

## MTMPSR5602B Manage meat processing systems for meat and meat product quality

Unit descriptor	This unit covers the skills and knowledge required to manage the quality system and maintain the quality of products. It includes the skills and knowledge to monitor, review and improve enterprise operations to ensure delivery of meat and meat products that satisfy customer demands.
Employability Skills	The required outcomes described in this unit of competency contain applicable facets of Employability Skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements.
Application of the unit	This unit is particularly appropriate for Quality Assurance (QA) personnel, production managers, cold chain coordinators and transport coordinators. Many factors impact on the quality, including eating quality, of meat and meat products, which affect prices and sales.

### ELEMENT

Elements describe the essential outcomes of a Unit of Competency.

### PERFORMANCE CRITERIA

Performance Criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the Range Statement. Assessment of performance is to be consistent with the Evidence Guide.

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1 <i>Define meat quality</i>	1.1	Relevant regulatory, scientific, industry and market information defining meat quality is researched and analysed.
	1.2	Customer and consumer perceptions, expectations and requirements are identified and analysed.
	1.3	Meat quality is defined and balanced against enterprise requirements for yield and cost.
	1.4	Enterprise meat quality specifications for suppliers or supplied product and end product are prepared.
	1.5	Performance standards, including specifications, are established and data collection strategies are put in place.
2 Analyse production processes and systems for impact on meat quality	2.1	Meat quality control points along the value chain, including <i>pre and post slaughter factors</i> , are identified.

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	2.2	Enterprise operations including inputs, processes and technology are analysed for impact on meat quality, yield and cost.	
	2.3	Recommendations to improve operations for product quality are prepared and presented.	
	2.4	Alliances with suppliers and customers are identified and established to improve quality at all points in the value chain.	
	2.5	Resource requirements for the achievement of meat quality specifications are identified and allocated.	
3	Monitor meat product quality	3.1	Sampling and <i>testing</i> procedures and schedules are prepared and implemented.
		3.2	Non-conformances with meat quality requirements are investigated.
		3.3	Preventative and control measures are developed and implemented.
4	Evaluate meat quality outcomes	4.1	Performance is analysed and assessed against performance standards.
		4.2	Continuous improvement strategies are developed and strategies for implementation prepared.
		4.3	Consumer and customer feedback is analysed and acted on within the continuous improvement framework.
5	Promote enterprise meat quality outcomes	5.1	Meat quality outcomes are reported to <i>stakeholders</i> , including employees, customers and consumers.
		5.2	Enterprise meat quality specifications are used to identify enterprise's market edge.

## REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge required for this unit. Where bold italicised text is used, further information is detailed in the Range Statement.

- Apply relevant *communication* and *mathematical skills*.
- *Assess and monitor the efficiency of improvements to meat and meat product quality.*
- Demonstrate detailed knowledge of HACCP principles, systems and food safety requirements for enterprise product.
- Describe the nutritional content and value of meat and meat products.
- Detail the impact of species, breed, sex, age (dentition and ossification) and nutrition of livestock on meat and meat product quality.
- Develop performance criteria for meat and meat product quality.

- Evaluate current plant, equipment and processes for impact on meat and meat product quality.
- Evaluate product quality outcomes through the development of specifications and performance standards, analysis and interpretation of performance information including costs and sales.
- Explain enterprise requirements for product costs, prices and sales and how this influences enterprise definitions and achievement of product quality.
- Explain the major *physical, chemical*/biochemical and *microbiological* characteristics and changes affecting the quality of meat and meat products.
- Identify and apply relevant *OH&S* and *workplace requirements*.
- Identify and determine optimum testing and sampling regimes to monitor and measure the quality of enterprise product.
- Identify *meat tenderisation techniques* and explain their suitability for enterprise product and operations.
- Identify pre and post slaughter factors and explain their impact on meat and meat product quality.
- Improve product input and service quality through the development of alliances, supplier specifications and audit processes, monitoring input quality.
- Maintain currency of knowledge through independent research or professional development.
- *Monitor operations* for meat and meat product quality.
- Outline biological and anatomical structures of major species processed in Australia for human consumption.
- Outline local and international meat and *meat product description and grading systems* operating in the Australian market.
- Outline *regulatory requirements* impacting on enterprise operations and the quality of enterprise product.
- Prepare and communicate information on meat and meat product quality outcomes to workforce, consumers and customers.
- Prepare *recommendations for improving operations to maintain and enhance meat/meat product quality*.
- Prepare specifications for enterprise product, including specifications for end product where not provided by customer, supplier and supplied product specifications, product description, labelling and claims.
- Research best practice in meat processing, meat manufacturing and meat preparation techniques and technology including computerised, mechanical and manual systems, and the impact on product quality.
- Take action to improve own work practice as a result of self-evaluation, feedback from others or in response to changed work practices or technology.

## RANGE STATEMENT

The Range Statement relates to the Unit of Competency as a whole. It allows for different work environments within the meat industry and situations that may affect performance. This includes any 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. Bold italics wording in the Elements and Performance Criteria, and Required Skills and Knowledge, is detailed below.

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Quality criteria for <b><i>defining meat quality</i></b> may include:	<ul style="list-style-type: none"><li>• consumer preferences</li><li>• customer specifications</li><li>• eating quality standards eg Meat Standards Australia.</li></ul>
<b><i>Pre and post slaughter factors</i></b> affecting meat quality may include:	<ul style="list-style-type: none"><li>• breeding, farming and farm handling, including diet and nutrition</li><li>• climate and seasonal variations</li><li>• cooking</li><li>• further processing, refrigeration, packaging, storage and handling</li><li>• livestock characteristics, including anatomy and biochemical characteristics</li><li>• slaughtering and processing operations</li><li>• transportation, handling and lairage.</li></ul>
<b><i>Tests</i></b> of meat and meat products may include testing for:	<ul style="list-style-type: none"><li>• ascorbate, erythorbate</li><li>• ash</li><li>• crude fat, chemical lean</li><li>• intolerances eg gluten, MSG</li><li>• meat content</li><li>• moisture content</li><li>• nitrate content</li><li>• pH</li><li>• preservatives, eg sulphur dioxide</li><li>• salt content</li><li>• species</li><li>• starch</li><li>• water activity.</li></ul>
<b><i>Stakeholders</i></b> may include:	<ul style="list-style-type: none"><li>• company owners, directors, shareholders, financiers</li><li>• competitors</li><li>• management and employees</li><li>• suppliers, customers, consumers</li><li>• unions and employer associations.</li></ul>
<b><i>Communication and mathematical skills</i></b> may:	<ul style="list-style-type: none"><li>• be complex and relate to product and product quality, financial operations, personnel, operations, sales and turnover, exports etc</li><li>• be formal or informal</li><li>• be inclusive of the cultural, ethnic and social diversity of</li></ul>

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	<p>individuals and groups</p> <ul style="list-style-type: none"> <li>• involve face-to-face and technological or electronic methods</li> <li>• involve the reading and interpretation of workplace-related information</li> <li>• occur in a variety of sensitive, conflictive, collaborative and supportive environments</li> <li>• relate to complex actual and hypothetical technical and financial modelling, calculations, interpretation or analysis</li> <li>• require analysis and presentation of complex concepts, technical information, mathematical information and other data in simple or complex formats</li> <li>• require assertiveness, persuasion and negotiation skills.</li> </ul>
<b><i>Assessing and monitoring of the efficiency improvements to meat and meat product quality</i></b> requires:	<ul style="list-style-type: none"> <li>• analysis of current and potential sales and prices</li> <li>• comparison of costs and prices against estimates</li> <li>• estimation of returns</li> <li>• preparation of resource proposals.</li> </ul>
<b><i>Physical, chemical and microbiological</i></b> factors affecting meat quality may include:	<ul style="list-style-type: none"> <li>• bruising, bone damage and breaks</li> <li>• ecchymosis</li> <li>• hanging, ageing, tender stretching</li> <li>• loss of moisture</li> <li>• pH, myoglobin, glycogen, adrenalin, ATP, creatine phosphate, oxidation effects on taste, colour, tenderness etc</li> <li>• proteins, fats and carbohydrates.</li> <li>• storage including vacuum packaged, frozen and chilled.</li> </ul>
<b><i>OH&amp;S requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• enterprise OH&amp;S policies, procedures and programs</li> <li>• hygiene and sanitation requirements</li> <li>• OH&amp;S legal requirements</li> <li>• Personal Protective Equipment (PPE) which may include: <ul style="list-style-type: none"> <li>— coat and apron</li> <li>— ear plugs or muffs</li> <li>— eye and facial protection</li> <li>— head-wear</li> <li>— lifting assistance</li> <li>— mesh apron</li> <li>— protective boot covers</li> <li>— protective hand and arm covering</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>— protective head and hair covering</li> <li>— uniforms</li> <li>— waterproof clothing</li> <li>— work, safety or waterproof footwear</li> </ul>
	<ul style="list-style-type: none"> <li>• requirements set out in standards, codes of practice etc.</li> </ul>
<b>Workplace requirements</b> may include:	<ul style="list-style-type: none"> <li>• enterprise ethical standards, values and obligations</li> <li>• enterprise-specific procedures, policies and plans</li> <li>• Standard Operating Procedures</li> <li>• work instructions.</li> </ul>
<b>Meat tenderisation techniques</b> include:	<ul style="list-style-type: none"> <li>• advanced technological processes</li> <li>• calcium activated tenderisation</li> <li>• conditioning, including elevated temperature conditioning</li> <li>• electrical stimulation</li> <li>• further processing (cooking, smoking etc)</li> <li>• mechanical tenderisers eg knife tenderisers</li> <li>• product ageing process (rigor mortis, shear force, post mortem including calcium dependent) proteolysis</li> <li>• tender stretching.</li> </ul>
<b>Monitoring of operations</b> for meat and meat product quality includes:	<ul style="list-style-type: none"> <li>• establishing and monitoring sampling and testing procedures specific to each product</li> <li>• identifying quality specifications and tolerances</li> <li>• implementing preventative measures and controls</li> <li>• taking corrective action in the case of non-conformances.</li> </ul>
<b>Meat product descriptions and grading systems</b> may be for Australian or international markets and include:	<ul style="list-style-type: none"> <li>• AUS-MEAT</li> <li>• Japan Beef Grading System</li> <li>• Meat Standards Australia</li> <li>• USDA Grading System.</li> </ul>
<b>Regulatory requirements</b> may include:	<ul style="list-style-type: none"> <li>• animal welfare</li> <li>• Australian Standards relevant to the meat industry</li> <li>• commercial law including fair trading, trade practices</li> <li>• consumer law</li> <li>• corporate law, including registration, licensing, financial reporting</li> <li>• environmental and waste management</li> <li>• equal opportunity, anti-discrimination and sexual harassment</li> <li>• Export Control Act</li> </ul>

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	<ul style="list-style-type: none"> <li>• industrial awards, agreements</li> <li>• legal requirements relating to erythorbate, meat content, nitrate, product labelling and claims</li> <li>• relevant regulations</li> <li>• state regulations regarding meat processing</li> <li>• taxation.</li> </ul>
<p><b><i>Recommendations for improving operations to maintain and enhance meat or meat product quality</i></b> include:</p>	<ul style="list-style-type: none"> <li>• analysis of alternative configurations of labour and technology</li> <li>• identification and assessment of alternative or new processes</li> <li>• identification of appropriate resources, technology and processes</li> <li>• strategies for ensuring the quality of supplied product</li> <li>• updating of procedures for changes in technical knowledge and information.</li> </ul>

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## EVIDENCE GUIDE

The Evidence Guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package.

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<p>Overview of assessment</p>	<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.</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>
<p>Critical aspects for assessment and evidence required to demonstrate competency in this unit</p>	<p>Competency must be demonstrated through sustained performance over time, at an appropriate level of responsibility and authority under typical operating and production conditions for the enterprise.</p>
<p>Context of and specific resources for assessment</p>	<p>Resources may include:</p> <ul style="list-style-type: none"> <li>• a real work environment</li> <li>• relevant documentation such as:</li> </ul>

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	<ul style="list-style-type: none"> <li>— manufacturer’s instructions and operations manuals</li> <li>— regulatory requirements</li> <li>— workplace policies and procedures</li> <li>• relevant equipment and materials.</li> </ul>
Method of assessment	<p>Recommended methods of assessment are:</p> <ul style="list-style-type: none"> <li>• a third party referee report of sustained performance at appropriate level of authority and responsibility</li> <li>• assignment focusing on understanding and application of principles and theory to workplace operations</li> <li>• case study</li> <li>• workplace project or audit with focus on company environment and conditions.</li> </ul> <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	<p>Resource materials available from MINTRAC, telephone 1800 817 462.</p> <p>AUS-MEAT (<a href="http://www.ausmeat.com.au">www.ausmeat.com.au</a>):</p> <ul style="list-style-type: none"> <li>• <i>Users’ Guide to Australian Meat</i> (2003) 3rd edn</li> <li>• <i>Handbook of Australian Meat</i> 7th edn, 2005</li> <li>• <i>Australian Pork Limited</i> (<a href="http://www.apl.au.com">www.apl.au.com</a>).</li> </ul> <p>Meat and Livestock Australia (<a href="http://www.mla.com.au">www.mla.com.au</a>):</p> <ul style="list-style-type: none"> <li>• <i>Maximising lamb and sheepmeat eating quality – a guide for Australian lamb and sheepmeat producers</i></li> <li>• <i>Preventing dark cutting in livestock</i> (2000) PPI 151</li> </ul> <p>Tips and tools:</p> <ul style="list-style-type: none"> <li>• <i>An introduction to LAMBPLAN</i> (2000) LPI 029</li> <li>• <i>Boer Goat Genetics for Meat Production</i></li> <li>• <i>KIDPLAN – goat genetic system</i> (2000) LPI 031</li> <li>• <i>Managing glycogen to improve meat quality in lamb and sheepmeat</i> (2000) PLI 033</li> <li>• <i>MSA requirements for handling cattle</i> (2000) ISO 06</li> <li>• <i>MSA Information Kit</i> (2001) LPI 102.</li> </ul> <p>Meat Standards Australia (<a href="http://www.msagrading.com">www.msagrading.com</a>).</p> <p>Food Science Australia: Meat Industry Services (<a href="http://www.meatupdate.csiro.au">www.meatupdate.csiro.au</a>), <i>Meat technology update</i>, CSIRO series.</p>

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