvesters and processing companies
- weigh carcasses (where appropriate)
- read and interpret workplace related documentation
- apply numeracy skills to workplace requirements
- share information
- show independence in identifying problems
- collect, analyse and organise information
- take initiative and make decisions within workplace role
- use technology and workplace-related equipment

Required knowledge

- causes of contamination at receipt
- hygiene and OH&S risks associated with carcase receipt
- relevant sections of AS 4464:2007 *Australian Standard for hygienic production of game meat for human consumption*
- identification and traceability requirements
- eligible carcasses
- tag requirements
- Shire requirements
- areas prohibited to game harvesters
- lighting lux requirements to ensure adequate inspection at night
- OH&S hazards specific to receipt.

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

- | | |
|--|---|
| Wild Game refers to all land animals not farmed but field harvested for commercial use including: | <ul style="list-style-type: none"> • kangaroos • wallabies • wild boar |
|--|---|

RANGE STATEMENT	
	<ul style="list-style-type: none"> • wild goat • possum • rabbit • hare • wild game birds
Harvester tags may include:	<ul style="list-style-type: none"> • "Wildlife Authority" tags on macropods • Company approved tags
Regulatory requirements may include:	<ul style="list-style-type: none"> • State and Federal regulations administered by among others Food Authorities, AQIS, Parks and Wildlife Authorities and State Government Departments • relevant regulations including carcass age relevant sections of the Australian Standard AS 4464:2007 <i>Australian Standard for hygienic production of wild game meat for human consumption</i>
Reasons for rejection of carcasses may include:	<ul style="list-style-type: none"> • undersize • restricted species • sourced from restricted area • contamination • disease or abnormality • outside time and temperature limits
Preparation of scales may include:	<ul style="list-style-type: none"> • calibration • cleaning and sanitising

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	<p>The meat industry has specific and clear requirements for evidence. A minimum of three forms of evidence is required to demonstrate competency in the meat industry. This is specifically designed to provide evidence that covers the demonstration in the workplace of all aspects of competency over time.</p> <p>These requirements are in addition to the requirements for valid, current, authentic and sufficient evidence. Three forms of evidence means three different kinds of evidence – not three pieces of the same kind. In practice it will mean that most of the unit is covered twice. This increases the legitimacy of the evidence.</p> <p>All assessment must be conducted against Australian game meat industry standards and regulations.</p>
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Candidates must be able to demonstrate competent receipt and inspection of carcasses without guidance or supervision. Ability to recognise diseases and abnormal conditions and make dispositions must also be demonstrated
Context of and specific resources for assessment	This competency has to be demonstrated under actual work conditions either at a game depot or at a processing works receiving carcasses straight from the field
Method of assessment	<p>Assessment methods may include;</p> <ul style="list-style-type: none"> • Workplace Referee report • video record of receipt and inspection • on-the-job demonstration with assessor observation • knowledge test • recognition of diseases and conditions from photographic records or preserved samples
Guidance information for assessment	Resource materials available from MINTRAC, telephone 1800 817 462.

Optimising the Quality and Yield of Spelt under Organic Production

by Mandy Mawson - Safe Food Production Queensland

Publication No. 11/123

This report summarises the purpose and results from the National Kangaroo Industry Wild Game Training Initiative. Industry stakeholders (convened as part of a Queensland Government group) and the Kangaroo Industry Development Committee (KIDC) identified the need for an enhanced training program focussed on hygienic dressing of kangaroo carcasses, the development of national competencies aligned with the VET system and associated training materials which could be used in the longer term.

The training initiative arose as part of a Government and industry response to the suspension of export of kangaroo meat to the Russian market. A refresher training program in hygienic field dressing was developed and delivered to existing licensed harvesters. Two additional training resources were developed; a

competency based program and materials through the national VET system and training resources, which could be used 'on the job'.

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