



Australian Government  
Department of Agriculture

# AUS-MEAT Capability Assessment Review

Agricultural Policy Division



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# Summary

The review into the operations and capability of AUS-MEAT has been undertaken in line with Recommendation 3 of the Senate Standing Committees on Rural and Regional Affairs and Transport report on the effect of market consolidation on the red meat processing sector, released on 12 September 2017.

The report recommended that the Department of Agriculture conduct a review into the operations and capability of AUS-MEAT to determine whether it is the most appropriate body to oversight the installation, inspection, calibration, replacement and quality assurance auditing processes of the new DEXA technology. In undertaking the review the department consulted with a wide range of stakeholders across the red meat supply chain.

The review identified three different roles associated with overseeing the installation, inspection, calibration, replacement and quality assurance auditing processes of the DEXA technology:

- commercial service provider
- general manager
- quality assurance auditor.

The review concluded that AUS-MEAT has, or would be able to acquire, the skills and capabilities required to undertake the roles of general manager and quality assurance auditor which encompass overseeing the inspection, calibration and quality assurance auditing processes of the DEXA technology. It further concluded that AUS-MEAT is unlikely to acquire, the skills and capabilities required for the commercial service provider role which encompasses overseeing the installation and replacement of DEXA technology.

Outcomes of the review should not be taken as government endorsement of AUS-MEAT to undertake the roles identified. It is likely that other organisations also possess the necessary skills and capabilities to do this. It is appropriate for industry to determine the appropriate body to undertake the roles.

# 1 Context

In December 2018 the Australian Government tabled its response to the Senate Standing Committees on Rural and Regional Affairs and Transport (RRA&T Committee) inquiry into the effect of market consolidation on the red meat processing sector (Department of Agriculture 2018). In this response, the government agreed to the Department of Agriculture conducting a review into the operations and capability of AUS-MEAT to determine whether it is the most appropriate body to oversee the installation, inspection, calibration, replacement and quality assurance auditing processes of the new Dual Energy X-ray Absorptiometry (DEXA) technology (the review).

## 1.1 Terms of reference

The Terms of Reference (ToR) for the review were to:

- 1) Identify the skills, capabilities and supporting resources required for overseeing meat processors' rollout and on-plant operation of DEXA technology (ToR1).
- 2) Examine and make findings about AUS-MEAT's capability and capacity to meet the requirements identified in ToR1. (ToR2)

## 1.2 Review process

In undertaking this review, the department undertook a considered approach to identifying the appropriate skills base, capabilities and supporting resources required to oversee the installation, inspection, calibration, replacement and quality assurance auditing processes of DEXA technology.

### 1.2.1 Literature review (ToR1)

The department reviewed relevant literature regarding the Australian meat processing sector and the potential gains from the integration of DEXA technology into red meat abattoirs. This informed the roles which may be required to ensure the successful rollout and ongoing use of the technology, along with the skills associated with each role.

### 1.2.2 Test literature review findings (ToR1)

The department undertook targeted, face-to-face meetings with key industry representatives, processors, research organisations and technology experts in order to validate the findings of the literature review. This included direct consultation with intended users of DEXA technology. A list of organisations the department engaged with directly is provided at [Appendix A](#).

In addition to targeted consultation, wider industry views were sought through the operation of a publicly accessible survey which was published on the department's 'Have Your Say' platform from 13 March 2019 to 28 March 2019. Findings of the survey are summarised at [Appendix B](#).

### 1.2.3 AUS-MEAT assessment (ToR2)

The department undertook an assessment of AUS-MEAT against the skills and capability set identified under ToR1 to determine whether it is an appropriate body to oversee the rollout and ongoing use of DEXA technology across the red meat processing industry.

## 2 Background

In recent years the red meat industry has undergone a number of reviews, including by the Australian Competition and Consumer Commission (ACCC) Cattle and Beef Market Study (ACCC 2017), and the Senate Standing Committees on Rural and Regional Affairs and Transport (RRA&T) Inquiry into the effect of market consolidation on the red meat processing sector (the Senate Inquiry).

Both studies highlighted the potential benefits DEXA could bring to the industry, specifically that it could ‘increase accuracy and transparency of value assessments’ (Rural and Regional Affairs and Transport References Committee 2017). Both studies also identified that consistent implementation of the technology and appropriate auditing and verification systems would be required for DEXA to maximise potential gains to the industry.

In its final report, the RRA&T Committee acknowledged that industry largely accepts that AUS-MEAT is the appropriate body to oversee the implementation and verification of DEXA, but expressed concern over AUS-MEAT’s capability to undertake this role. Accordingly, it recommended:

That the Department of Agriculture conduct a review into the operations and capability of AUS-MEAT to determine whether it is the most appropriate body to oversight the installation, inspection, calibration, replacement and quality assurance auditing processes of the new DEXA technology. The review should also identify what reforms and resources AUS-MEAT would require to fulfil this role.

### 2.1 Red meat industry

Australia’s red meat processing sector is worth \$20 billion, making it the nation’s largest trade-exposed manufacturing industry (Red Meat MoU Taskforce 2019). The industry is reliant on overseas markets with approximately 60 per cent of production exported. As a result, profitability is highly influenced by demand fluctuations due to changes in the exchange rate—a high Australian dollar makes Australian meat products more expensive in overseas markets, which can weaken demand. The processing sector is also affected by Australia’s variable weather conditions, which can alter the supply of cattle available for slaughter.

The Australian red meat industry operates within a dynamic and competitive global environment. As a high-cost industry that is unable to compete on quantity—accounting for only about two per cent of the global cattle herd—Australian red meat has instead found a niche in high value, international markets as a high quality, sustainably sourced product that attracts price premiums. However, in light of growing international competition, the rise of alternative protein sources and challenges to the industry’s social license to operate, it is important that all actors along the red meat supply chain continue to ensure that their operations are efficient, innovative and aligned with industry best practice.

Higher wage rates and limited opportunities for economies of scale mean that Australia’s processing sector faces significantly higher costs of operation than many foreign processors. To seek efficiency gains and build economies of scale in production and distribution, vertical integration along the supply chain has been employed by several larger operators.

This combination of factors act as a driver for the processing sector to adopt new technologies and innovative methods to increase operational efficiency, productivity and product quality. In recent years, research and development projects, driven by industry, have been focusing on the potential use of objective carcass measurement (OCM) technologies, such as DEXA technology, to better measure carcass attributes to predict eating quality, disease or contamination, precise boning cutting lines, and lean meat yield.

## 2.2 DEXA Technology

In recognition of the need to adapt, industry has investigated, and is now investing in, DEXA technology. DEXA is a type of OCM that enables optimised boning; potentially lifting the revenue from saleable meat to producers and reducing the cost of processing. Recognising the potential value of this technology to the industry as a whole, in 2016 Meat & Livestock Australia (MLA) announced its support for accelerating the adoption of DEXA technology across the industry (Meat & Livestock Australia 2016). The application of DEXA in beef processing is still in the developmental stages and to date, a whole-of-industry rollout has not occurred. The application of DEXA technology for the analysis of lamb carcass measurements is more advanced than for beef carcass measurements.

DEXA was originally designed for the medical industry to measure bone density. DEXA can also be used to measure total body composition and fat content and thus determine the lean meat yield (LMY) of a carcass. The first whole lamb carcass DEXA system was developed in a collaboration between Murdoch University and Scott Automation and Robotics.

DEXA technology utilises two X-ray beams with different energy levels that are projected through a carcass to provide a timely and accurate indication of LMY. The data captured by DEXA includes x-ray images, carcass weight, and carcass identification which are fed into a software algorithm to calculate the LMY of the animal carcass (Ernst & Young 2017). This information can help the entire red meat value chain make more informed business decisions to improve on-farm and processing efficiency that in turn may result in the delivery of a more cost effective product (Australian Beef Sustainability Framework 2018).

DEXA also has the potential to drive automated de-boning and optimise profit for the industry. It may speed up carcass processing time through integration with the boning room continuous chain as it is currently estimated to have capacity to scan up to 520 hot or chilled beef sides per hour (Scott Automation and Robotics 2017). It also has the potential to provide LMY feedback to processors, producers and seed-stock suppliers for an individual carcass which may help inform these actors about ways to increase meat yield on stock.

The use of OCM technology in livestock is advocated by Advanced Measurement Technologies for Globally Competitive Australian Meat (ALMTech). The ALMTech Industry Calibration Working Group (ICWG) is currently working on a project targeted towards developing objective gold standard measurements for carcass attributes that influence the value of livestock (ALMTech 2017). These attributes include carcass LMY, eating quality and compliance with market specifications. DEXA has been a technology of focus for ALMTech, with initial LMY measurements showing high accuracy and precision.



### 2.2.1 Industry wide rollout of DEXA technology

If there is to be an industry wide rollout of DEXA technology, it is critical that installation, calibration and use is consistent across facilities and aligned with an industry-wide standard. However, there is currently no widely accepted industry standard for this purpose. An industry standard for DEXA technology would ensure data collected across facilities is consistent and potentially enable it to be used in future research and development projects to drive further efficiencies for the industry.

It is understood that daily calibration of the DEXA machine, most likely through the use of a certified calibration density block, is required to ensure correct measurements are being taken. In an ideal situation, the machine should be calibrated in line with an industry-wide standard, should such a standard be developed.

The department has been advised that the only way now to confidently independently verify calibration and measurement calculation is through the use of a computed tomography (CT) scanner. Daily verification through the use of a CT scanner is both too costly and time consuming to be practical. It is more likely that CT scanning would be used as a method to independently audit the machinery intermittently in line with an industry standard if developed.

## 2.3 AUS-MEAT

AUS-MEAT is a not-for-profit, industry-owned body that operates as a joint venture under the control of a Board of Directors appointed by MLA and AMPC.

AUS-MEAT was established under the Red Meat Memorandum of Understanding (MoU) (Red Meat Advisory Council 2010). It is the national industry organisation responsible for the objective description of Australian meat and livestock based on approved quality assurance systems. AUS-MEAT is also cited as the 'standards body' responsible for setting standards for meat for export under Regulation 3(1) of the Australian Meat and Livestock Industry (Export Licensing) Regulations 1998.

AUS-MEAT has two principle objectives in the red meat processing sector (AUS-MEAT 2019):

- The administration of red meat trade descriptions. Known as the AUS-MEAT Language, this description system is managed by the Australian Meat Industry Language and Standards Committee (AMILSC). The committee, which comprises of industry representatives, controls trade descriptions and AUS-MEAT National Accreditation Standards requirements. The AUS-MEAT Language is a standard way of describing meat products and has been widely adopted throughout the Australian meat processing sector to provide industry and customers with consistency for identifying and ordering meat products.
- The management and administration of the AUS-MEAT National Accreditation Standards (optional for domestic establishments), which is also controlled by AMILSC. The standards ensure the processor's quality systems are independently audited and cover quality assurance procedures throughout every step of the process including handling, storage, processing and packaging. This ensures meat products are produced by trained staff and are monitored throughout the production process.



AUS-MEAT achieves this through the following two broad functions as a commercial service provider - provides auditing and certification services for a range of industry and commercial third-party certification scheme; and delivers nationally accredited training qualifications for auditors, carcase graders and quality assurance staff.

## 3 Findings

The department understands that, while the application of DEXA technology within the lamb processing sector is more advanced, the beef processing sector is still in the developmental stage.

Given the infancy of DEXA technology's use in the red meat processing sector as a whole, the department has made several assumptions in relation to requirements for the rollout and ongoing use of the technology by the industry. The biggest assumption made is that a whole-of-industry rollout would occur. This is a decision for industry and will only occur if the technology is commercially viable.

In line with industry best practice, the department has also assumed that prior to rollout, the use of the technology would be validated and presented to AMILSC for consideration and integration into current standards. Upon approval, AMILSC would endorse operational practices for the rollout and ongoing use of the technology.

Consistent with other industry standards, the department concluded DEXA-related standards would include:

- identification of where the technology should be placed within the production line
- mandatory calibration practices, including the use of certified calibration density blocks
- use of a mandated algorithm
- identification of certified calibration density blocks
- training requirements
- frequency of inspections
- frequency of audits.

It is also expected that the manufacturing of the technology would occur in line with an endorsed standard.

While this review is DEXA-centric, the department acknowledges that the industry may choose to rollout an alternative OCM technology in the future. As a result, the department has undertaken the assessment of required roles for the implementation of DEXA technology in a way that could be transferable to any OCM technology.

### 3.1 Skills and capabilities

Based on the outcomes of stakeholder consultations with key industry representatives, research bodies and technology experts, the department has determined that the skills and capabilities required to oversee the installation, inspection, calibration, replacement and quality assurance auditing processes of DEXA vary depending on the activity undertaken.

The department has identified three different roles that would need to be filled:

- commercial service provider
- general manager
- quality assurance auditor.

Although three different roles have been identified, the department, supported by stakeholder feedback, considers that there is nothing limiting the ability of one organisation in undertaking multiple roles, as long as the organisation is able to demonstrate that it has the required skills, capabilities and level of independence associated with each role.

Ultimately, the decision of which organisation/s are to undertake each role is a decision for industry. If industry decides that different organisations are needed to provide different roles, organisations operate cohesively and are well integrated.

## **Role 1: Commercial service provider**

### **Definition**

The commercial service provider would be responsible for manufacturing DEXA machinery and supporting equipment. It would also be in the remit of the commercial service provider to ensure consistent installation of the technology in line with AMILSC requirements. The commercial service provider would also be required to certify equipment upon installation, undertake initial calibration and have capacity for scheduled maintenance and replacement of the equipment over the lifetime of the technology.

### **Skills capabilities and supporting resources required**

The commercial service provider should possess the following skills, capabilities and resources:

- ability to manufacture/source manufactured technology in line with relevant AMILSC requirements
- technical knowledge and qualifications required for installation and maintenance
- ability to undertake initial calibration of the technology in line with relevant standards
- strong technical knowledge of DEXA equipment
- ability to certify technology in line with a national accreditation standard
- sufficient staff to undertake maintenance and replacement.

## **Role 2: General manager**

### **Definition**

The general manager would be responsible for overseeing the ongoing use of DEXA in processing facilities, including maintaining a centralised record management system that identifies which facilities have the technology installed, certification status of the facility and a register of calibration density blocks issued to each facility, including when they were last audited. The general manager would also be responsible for initially certifying and distributing calibration density blocks required under AMILSC endorsed standards.

The general manager would be expected to undertake the inspection of processing facilities to ensure onsite management and operation of DEXA machinery complies with AMILSC standards and industry best practice documentation.

It is likely that the general manager would be expected to deliver relevant training to align with AMILSC endorsed training packages. It is also likely that ongoing assessment of operational staff would be required to ensure their skills remain current.

The general manager would also be expected to be the central contact person for any inquiries about how the technology is used. In the event that a producer or processor wanted to dispute carcase measurements obtained through the use of DEXA, it would be the role of the general manager to:

- undertake a review into onsite practices to ensure calibration and machinery operation were undertaken in line with accreditation standards
- provide information to the parties involved regarding carcase grading and classification standards.

If a dispute was to be taken further by a producer or processor, this would be resolved through other commercial litigation avenues and would not be the responsibility of the general manager.

### **Skills, capabilities and supporting resources**

The general manager's key skills and experiences will need to include:

- strong understanding of relevant AMILSC endorsed standards and of how to assess compliance against a standard
- ability to undertake general inspection of the facility and how it uses the technology to ensure it is compliant with AMILSC endorsed standards and best practice
- experience in inspecting equipment in line with an AMILSC endorsed standard
- ability to ensure consistent practices are implemented across businesses, including consistent calibration in line with an industry standard
- ability to certify and distribute density calibration blocks
- strong understanding of DEXA technology and how it will be used
- ability to maintain and store records
- ability to track and keep records of inspection outcomes
- ability to generate reports and document facility results
- ability to communicate technical information to users
- ability to deliver relevant training to align with AMILSC endorsed training packages
- ability to demonstrate independence from processors and producers
- ability to investigate and come to a resolution on DEXA carcase measurement disputes
- relevant occupational health & safety accreditation.

### **Role 3: Quality assurance auditor**

#### **Definition**

The quality assurance auditor would be responsible for undertaking audits to ensure machinery is calibrated correctly, most likely through auditing calibration density blocks and verifying

records. The auditor would be expected to report audit outcomes back to the general manager for central record keeping.

If a discrepancy was to be identified through an audit by the auditor, it would be the responsibility of the facility to rectify the discrepancy. Depending on the severity of the discrepancy, the auditor would have the authority to revoke certification of the machinery until the discrepancy was rectified.

Auditing frequency by the quality assurance auditor would be stipulated by the AMILSC; however, it is unlikely to align with inspections of facility operational practices (undertaken by the general manager). Because of the technical skills required for the audit and assessment of DEXA, the required skillset of the auditor would be specific to the technology.

### **Skills, capabilities and supporting resources**

The quality assurance auditor's skills, capabilities and resources will need to include:

- strong understanding of the auditing process
- experience in successfully auditing technology against an AMILSC endorsed standard
- ability to certify against the industry standards
- ability to track and keep records of auditing outcomes
- ability to transmit information through reports to the general manager
- access to the equipment required to independently audit the DEXA machinery/equipment
- relevant occupational health & safety accreditation.

## **3.2 Assessment of AUS-MEAT**

### **Role 1: Commercial service provider**

In assessing AUS-MEAT against the criteria of commercial service provider, it became evident that AUS-MEAT did not have experience in manufacturing and installing technology equivalent to DEXA. Although AUS-MEAT has previously manufactured the colour grading cards and distributes the computers used for Onsite Correlation and Practice Program (OsCap), the technical skills and qualifications required to install, initially calibrate and maintain DEXA technology are considered far more specialised.

However, AUS-MEAT's extensive experience in auditing different operational practices within the red meat sector and its engagement on ALMTech's ICWG led the department to conclude that AUS-MEAT would be able to demonstrate a strong understanding of the technology and certify the technology in line with an AMILSC endorsed standard.

The department also considered AUS-MEAT's current role and remit and whether the role of Commercial Service Provided aligned with this. The department concluded that AUS-MEAT's limited jurisdiction, as outlined in the National Accreditation Standards, would limit its ability to operate successfully as a commercial service provider and would risk its ability to maintain transparency and mitigate any potential conflicts of interest.

Overall the department is of the view that AUS-MEAT does not currently have the skills, capabilities and staff required to undertake the role of the commercial service provider.

However, the department acknowledges that if AUS-MEAT was directed to undertake this role, past performance suggests that it has the structural resources required to successfully expand its remit and capabilities to undertake a new role.

## **Role 2: General manager**

In assessing AUS-MEAT against the criteria of general manager, the department assessed what skills and capabilities AUS-MEAT currently holds in comparison with the skills and capabilities identified to fulfil the general manager role. The department also considered the two overarching objectives of AUS-MEAT.

AUS-MEAT currently accredits export processing facilities in accordance to the Meat and Live-Stock Industry Act 1997 (the Act). In line with the requirements of the Act, AUS-MEAT undertakes intermittent inspections of facilities to ensure that their practices comply with an approved quality management system. An example is the mandatory use of the Chiller Assessment Language by exporting facilities. Taking this into consideration, the department concluded that AUS-MEAT has general inspection experience and a strong understanding of current AMILSC standards.

The National Accreditation Standards stipulate which measuring instruments can be used within a processing facility. Part of AUS-MEAT's current role is to ensure that processing facilities are utilising compliant measuring instruments. This role demonstrates AUS-MEAT's experience in inspecting equipment in line with an industry standard and its ability to ensure consistent practices are implemented across businesses.

With reference to calibration, AUS-MEAT was able to demonstrate its experience in ensuring correct calibration of weights and measures used within processing facilities as well as in the mandatory calibration requirements of the OsCap system which it distributes, monitors and maintains.

AUS-MEAT's successful distribution of colour grading cards and computers used for OsCap resulted in the department concluding that AUS-MEAT would be able to certify and distribute density calibration blocks.

AUS-MEAT's extensive experience in auditing different operational practices within the red meat sector and its engagement on ALMTech's ICWG led the department to conclude that AUS-MEAT would be able to demonstrate a strong understanding of the technology and certify the technology in line with an AMILSC endorsed standard.

The department also assessed AUS-MEAT's current internal software program. AUS-MEAT was able to demonstrate how the software records information specific to each facility, including what accreditations it holds, when audits are due, outcomes of past audits and staff training history. The department determined that this software had the capability to maintain and generate relevant DEXA reports that would communicate outcomes back to stakeholders.

AUS-MEAT has been a registered training organisation since 1992. This ensures training courses comply with Training and Assessment Standards under the Australian Quality Training Framework. AUS-MEAT's ability to undertake training through a number of platforms (both face-to-face and virtually) on a range of topics in line with an internationally recognised Quality

Management System Standard (ISO 9001) was recognised by the department as demonstrating AUS-MEAT's strong industry knowledge and ability to deliver relevant training requirements.

In assessing AUS-MEAT's ability to demonstrate independence from processors and producers the department reviewed the findings of AUS-MEAT's staff culture survey. The survey was conducted by human resources consultants in response to the RRA&T Committee questioning the integrity of AUS-MEAT's staff during the 2017 Senate Inquiry. The independent assessment found that AUS-MEAT had no staff integrity issues. While jointly owned by both MLA and AMPC, the department came to the conclusion that AUS-MEAT is able to demonstrate the level of independence necessary.

AUS-MEAT was also able to demonstrate past experience in conflict resolution. AUS-MEAT has a process in place that it follows when disputes occur in relation to carcase grading and value determinations. The department was of the view that this process could be adapted for use in the case of disputes relating to DEXA.

As mentioned previously, in their analysis, the department made the assumption that requirements relevant to the operation and installation of DEXA technology would be integrated into the AMILSC standards. Due to AUS-MEAT being the administrator of AMILSC standards in the red meat processing industry, the department concluded AUS-MEAT would be well placed to undertake the role of general manager as it has the knowledge and previous experience required for the role.

Overall the department concluded that there was sufficient information and evidence provided to assess AUS-MEAT as having or being able to acquire the skills and capabilities required to undertake the role of general manager.

### **Role 3: Quality assurance auditor**

In assessing AUS-MEAT against the criteria of Quality Assurance Auditor, the department focused on comparing the AUS-MEAT's current auditing practices with what has been proposed under this role, as well as assessing whether AUS-MEAT would be able to access equipment required to independently audit the DEXA machinery/equipment.

The department determined that the auditing process proposed for DEXA is likely to be similar to AUS-MEAT's current auditing practices for other technology used in processing facilities. The department was advised that all of AUS-MEAT's current auditing programs have been accredited to an internationally recognised Quality Management System Standard (ISO 9001) which led to the assessment that AUS-MEAT has a strong understanding of the auditing process and experience in auditing and certifying against industry standards.

The department assessed AUS-MEAT's current internal software program as having the capability to track and transmit auditing records for individual facilities. AUS-MEAT was able to demonstrate how its software already completes this function for other auditing services.

Given the developmental stage of the DEXA technology the department was unable to determine if AUS-MEAT already had access to the equipment that would be needed to audit the machinery. However, upon assessing what is required of AUS-MEAT under its current procedures, the department came to the conclusion that, if required, AUS-MEAT would most likely be able to acquire the equipment required to independently audit the DEXA machinery/equipment (be it



through buying the technology themselves or engaging a third party). This finding was supported by AUS-MEAT's ongoing involvement on the ALMTech ICWG, which is currently investigating how best to implement the technology.

Overall the department concluded that there was sufficient information and evidence provided to assess AUS-MEAT as having or being able to acquire the skills and capabilities required to undertake the role of quality assurance auditor.

The department's findings against each role are summarised in Table 1.

**Table 1 Summary of findings**

Requirements for the organisation/body to manage the rollout of DEXA	Already possessed	Need to be acquired—likely	Need to be acquired—unlikely
<b>Role 1: Commercial service provider</b>			
Ability to manufacture/source manufactured technology in line with relevant AMILSC endorsed standard	No	No	Yes
Technical knowledge and qualifications required for install and maintenance	No	No	Yes
Ability to undertake initial calibration of the technology in line with relevant AMILSC endorsed standard	No	No	Yes
Strong technical knowledge of DEXA equipment	No	Yes	No
Ability to certify DEXA technology in line with AMILSC endorsed standard	No	Yes	No
Sufficient staff to undertake maintenance and replacement	No	No	Yes
<b>Role 2: General manager</b>			
Strong understanding of AMILSC standards and how to assess compliance against a standard	Yes	No	No
Ability to undertake general inspection of a processing facility and how it uses the technology to ensure it is complainant with AMILSC endorsed standard and best practice	Yes	No	No
Experience in inspecting equipment in line with an AMILSC standard	Yes	No	No
Ability to ensure consistent practices are implemented across business, including consistent calibration in line with an industry standard	Yes	No	No
Ability to certify and distribute density calibration blocks	No	Yes	No
Strong understanding of DEXA technology and how it will be used	Yes	No	No
Ability to maintain and store records	Yes	No	No
Ability to track and keep records of inspection outcomes	Yes	No	No
Ability to generate reports and document facility results	Yes	No	No
Ability to communicate technical information to users	Yes	No	No
Ability to deliver relevant training in line with AMILSC endorsed training packages	Yes	No	No
Ability to demonstrate independence from processors and producers	Yes	No	No
Ability to investigate and come to a resolution on DEXA carcase measurement disputes	No	Yes	No
Holds relevant occupational health & safety accreditation	Yes	No	No

Requirements for the organisation/body to manage the rollout of DEXA	Already possessed	Need to be acquired—likely	Need to be acquired—unlikely
<b>Role 3: Quality assurance auditor</b>			
Strong understanding of the auditing process	Yes	No	No
Experience in successfully auditing technology against an AMILSC standard	Yes	No	No
Ability to certify against an AMILSC standard	Yes	No	No
Ability to track and keep records of auditing outcomes	Yes	No	No
Ability to transmit information through reports to the general manager	Yes	No	No
Access to the equipment required to independently audit the DEXA machinery/equipment	No	Yes	No
Holds relevant occupation health & safety accreditation	No	Yes	No

# Appendix A: Targeted stakeholder consultation register

The department conducted targeted engagement with a range of industry stakeholder groups within the red meat processing sector to seek input on ToR1. The department met with:

- AUS-MEAT
- Australian Lot Feeders' Association
- Australian Meat Processor Corporation
- Meat & Livestock Australia
- Murdoch University
- Sheep Producers Australia
- Teys Australia (current user of DEXA).

The Australian Meat Industry Council and Cattle Council of Australia were unavailable for consultation

Targeted consultation was undertaken to develop a holistic view of what skills industry believed were required. Industry's views were taken into consideration throughout the identification of the skills, capabilities and supporting resources required for overseeing meat processors' rollout and on-plant operation of DEXA technology.

The department recognises that it has been a challenging time for the red meat industry, exacerbated by recent environmental disasters such as prolonged drought conditions across Australia and flooding in North Queensland and northern Western Australia. The department appreciates the time taken by stakeholder groups to engage in this review process, complete the survey and share their views of DEXA technology in the industry.

# Appendix B: Public consultation summary

Public consultation on the department's initial assessment of the skills, capabilities and supporting resources required for the rollout of DEXA technology, opened on 13 March 2019 and closed on 28 March 2019. Public consultation was available through an online survey on the Department of Agriculture's Have Your Say platform.

The public survey asked participants whether they agreed with the department's definitions of the roles required for the rollout of DEXA technology and provided free text fields for participants to outline any gaps in the department's assessment.

Survey responses assisted the department to compile a list of skills, capabilities and resources required for the successful implementation of DEXA technology across AUS-MEAT accredited processing facilities.

A total of seven stakeholders participated in the survey; five from the processing sector, one research body and one participant from the regulatory/auditing sector.

The majority of survey participants agreed with the skills, capabilities and supporting resources proposed by the department. Key insights provided by participants for the rollout of DEXA technology were:

## Operational insights

- Certification, inspection, auditing and training requirements should follow similar processes to objective carcase measurement technologies already utilised in the industry.
- Initial calibration and operational calibration instructions would be the responsibility of the commercial service provider, not an overseer/program manager.
- A gold standard would need to be identified and agreed upon by industry to benchmark measurements that influence carcase value.
- The DEXA unit would need to be installed in line with strict adherence to the design criteria. The responsibility would lie with the commercial service provider.
- System auditing processes would need to take into account impacts on the operational environment, such as plant efficiencies, interruptions and costs of production.
- There should be a test using a calibration block of varying densities so that the full length of the DEXA image is tested.

## Regulatory insights

- DEXA system verification would need to be recorded on a central computer that controls the scanner and be available for audit.

## Implementation insights

- Participants commented on the similarities of skills between the roles proposed by the department. It was recommended by some stakeholders that only two roles would be required not three. The two roles identified as being needed are:
  - program implementer and customer manager
  - program standards officer.

## Skills and capabilities insights

In addition to the skills, capabilities and supporting resources identified by the department, some participants believed the following additions would be required:

- general knowledge of beef processing practices
- in-depth knowledge of approved arrangement requirements
- general knowledge of work health and safety standards and requirements
- well-developed interpersonal skills
- the ability to train staff and communicate outcomes
- some authoritative people quickly revert to 'command and control' attitude without fully appreciating the people involved in the process
- understanding the background helps come to a solution.

# Glossary

Term	Definition
Australian Competition and Consumer Commission (ACCC)	The ACCC is an independent Commonwealth statutory authority whose role is to enforce the <i>Competition and Consumer Act 2010</i> and a range of additional legislation, promoting competition, fair trading and regulating national infrastructure for the benefit of all Australians.
Advanced Measurement Technologies for Globally Competitive Australian Meat (ALMTech)	ALMTech is a technical working group that operates a number of projects to develop accurate descriptions of key attributes that influence the value of livestock. Specifically, ALMTech projects focus on carcass lean meat yield, eating quality and compliance to market specifications.
Australian Meat Industry Council (AMIC)	AMIC is the peak body representing meat retailers, processors and smallgoods manufacturers across Australia.
Australian Meat Industry Language and Standards Committee (AMILSC)	AMILSC are custodians of the Australian Meat Industry Classification System (AUS-MEAT Language); National National Accreditation Standards and the Meat Standard Australia (MSA) Standards).
Australian Meat Processor Corporation (AMPC)	The AMPC is the Rural Research and Development Corporation that supports the red meat processing industry throughout Australia. AMPC's mandate is to provide research, development and extension (RD&E) services that improve the sustainability and efficiency of the sector.
Computer Tomography (CT) Scanner	A CT scanner is a medical imaging device that uses x-ray and digital computer technology to create a detailed two- or three-dimensional images of a body. Unlike other forms of medical imaging, a CT scanner can make an image of every type of body structure at once, including bone, blood vessels and soft tissue.
Dual Energy X-ray Absorptiometry (DEXA)	DEXA was originally designed for the medical industry to measure bone density. DEXA Bone Densitometry is a quick, and non-invasive way to accurately and reliably measure bone mineral density. DEXA Body Composition allows the measurement of total body fat and total muscle mass.
Industry Calibration Working Group (ICWG)	<p>The ICWG is an ALMTech working group working on a project targeted towards developing objective gold standard measurements for carcass attributes that influence the value of livestock.</p> <p>The ICWG includes representatives from AUS-MEAT, the Australian Meat Industry Council (AMIC), the National Measurement Institute, and the Australian Meat Processing Corporation (AMPC)</p>
Lean Meat Yield (LMY)	LMY refers to the amount of meat recovered from a carcass. LMY is expressed as a percentage so that it is independent of variation in carcass weight.
Meat & Livestock Australia (MLA)	MLA is the Rural Research and Development Corporation that supports the meat and livestock sector. MLA works in partnership with the red meat industry and the Australian Government to deliver marketing, research and development products and services to beef cattle, sheep and goat producers, with the core purpose of fostering the prosperity of the red meat industry.
National Accreditation Standards (NAS)	The NAS is the Australian Meat Industry Standards for abattoirs, boning rooms, non-packer exporters's, further processors and other accredited enterprises. These standards provide the minimum requirements for AUS-MEAT accreditation.
Objective Carcass Measurement (OCM)	Objective carcass measurement refers to the processes and technologies that have the potential to be used to better measure carcass attributes to predict eating quality, disease or contamination, precise boning cutting lines, and lean meat yield.
Onsite Correlation and Practice Program (OsCAP)	OsCap is a software based method of objectively calibrating graders. OsCap also provides tests for AUS-MEAT's Chiller Assessment Language and MSA's Grading System.
Red Meat Memorandum of Understanding (Red Meat MoU)	<p>The Red MOU describes the inter-relationships of all organisations within the red meat sector. The signatories to the MOU are:</p> <ul style="list-style-type: none"> <li>• The Australian Government</li> <li>• Australian Meat Processor Corporation (AMPC)</li> </ul>

Term	Definition
	<ul style="list-style-type: none"> <li>• Meat &amp; Livestock Australia Ltd (MLA)</li> <li>• Australian Livestock Export Corporation Ltd (LiveCorp)</li> <li>• Australian Meat Industry Council (AMIC)</li> <li>• Cattle Council of Australia (CCA)</li> <li>• Sheepmeat Council of Australia (SCA)</li> <li>• Australian Lot Feeders' Association (ALFA)</li> <li>• Australian Livestock Exporters Council (ALEC)</li> </ul>
Senate Standing Committees on Rural and Regional Affairs and Transport (RRA&T Committee)	The RRA&T Committee's covers the Agriculture, and Infrastructure and Regional Development portfolios.
Terms of Reference (ToR)	The ToR was established by the RRA&T Committee and provides a common understanding of the scope and limitations of the review.



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