



**Industry Animal Welfare Standard for
Livestock Processing Establishments
Preparing Meat for Human Consumption**

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Foreword

This Australian Meat Industry Council (AMIC) Industry Animal Welfare Standard has been developed in accordance with the AMIC STD001 *Standards Development Procedure*. The AMIC Industry Standard reflects international expectations for standard development as described in:

- World Trade Organization (WTO) Agreement on Technical Barriers to Trade, *Annex 3 Code of Good Practice for the Preparation, Adoption and Application of Standards*;
- ISO/IEC Guide 59:1994, *Code of good practice for standardisation*;
- ISO/IEC 17007:2009, *Conformity assessment - Guidance for drafting normative documents suitable for use for conformity assessment*; and

This third edition of the AMIC Industry Animal Welfare Standard was drafted by an industry working group and further developed by the AMIC *Standards Committee* ('the Committee'). The Committee represented a balanced set of stakeholder interests with no one interest predominating. The members of the Committee came from the following interest groups:

- Industry representatives;
- Animal welfare scientists, researchers and technical experts;
- standards writing and conformity assessment experts;
- Non-governmental organizations; and
- regulators with an interest in animal welfare.

The Standard was first developed in 2005 with the support of a national committee comprised of industry, science, policy, animal welfare, and other supply chain representatives. It was subsequently reviewed in 2009 using a similar process. Establishments that fulfil the requirements of the Standard may seek certification in accordance with the Australian Animal Welfare Certification System (AAWCS) requirements.

The Standard was developed to reflect the expectations of both the Australian meat processing industry and the community regarding the management of livestock at Australian livestock processing establishments. Livestock processing establishments already address issues associated with food safety and meat quality using quality assurance systems. The addition of animal welfare principles to these systems provides a more comprehensive approach and assists industry to continually improve and demonstrate animal welfare outcomes.

The Standard is intended for incorporation into existing livestock processing industry quality assurance programs and to provide support towards demonstrating existing regulatory requirements in the industry.

This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives). Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. AMIC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction. Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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Introduction

The objectives of the Standard are to enable establishments to demonstrate fulfilment of the regulatory requirements covering the welfare of livestock and ensure good animal welfare outcomes.

The Standard sets out requirements for the welfare of livestock during processing. The requirements are structured to address the topics of:

- a) management procedures and planning;
- b) resources, including human resources;
- c) animal management;
- d) animal handling; and
- e) stunning, sticking and humane killing.

The Standard can be met by any establishment undertaking processing of livestock regardless of size or complexity of its activities.

The Standard can be used as the basis for conformity assessment by first, second or third-parties. Establishments that fulfil the requirements of the Standard may seek certification in accordance with the Australian Animal Welfare Certification System (AAWCS) requirements. To fulfil this Standard, establishments must demonstrate their fulfilment of *compliance requirements*.

In accordance with the ISO/IEC Directives, Part 2, this document uses the following verbal forms of expression:

- "shall" indicates a requirement;
- "should" indicates a recommendation;
- "may" indicates a permission;
- "can" indicates a possibility or a capability.

For establishments and auditors there is further guidance on how requirements may be demonstrated. This Standard can be used in conjunction with more specific requirements that are prescribed by regulators or supply chains. Processing establishments must identify and demonstrate their fulfilment of *compliance requirements* which are defined as including any relevant local, regional, national and international laws and regulations and contractual (i.e. customer/supply chain) requirements.

1 Scope

This document provides requirements for the commercial processing of cattle (including calves), sheep (including lambs), pigs, goats, buffalo, deer and horses in Australian processing establishments; from receipt at the processing establishment through to (and including) slaughter.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

- Australian Animal Welfare Standards and Guidelines - Land Transport of Livestock
- Australian Standard for the Hygienic Production and Transport of Meat and Meat Products for Human Consumption
- Model Code of Practice for the Welfare of Animals - Livestock at Slaughtering Establishments. SCARM Report 79

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

Term	Definition
3.1 AAWCS	Australian Livestock Processing Industry Animal Welfare Certification System.
3.2 Competency	The demonstrated knowledge, skills, attitude and behaviour to effectively undertake a task.
3.3 Compliance requirements	Any local, regional, national and international: a) statutory or regulatory requirements (including any necessary certificates, permits, licences, permissions, consents); b) requirements in treaties or conventions; and c) contractual requirements.
3.4 Correction	Action to eliminate an identified nonconformity. SOURCE ISO 9000:2015, 3.12.3
3.5 Corrective action	Action to eliminate the cause of a nonconformity and prevent recurrence. <i>Note 1 to entry: There can be more than one cause for a nonconformity.</i> <i>Note 2 to entry: Corrective action is taken to prevent recurrence whereas preventive action is taken to prevent occurrence.</i> SOURCE ISO 9000:2015, 3.12.2
3.6 Documented information	Information required to be controlled and maintained by an establishment.
3.7 Electric goad	A low voltage (<50 volts) or commercially manufactured electric device designed and used for the purpose of making livestock move.

3.8 Emergency slaughter	<p>Slaughter by necessity (ie. in the interest of animal welfare) of any animal that:</p> <p>a) has recently suffered traumatic injury or is affected or suspected of being affected by a disease or other abnormality; and</p> <p>b) is in pain or is likely to deteriorate unless it is killed immediately.</p> <p>Generally, livestock in relation to the above would normally undergo an assessment as to the fitness for human consumption.</p>
3.9 Fall	<p>Occurs when an animal loses an upright position suddenly in which a part of the body other than the limbs touches the ground.</p> <p>SOURCE NAMI Recommended handling guidelines and audit guide: A systematic approach to animal welfare. September 2019 Rev.2.</p>
3.10 Humane	Without pain, suffering or distress.
3.11 Insensibility	Synonymous with unconsciousness.
3.12 Killing	Any procedure which causes the death of an animal.
3.13 Lairage	A designated holding area of the processing establishment where livestock are kept before slaughter.
3.14 Livestock processing establishment ('the establishment')	Premises used for the processing of livestock and production of meat or meat products for human consumption.
3.15 Nonconformity	Nonfulfillment of a requirement or failure to demonstrate fulfilment of a requirement.
3.16 Restraint	Positioning the animal for stunning or killing.
3.17 Slaughter	The killing of an animal; includes stunning, sticking and bleeding.
3.18 Sticking	The severing of blood vessels to induce effective bleeding.
3.19 Stocking density	The number of animals per unit area, with the area usually measured in m ² .

3.20 Stunning	<p>The procedure for rendering an animal unconscious and insensible to pain.</p> <p><i>Note 1 to entry: Irreversible stunning - where there is no possibility of the animal regaining consciousness.</i></p> <p><i>Note 2 to entry 2: Reversible stunning - where the animal may regain consciousness unless effectively bled out to cause death.</i></p>
3.21 The Standard	<p>This Standard, that is the <i>Industry Animal Welfare Standard – Livestock Processing Establishments (3rd Edition)</i>.</p>
3.22 Training	<p>Formal and informal vocational education and development.</p>
3.23 Unconsciousness	<p>State of unawareness (loss of consciousness) in which there is temporary or permanent disruption to brain function, during which the animal does not feel pain.</p>
3.24 Vocalisation	<p>Moo or bellow in cattle as a consequence of direct active handling in the race or crowd pen or during restraint (eg in the stun box). Squeal in pigs. A squeal is an extended sound produced with an open mouth, indicating excitement, fear, or pain. Squealing that occurs when pigs root under each other or jump on top of each other is counted if provoked by the application of electric goads, yelling, poking, or hitting the pigs.</p> <p>SOURCE NAMI Recommended handling guidelines and audit guide: A systematic approach to animal welfare. September 2019 Rev.2.</p>

4 Management requirements

4.1 Management system

4.1.1 The establishment shall establish, implement, and maintain a management system that enables the consistent fulfilment of the requirements in this Standard.

4.1.2 The management system shall include at least the following:

- a) identification of compliance requirements associated with processing activities as related to animal welfare;
- b) identification, monitoring and control of processes used to carry out processing activities as related to animal welfare, including those in Annex A;
- c) management commitment and allocation of responsibilities;
- d) resource management, including human resource management and competence (Annex B);
- e) improvement, including internal audit and management review processes and systems for implementing corrective action; and
- f) documented information that is necessary to demonstrate consistent fulfilment of the requirements in this Standard.

NOTE The extent of the documented information for a management system can differ between establishments based on their size and the scope and complexity of its meat processing activities.

4.2 Document control

4.2.1 When creating and updating documented information, the establishment shall ensure appropriate:

- a) identification and description (e.g. a title, date, author, reference number);
- b) format (e.g. language, software version, graphics) and media (e.g. paper, electronic); and
- c) review and approval for suitability and adequacy.

4.2.2 Documented information required by the management system and by this Standard shall be controlled to ensure that:

- a) it is available and suitable for use; and
- b) it is adequately protected (e.g. from improper use, loss of confidentiality or loss of integrity).

4.2.3 For the control of documented information, the establishment shall address:

- a) distribution, access, retrieval and use;
- b) storage and preservation;
- c) control of changes (e.g. version control); and
- d) retention and disposition.

4.3 Performance evaluation and improvement

4.3.1 Performance evaluation

4.3.1.1 The establishment shall identify, monitor and measure performance indicators.

4.3.1.2 The establishment shall analyse its performance to identify and evaluate:

- a) the achievement of indicators;
- b) conformity with the requirements of this Standard;
- c) areas of risk;
- d) opportunities for improvement;
- e) the performance of personnel and suppliers; and
- f) customer satisfaction.

4.3.2 Internal audit

The establishment shall:

- a) plan, establish and maintain an internal audit programme including the frequency, methods, responsibilities, planning requirements and reporting, which shall take into consideration the importance of the processes concerned and associated risks to animal welfare, customer feedback, changes affecting the establishment and the results of previous internal audits and external evaluations;
- b) follow the audit criteria and scope for each internal audit;
- c) select competent auditors and conduct audits in a manner that ensures objectivity and impartiality;
- d) report the results to relevant management;
- e) take necessary and timely corrective action; and
- f) retain documented information as evidence of the implementation of the internal audit programme and the audit results.

4.3.3 Nonconformities, correction and corrective actions

4.3.3.1 When a nonconformity occurs, the establishment shall:

- a) correct the nonconformity;
- b) determine the cause of the nonconformity and ways to prevent its recurrence;
- c) undertake, and review the effectiveness of, corrective action; and
- d) make any necessary changes to the management system.

4.3.3.2 Corrective actions shall be appropriate to the effects of the nonconformities encountered.

4.3.3.3 The establishment shall retain documented information as evidence of:

- a) the nature of the nonconformity and the corrective action taken; and
- b) the results of any corrective action.

4.3.4 Management review

4.3.4.1 Management shall review the establishment's management system at least annually.

4.3.4.2 The review shall include the following:

- a) the status of actions from previous management reviews;
- b) changes in external and internal issues that are relevant to the management system;
- c) results of internal and external audits;
- d) nonconformities and corrective actions;
- e) customer satisfaction; and
- f) potential opportunities for continuous improvement.

4.3.4.3 The output from the management review shall include:

- a) identification of risks;
- b) opportunities for improvement; and
- c) the need for any changes to the management system.

5 Resource requirements

5.1 Human resource management and competencies

5.1.1 The establishment shall:

- a) identify and have access to enough personnel to enable the fulfilment of the requirements of the Standard;
- b) demonstrate that personnel involved in activities relating to the handling, stunning, slaughter and animal welfare monitoring have the competencies contained in Annex B; and
- c) allocate and communicate to personnel their responsibilities.

5.1.2 The establishment shall identify and allocate responsibilities for fulfilling animal welfare requirements, including specific personnel at each site with responsibility for:

- a) animal welfare, including stunning, sticking, emergency slaughter and humane killing;
- b) the day-to-day application of the Standard; and
- c) animal welfare monitoring activities, including the effectiveness of stunning, sticking,
- d) emergency slaughter and humane killing.

5.1.3 The establishment shall provide training to personnel that:

- a) is appropriate to their assigned responsibilities; and
- b) includes health, safety and emergency preparedness.

NOTE Emergencies include fire, injury to livestock or personnel, truck breakdowns or accidents, acts of nature, interruption to supply of resources (for example, power failure), equipment breakdowns and environmental conditions (e.g. extreme heat or cold, flooding, high winds)

5.1.4 For personnel undergoing training, the establishment shall:

- a) provide direct supervision, by a competent person, when the tasks are high risk for welfare; and

NOTE Tasks that are high risk to welfare include animal handling, restraint, stunning, sticking, emergency slaughter and humane killing.

- b) monitor progress until assessed competent; and
- c) document training and competencies achieved.

5.2 Physical resources

5.2.1 Infrastructure and equipment shall:

- a) not cause injury, pain, suffering or distress to the animal;
- b) allow for effective livestock handling;
- c) allow livestock to be segregated to the extent necessary to avoid injury, pain, suffering or distress;
- d) allow aggressive livestock to be removed, or managed, to reduce the likelihood of injury and stress to other animals in the group;
- e) enable control of environmental conditions, to allow effective thermoregulation;

NOTE Environmental conditions can include temperature, humidity, air quality which can be modified and controlled by provision of shade, ventilation or climate control and air conditioning.

- f) be in good repair and effective working order in accordance with a maintenance schedule.

5.2.2 If defective infrastructure and equipment could cause injury, pain, suffering or distress to livestock, the establishment shall:

- a) ensure livestock be removed from the area; or
- b) ensure the infrastructure and equipment is not used until repaired.

5.2.3 The flooring of infrastructure shall allow for effective draining.

5.2.4 Lighting shall be sufficient to aid animal movement and to perform individual animal inspections.

5.2.5 Lairage holding pens shall allow for livestock to stand up, lie down, turn around and access drinking water.

5.2.6 Equipment for providing drinking water shall be available and operational in areas where livestock are held.

NOTE Areas where livestock are held does not include parts of the handling system where livestock are being moved.

5.2.7 If livestock are to be fed in the lairage, equipment for providing feed shall be available and operational in areas where livestock are held.

- 5.2.8 Facilities shall be available to segregate and care for weak, injured or ill livestock, where necessary to prevent further pain and distress to the animal.
- 5.2.9 Equipment for the emergency slaughter and humane killing of livestock shall be available.
- 5.2.10 A functional video surveillance system should be installed and operational to clearly monitor the following processes:
- a) unloading livestock from vehicles into the lairage;
 - b) movement of livestock towards the stunning area;
 - c) restraint and stunning;
 - d) hoisting; and
 - e) sticking.
- 5.2.11 The recorded video surveillance footage should be retained by the establishment for a period of at least one month.

NOTE 5.2.10 and 5.2.11 are not mandatory requirements, however, they are recommended practices.

6 Management and care of livestock

6.1 Receival of livestock at the establishment

6.1.1 The establishment shall:

- a) schedule receival to ensure unloading of livestock occurs without delay;
- b) take immediate action to ensure that any delay in unloading does not compromise animal welfare; and
- c) take into account the welfare needs of livestock when scheduling slaughter.

NOTE An example of taking the welfare needs of livestock into account when scheduling slaughter could be slaughtering bobby calves first.

6.1.2 The establishment shall advise livestock suppliers of:

- a) any livestock that were not fit for the intended journey (Annex C); and
- b) any adverse animal welfare outcomes upon arrival at the processing establishment.

NOTE Suppliers can include saleyards.

6.2 Livestock handling

6.2.1 Livestock handling shall be undertaken in a manner that:

- a) uses low stress livestock handling techniques taking into account the animal's natural behaviour;
- b) does not subject livestock to noise that creates stress or panic;
- c) does not require livestock to be isolated unless absolutely necessary;
- d) involves the appropriate use of handling tools; and

NOTE Handling tools may include flags, rattles, paddles, electric goads.

- e) does not subject livestock to unnecessary practices and procedures (Annex D).

6.2.2 During active handling at unloading and from lairage to entry into restraint, the establishment shall monitor the following targets in accordance with Annex A:

- a) No more than 1% of animals fall;

- b) No more than 3% of cattle vocalise when under direct and active handling in races, crowd pens and moving into restraint.
- c) No more than 5% of cattle vocalise when head restraint is used; and
- d) No more than 5% of pigs vocalise when being moved into the restrainer.

NOTE A restrainer for pigs may include a gondola, restrainer for automatic electrical stunning, or stun box.

6.2.3 Where electric goads are used to move livestock, they shall:

- a) be used in accordance with compliance requirements;
- b) be used only on livestock older than 3 months of age;
- c) not be applied to genital, anal, facial areas or udders;
- d) not be used on livestock that are unable to move away;
- e) be used on less than 25% of cattle and buffalo;
- f) be used on less than 5% of sheep and goats, and only at the entrance to the restrainer;
- g) be used on less than 5% and 25% of pigs in group and single file systems respectively;
- h) not be used on horses or deer; and
- i) not be used in an unreasonable manner (Annex D) on any animal.

6.2.4 Where dogs are used to move livestock, they shall:

- a) be used in accordance with compliance requirements;
- b) be trained, muzzled and supervised;
- c) not be used during the handling of horses, pigs or deer;
- d) not be used during the handling of livestock less than 3 months old;
- e) not be used on livestock that are unable to move away; and
- f) when not being used, kept away from areas where livestock are held.

6.3 Daily management of livestock

- 6.3.1 Livestock shall be protected from exposure to adverse weather conditions.
- 6.3.2 Clean, palatable water shall be available and accessible to livestock at all times while they are held.

NOTE Clean, palatable water means that it is suitable for livestock to drink. It does not mean potable.

- 6.3.3 All livestock held over 24 hours shall have access to feed that is palatable and free from physical contamination.
- 6.3.4 Livestock in the lairage shall be inspected upon arrival and at least every 24 hours thereafter, with action taken if any adverse animal welfare outcomes are observed.

6.4 Identification and management of weak, ill or injured livestock

Livestock that are identified as weak, ill or injured shall be:

- a) segregated and cared for, where necessary to prevent further pain and distress to the animal;

NOTE Segregation involves maintaining audible and visual contact with livestock of the same species

- b) only moved if movement will not cause any further pain or distress; and
- c) subject to emergency slaughter or humane killing if deemed to be suffering.

7 Humane stunning and sticking processes

7.1 Restraint

7.1.1 Livestock shall be restrained for stunning using a method that:

- a) is designed and operated effectively for the species and type of livestock processed.
- b) allows the animal to be positioned for effective stunning; and
- c) does not involve the use of unacceptable practices and procedures, included in Annex D.

7.1.2 The establishment shall ensure that:

- a) livestock are not left in restraint, single file races or without access to water during scheduled breaks in processing; and
- b) during delays, the welfare of livestock is monitored and action is taken if welfare is compromised.

NOTE Appropriate action may involve removing livestock from the handling system and returning them to holding pens.

7.1.3 When adult cattle or pigs are being moved into restraint for stunning, the establishment shall monitor vocalisation and use of electric goads in accordance with 6.2.2 and 6.2.3 as appropriate.

7.1.4 After effective restraint, the animal shall be stunned without delay.

7.2 Stunning procedures

7.2.1 Livestock shall be effectively stunned prior to sticking, using a permitted method as described in Annex E.

7.2.2 The establishment shall ensure that monitoring of stunning effectiveness is performed in accordance with a documented procedure (Annex A).

7.2.3 Where the first application is not effective or the animal shows signs of recovery before death, the animal shall be re-stunned immediately, using a back-up method if required.

7.2.4 The establishment shall ensure that:

- a) effective stunning is confirmed before hoisting or sticking commences;
- b) livestock remain unconscious during the period between stunning and death; and
- c) bleedline insensibility is monitored in accordance with a documented procedure (Annex A), where 100% of animals remain unconscious from stunning until death.

7.3 Sticking procedures

7.3.1 Sticking shall be performed using:

- a) throat cut severing both carotid arteries; or
- b) thoracic sticking severing the major blood vessels close to the heart.

7.3.2 In cattle and buffalo (including calves), where an initial throat cut is used, a thoracic stick shall be performed after cutting the throat in accordance with compliance requirements.

7.3.3 Dressing procedures shall not be performed before the animal is confirmed as dead.

NOTE Dressing procedures do not include oesophageal occlusion and PIC/RFID removal or scanning, which may be performed when the animal has been confirmed as unconscious.

7.3.4 In cattle, where foetal blood is collected, the establishment shall ensure that:

- a) this is performed in accordance with a documented procedure (Annex A);
- b) the welfare of the foetus is safeguarded by ensuring that it remains unconscious throughout the procedure until confirmed dead; and
- c) if there is any doubt about the consciousness of the foetus, it is killed immediately in accordance with Annex E.

ANNEX A

Documented procedures

(Normative)

Establishments shall develop documented procedures for the following activities:

- Scheduling of livestock transport
- Livestock handling
- Stunning and sticking
- Emergency slaughter and humane killing
- Emergency livestock care
- Animal welfare monitoring - To include the following stunning targets as a minimum:
 - when, penetrating captive bolt and non-penetrating percussive devices are used, at least 96% of animals are stunned effectively with the first application of the stunning method;
 - when electrical stunning is used, at least 99% of animals have the electrodes applied in the optimum position and 98% or more of the animals show no sign of starting the process of return of consciousness; and
 - when controlled atmosphere (CO₂) stunning is used, 98% or more of animals show no signs of starting the process of return of consciousness.
- Foetal blood collection

Annexes

ANNEX B Personnel Competencies (Normative)

Establishments shall demonstrate that personnel have the following competencies in Table 1.

Table 1: Competencies¹ related to animal welfare

Competency required:	Handling livestock	Livestock management	Stunning and sticking	Animal welfare monitoring
Knowledge				
a) Workplace requirements for maintaining the flow and order of livestock	✓	✓		✓
b) Impact of stress and injury on livestock	✓	✓	✓	✓
c) Impact of stress and injury on product quality	✓	✓	✓	✓
d) Hazards of handling livestock	✓	✓	✓	✓
e) Feed and water requirements		✓		✓
f) relevant work instructions and procedures associated with tasks undertaken	✓	✓	✓	✓
g) Responding to emergency situations	✓	✓	✓	✓
Skills				
h) Identification of weak, ill and injured livestock	✓	✓		✓
i) Identify out of specification livestock		✓		✓
j) Identify signs and causes of stress in livestock	✓	✓	✓	✓
k) Comply with workplace procedures and requirements for handling livestock and minimizing livestock stress	✓	✓	✓	✓
l) Operation and maintenance of capture and restraint equipment	✓		✓	✓
m) Operation and maintenance of stunning equipment			✓	✓
n) Operation and maintenance of sticking equipment			✓	✓
o) Operation and maintenance of emergency equipment	✓	✓	✓	✓

¹ Components drawn from the AMP - Australian Meat Processing Training Package - AMPA2006 Apply animal welfare and handling requirements and also AHCLSK217 Apply animal welfare principles to handling and husbandry of livestock - www.training.gov.au

ANNEX C **Fitness for transport** **(Normative)**

An animal is not fit for a journey if it is:

- i) unable to walk on its own by bearing weight on all legs; or
- ii) severely emaciated; or
- iii) visibly dehydrated; or
- iv) showing visible signs of severe injury or distress; or
- v) suffering from conditions that are likely to cause increased pain or distress during transport; or
- vi) blind in both eyes; or
- vii) known to be, or visually assessed to be near (within two weeks) parturition, as specified in the species requirements, unless time off water and journey is less than four hours duration to another property.

Note: In the Australian Animal Welfare Standards and Guidelines – Land Transport, Standard SA4.4 states that ‘A person in charge must not load, nor permit to be loaded, animals that are not fit for the intended journey except under veterinary advice.’

ANNEX D **Unacceptable practices and procedures** **(Normative)**

Unacceptable practices and procedures for conscious animals include but are not limited to:

- a) Lifting or dragging by hair, wool, head, neck, horns, ears or limbs;
- b) pressure (including use of high-pressure hoses during washing or moving animals) applied to eyes, ears or genitalia;
- c) whipping, tail twisting and pulling;
- d) nose twitches;
- e) throwing, hitting or kicking;
- f) forcing livestock to walk over the top of others;
- g) use of livestock handling tools in a manner that causes harm, distress or injury to the animal;
- h) electro-immobilisation; and
- i) forcing water into an animal's stomach or into its mouth.

ANNEX E Permitted stunning methods (Normative)

Method	Species	Parameters
Non-penetrating percussive stunning device	Cattle	Equipment to be applied according to manufacturer's recommendations for appropriate position and power (charge, air-pressure, etc.).
	Sheep and goats	Equipment to be applied according to manufacturer's recommendations for appropriate position and power (charge, air-pressure, etc.).
Penetrating captive bolt stunning	All species	Equipment to be applied according to manufacturer's recommendations for appropriate position and power (charge, air-pressure, etc.).
Free bullet	All species	Equipment to be applied in the correct position with appropriate gauge used. Suitable as an emergency method as local laws allow
Head-only electrical stun	Cattle and buffalo	Electrode shall span the brain. Minimum current to produce an immediate stun.
	Sheep and goats	Electrode shall span the brain. Minimum current to produce an immediate stun.
	Pigs	Electrode shall span the brain. Minimum current to produce an immediate stun.
Head to body electrical stun/kill	Cattle and buffalo	Electrode shall span the brain and the heart. Minimum current to produce an immediate stun.
	Sheep and goats	Electrode shall span the brain and the heart. Minimum current to produce an immediate stun.
	Pigs	Electrode shall span the brain and the heart. Minimum current to produce an immediate stun.
Controlled atmosphere (CO₂) stunning	Pigs	Equipment to be used according to manufacturer's recommendations in relation to dwell time and gas concentration.

Bibliography

- [1] ISO 9000:2015, *Quality management systems - Fundamentals and vocabulary*
- [2] Australian Animal Welfare Standards and Guidelines - Land Transport
- [3] Australian Standard for the Hygienic Production and Transport of Meat and Meat Products for Human Consumption
- [4] Model Code of Practice for the Welfare of Animals - Livestock at Slaughtering Establishments. SCARM Report 79
- [5] NAMI Recommended handling guidelines and audit guide: A systematic approach to animal welfare. September 2019 Rev.2.