MEAT & LIVESTOCK AUSTRALIA

final report

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Comparison of the Australian Standards for the Export of Livestock (ASEL) and the National Feedlot Accreditation Scheme (NFAS)

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Executive summary

The reviewer identified a number of areas that industry, FLIAC and AUS-MEAT could address over the next two years (2019 and 2020). These largely relate to incorporating some of the existing industry initiatives into the National Feedlot Accreditation Scheme (NFAS), increasing the level of verification during an audit on some aspects of the Scheme and encouraging industry to be truly open to ensuring aggressive scheme improvement.

The reviewer acknowledges that the NFAS is currently a voluntary scheme, and therefore any increase in the level of compliance for feedlot operators, coupled with both perceived and real additional time and therefore costs, particularly during the annual audit phase, may weigh heavily on increasing the future level of participation in the Scheme. However, this needs to be balanced in terms of the changing perceptions around livestock production generally, growing concerns around intensive food production and increasingly complex future expectations of beef consumers.

The reviewer has compiled recommendations (27) that can be used as the basis for further industry discussion on continual improvements to the NFAS, specifically around cattle welfare, managing cattle during summer seasons, increased accountability and transparency. The recommendations have been formulated on the need to ensure the cattle feedlot production system (underpinned by the NFAS) sustains grain fed beef as a relevant category in the beef value chain through adequate and continually improving product integrity mechanisms.

Many observations in this review oscillate between activities on a feedlot and those during transport. Particularly in relation to the McCarthy review, where some of the recommendations that have been applied to the transport of livestock for live export have dual consideration for the NFAS, both in the feedlot production and transport phases.

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1 Introduction/Background

1.1 Introduction

The Australian Lot Feeders Association (ALFA) has identified that there is a risk some stakeholders may compare live export requirements outlined in the Australian Standards for the Export of Livestock (ASEL) and the McCarthy Review with those requirements outlined for the Australian feedlot sector under the National Feedlot Accreditation Scheme (NFAS). The risk is that this may result in 'Regulatory Creep' where some stakeholders may question or seek to apply live export requirements back onto the feedlot sector. Industry needs to ready itself for such an event and address this by either reviewing relevant sections of the NFAS or have relevant information at hand to defend current practice.

This project independently reviewed the Australian Standards for the Export of Livestock (ASEL), the recommendations from the McCarthy review (including responses from the Department of Agriculture and Water Resources (DAWR), and made comparisons with the National Feedlot Accreditation Scheme (NFAS) in meeting the current needs of industry and other external stakeholders.

The project also endeavoured to explore the future needs of the NFAS, particularly in relation to cattle welfare, management of cattle during summer, risk assessment, incident reporting, ongoing development, relevance of particular issues and the potential for further improvements to the existing Scheme.

1.2 Background

Recent live export events have resulted in greater scrutiny of the live trade specifically around heat load management, risk assessment, acceptable levels of risk and incident reporting as it relates to the live shipping of livestock.

In response to the release of footage of sheep voyages to the Middle East a short sharp review has been undertaken at the request of the Federal Minister. Called the McCarthy Review, it was released on 17th May 2018 and proposes twenty-three (23) recommendations, some of which focus on heat stress management plans, heat stress risk assessment, reportable mortality levels and incident reporting.

In addition it has been noted previously that during the development of The Australian Standards for the Export of Livestock (ASEL) the live export sector and government drew on the very successful National Feedlot Accreditation Scheme (NFAS) for its Quality Assurance (QA) and risk management approach.

The cattle lot feeding industry introduced a quality management program in 1994 to address the ever-increasing need to ensure that the feedlot sector was in charge of its own destiny. The current National Feedlot Accreditation Scheme (NFAS) incorporates a formal set of rules and standards which compel accredited feedlots to achieve certain outcomes in the areas of food safety, livestock management, the environment and product integrity.

The NFAS also serves as a mechanism to deliver continual industry improvement, assists in defending the credentials of the industry and ensures a systems-based approach that encourages improvement in the management of feedlots over time.

The Minimum Standards for Grain Fed Beef are also referenced in the AUS-MEAT Language for trading beef, the Export Control Act (1982) and the Export Control (Meat and Meat Products) Orders (2005).

The Australian Position Statement on the Export of Livestock was developed in 2011 as part of the Australian Government's response to the Livestock Export Review (Keniry Review) of the livestock export industry. The Position Statement provides a framework for the development of the Australian Standards for the Export of Livestock. The Standards represent the basic animal health and welfare requirements for the conduct of the livestock export industry.

The ASEL are referenced in the Australian Meat and Livestock Industry (Export Licensing) Regulations 1998 and the Export Control (Animals) Order 2004. These Australian Government laws cover only the exporter, Australian Quarantine and Inspection Service (AQIS)-accredited veterinarians, the registration of premises, and processes relating to the livestock export trade. The ASEL are relevant throughout the livestock export chain.

Only exporters licensed by the Department of Agriculture and Water Resources (DAWR) can legally export livestock from Australia. Exporters are accountable to the Australian Government for the outcomes of each consignment. AQIS must be satisfied that importing country requirements are met before issuing a health certificate and export permit.

Livestock sourced for export must also meet all requirements under relevant state and territory legislation, including animal welfare Acts. State and territory governments are responsible for ensuring that these requirements are met. Areas of state and territory responsibilities include animal health and welfare, vehicle registration and operation, licensing and operation of facilities and equipment where appropriate, occupational health and safety, and environmental protection and operation of companies.

2 Project objectives

2.1 Purpose

ALFA is seeking research that compares the regulatory and Quality Assurance requirements of the live export and Australia feedlot sectors, and:

a) Identifies areas where there are the same or similar regulatory/QA requirements in the live export and Australia feedlot sector. This should include, but is not limited to, heat stress management plans, heat stress risk assessment, reportable mortality levels and incident reporting requirements.

b) Identifies the differences between the live export and the Australia feedlot sector requirements and where there is potential 'Regulatory Creep' risk. This should compare and identify the practical and technical differences between the requirements and why those differences occur.

c) Identify and recommend where the NFAS Rules and Standards may require review and/or change.

d) Identify where relevant requirements of the live export sector, though similar, should not apply to the Australian feedlot production system.

e) Prepare arguments, based on practice, environment and/or scientific evidence, against applying those relevant requirements identified in the point above.

3 Methodology

There were two components initially undertaken in the research:

- A comparison of the current Standards for NFAS and ASEL, and
- A review of the recommendations from the McCarthy review, and the potential areas for influence on the NFAS.

3.1 NFAS and ASEL

The NFAS was reviewed in 2015, and implementation of the agreed recommendations commenced in 2017. Further improvements or enhancements suggested in the review continue to be implemented.

The ASEL are committed for review during 2018. The current version 2.3 (2003) has been adopted for the purposes of this project.

3.1.1 National Feedlot Accreditation Scheme (NFAS)

The Accreditation Rules represent the mechanism by which the NFAS Standards are both applied and managed. The Rules describe the Auditing system used to assess the ability of an enterprise to meet the requirements of the NFAS Standards.

The NFAS Standards describe the processes by which the Australian feedlot industry, as a pro-active self-regulated sector, has agreed to operate so as to demonstrate its commitment to animal welfare, environment, meat quality and food safety.

The NFAS Standards are designed to:

(a) protect the reputation and integrity of NFAS;

(b) enhance the integrity of product described as grain fed;

(c) address food safety issues;

(d) maintain the image of feedlots held by the community, particularly relating to environmental impact and animal welfare issues; and

(e) protect the integrity of the AUS-MEAT Language.

The Mission of the NFAS is to ensure the Australian beef feedlot industry demonstrates a responsive feedlot management program for continual improvement, particularly in relation to cattle welfare and the environment, whilst guaranteeing the safety and integrity of grain fed beef.

The purpose of the NFAS is to provide a Quality System for beef feedlots:

(a) that will impact positively on product integrity, quality and acceptability; and

(b) for which lot feeders maintain responsibility.

A trade description for Grain Fed Beef is provided through the Minimum Standards for Grain Fed Beef and is referenced in the **Export Control (Meat and Meat Products) Orders 2005 as amended,** made under regulation 3 of the *Export Control (Orders) Regulations 1982*.

3.1.2 Australian Standards for the Export of Livestock (ASEL)

The Standards represent the basic animal health and welfare requirements for the conduct of the livestock export industry, which the Australian Government expects the industry to meet. The Standards are referenced in the Australian Meat and Livestock Industry (Export Licensing) Regulations 1998 and the Export Control (Animals) Order 2004, which came into effect on 1 December 2004. These Australian Government laws cover only the exporter, Australian Quarantine and Inspection Service (AQIS)-accredited veterinarians, the registration of premises, and processes relating to the livestock export trade. The Standards are relevant throughout the livestock export chain and should be reflected in relevant industry quality assurance (QA) programs.

Only exporters licensed by the Australian Government Department of Agriculture Fisheries and Forestry (DAFF) can legally export livestock from Australia. Exporters are accountable to the Australian Government for the outcomes of each consignment. AQIS must be satisfied that importing country requirements are met before issuing a health certificate and export permit.

The export of animals obliges all participants in the trade to ensure that the animals' health and welfare is protected to the greatest extent possible and reflects Australian community expectations. The health and welfare of livestock in the live export chain should be protected by:

- industry QA programs from place of origin to destination
- state and territory legislation, including animal welfare Acts
- Australian Government legislation, including the Standards.

The Australian Government provides the legislative and administrative framework in which livestock exporters, operators of registered premises and accredited veterinarians are licensed and regulated. State and territory governments provide and administer animal welfare legislation, which applies to all participants in the live export chain.

Relevant national Model Codes of Practice for the Welfare of Animals (codes) (now known as the Australian Animal Welfare Standards and Guidelines) are developed by Australian Government and state and territory government representatives in consultation with farming industries and animal welfare organisations, including RSPCA Australia. Currently, under state and territory animal welfare legislation, it is not a legal requirement to comply with most codes. However, some state and territory animal welfare legislation provides a defence to a person charged under the Act if they are complying with a relevant code.

The aim of the codes (guidelines) is to provide guidelines for the humane and responsible treatment of livestock in Australia. The codes (guidelines) cover both animal husbandry and transportation. Livestock industries implement these national code (guideline) requirements through industry QA programs.

The guiding principles for the export of Australian livestock from Australia are:

- The health and welfare of animals is a primary consideration at all stages of the livestock export chain.
- All participants throughout the livestock export chain are responsible for the health and welfare of animals in their care.
- The operation and regulation of the livestock export industry is conducted in a transparent manner, in which accountabilities, roles and responsibilities are clearly defined and met.

- Animal health and welfare requirements that apply to the livestock export industry are consistent with those applying to other livestock industries in Australia.
- Participants in the livestock export industry are demonstrably competent and operate in accordance with the national animal health and welfare system in an environment that encourages sustainable improvement.
- Livestock export consignments from Australia meet the requirements of the national animal health and welfare system and importing country requirements.
- The export of livestock requires a risk-based approach throughout the export chain and development of appropriate risk minimisation strategies.
- The Australian Government and the Australian livestock export industry remain committed to furthering improvements in the health and welfare of livestock in the live export chain in Australia, including by supporting relevant research and development initiatives.

The exporter must comply with the Australian animal health and welfare system, including all Australian Government and state, territory or local government laws that apply to the health and welfare of livestock in a particular jurisdiction. The exporter is also responsible for ensuring that importing country requirements are met and that verification systems are established to meet audit scrutiny throughout the livestock export chain. Where the exporter subcontracts to service providers, the exporter is responsible for instructing the service provider to comply with the Standards and importing country requirements, and to ensure that all of the above requirements are met.

In particular, the exporter must source suitable livestock that meet consignment specifications, such as species, class, condition, animal health and welfare status and number of livestock. The exporter must also ensure sufficient livestock services are maintained throughout the voyage and on-board care and management of the livestock is adequate to maintain animal health and welfare. To achieve this, the Standards prescribe that the exporter must engage an accredited stockperson and, when required, an accredited veterinarian.

The exporter is also responsible for ensuring that livestock are loaded in a manner that prevents injury and minimises stress by providing competent animal handlers and suitable loading facilities.

In addition, the exporter must ensure that stocking densities meet all relevant requirements and that there is adequate provisioning of the vessel before departure, including feed, water and veterinary supplies.

The exporter must be able to demonstrate that the preparation and loading of livestock at the port of embarkation have been conducted in accordance with the approved loading plan, and any importing country requirements, and in compliance with the Standards and any requirements of the relevant state, territory and local governments.

The Standards prescribe that the outcome of each consignment must be reported by the exporter to the Australian Government. Data reported for each consignment must be accurate and reliable and include the health, welfare and mortalities of livestock during the export voyage, conditions on board, epidemiological data and other relevant information. The Minister of Agriculture and Water Resources must report to both houses of parliament every six months on the outcomes of each livestock voyage by sea, based on information reported to the Australian Maritime Safety Authority by the master of the live export vessel.

3.1.3 Comparison NFAS and ASEL

Table one in Appendix A shows the comparison in detail of the Australian Standards for the Export of Livestock (ASEL) with those relevant Standards in the National Feedlot Accreditation Scheme (NFAS).

The ASEL have six categories of Standards, each with guiding principles and required outcomes. Each of the six categories has a series of underpinning Standards that are required to be met by the exporter. The text below is drawn directly from the ASEL document (in black), and relevant references or comments in relation to the NFAS are included below each Standard (in blue):

3.1.3.1 Standard 1 - Sourcing and on-farm preparation of livestock

1.1 Guiding principle

Sourcing of appropriately prepared livestock that are fit to travel is critical to successful health and welfare outcomes during export.

1.2 Required outcomes

(1) Livestock sourced for export must meet any requirement under a law of a state or territory relating to the sourcing of livestock. State and territory governments are responsible for ensuring that these requirements are met.

(2) Livestock sourced for export must meet these Standards and importing country requirements.

(3) Livestock sourced for export that become sick or injured during on-farm preparation must be excluded from export, and arrangements must be made for their prompt and humane handling and care.

(4) AQIS must be satisfied that these Standards and importing country requirements are met before issuing a health certificate and export permit.

1.3 Standards

S1.1 Livestock sourced for export must meet any relevant animal health and welfare requirements under state and territory legislation and relevant requirements under national Model Codes of Practice for the Welfare of Animals.

NFAS: The Scheme references the Livestock Production Assurance (LPA) Standards, Australian Animal Welfare Standards and Guidelines for Cattle and the Animal Welfare Standards and Guidelines – Land Transport of Livestock (as amended or superseded).

The Scheme refers to Elements FS2 (Safe and Responsible Animal Treatment), FS4 (Preparation for Dispatch of Livestock), LM1 (Livestock Identification), LM2 (Livestock Husbandry and Presentation), LM3 (Livestock Transport) and LM4 (Animal Welfare) for cattle destined for export to meet legislated animal health and welfare requirements.

The Scheme also references “A national guide to the selection of animals fit to transport (Revised edition 2012)”.

S1.2 Livestock sourced for export must meet importing country requirements.

> **NFAS**: Cattle sourced and produced for the export market must meet the AUS-MEAT, LPA, Safemeat and NFAS requirements. All grain fed cattle must also have satisfied the minimum standards for grain fed beef.

S1.3 Livestock sourced for export must be:

> (a) identified to the property of source;
>
> (b) accompanied by a correctly completed and signed declaration as to the identification of the livestock and property of source; and
>
> (c) individually identified where testing is required during preparation.
>
> **NFAS**: The Scheme requires correctly completed livestock vendor declarations for all incoming consignments of cattle, and LPA and NFAS declarations for all outgoing cattle. All cattle must be individually identified and recorded on the National Livestock Identification System (NLIS).

S1.4 Livestock sourced for export and intended for human consumption must comply with Australian food safety requirements, including standards for chemical residues or environmental contaminants.

> **NFAS**: Cattle sourced and produced for the export market must meet the AUS-MEAT, LPA, Safemeat and NFAS requirements. All grain fed cattle must also have satisfied the minimum standards for grain fed beef. The elements under Food Safety in the Standards provide for compliance.

S1.5 Fat *Bos taurus* cattle must not be sourced for export from or through the ports of Darwin, Weipa or Wyndham from 1 October to 31 December (inclusive).

(Note: "Fat" means having a body condition score as per description table)

> **NFAS**: Not applicable.

S1.5A *Bos taurus* cattle bred in an area of Australia south of latitude 26° south must not be sourced for export to the Middle East from May to October unless an agreed livestock heat stress risk assessment indicates that the risk is manageable. [less than a 2% risk of 5% mortality]

> **NFAS**: Not applicable.

S1.6 Sheep must not be sourced for export from or through the ports of Darwin, Weipa or Wyndham from 1 November to 31 May in the following year (inclusive).

> **NFAS**: Not applicable.

S1.7 Livestock sourced for export must be fit to enter the export chain. Livestock sourced for export must be inspected on-farm and any animal showing signs consistent with the rejection criteria below, or any other condition that could cause the animal's health and welfare to decline during transport or export preparation, must not be prepared for export.

NFAS: Cattle sourced and produced for the export market must meet the AUS-MEAT, LPA, Safemeat and NFAS requirements. All grain fed cattle must also have satisfied the minimum standards for grain fed beef. The Scheme refers to Elements FS2 (Safe and Responsible Animal Treatment), FS4 (Preparation for Dispatch of Livestock), FS5 (Livestock Transactions and Movements), LM1 (Livestock Identification), LM2 (Livestock Husbandry and Presentation), LM3 (Livestock Transport) and LM4 (Animal Welfare) and LM6 (Biosecurity) to ensure cattle are fir for purpose in the export chain.

S1.8 Livestock must not be sourced for export if they are in an emaciated or overfat body condition. That is:

(a) cattle and buffalo must be from condition scores 2 to 6 (inclusive) on a scale of 1 to 7;

(b) pregnant cattle must be from condition scores 3 to 6 (inclusive) on a scale of 1 to 7;

(c) sheep, goats and deer must be from condition scores 2 to 4 (inclusive) on a scale of 1 to 5; and

(d) camels must be from condition scores 2 to 4 (inclusive) on a scale of 1 - 5.

(e) alpacas must be from condition scores 2 to 4 on a scale of 1 to 5.

NFAS: Not applicable.

S1.9 Cattle and buffalo sourced for export as slaughter and feeder animals:

(a) must have been weaned at least 14 days before sourcing for export;

(b) must have an individual liveweight of more than 200 kg and less than 650 kg or, if outside these weights, have written prior approval from the relevant Australian Government agency;

(c) must have been determined not to be pregnant, using the following criteria:

(i) have been pregnancy tested during the 30 day period before export and certified in writing as not detectably pregnant by the

registered veterinarian or competent pregnancy tester who pregnancy tested the cattle or buffalo; or

(ii) be accompanied by a vendor declaration that certifies that they have been spayed using the Willis dropped ovary technique not less than 30 days before export; or

(iii) be accompanied by a vendor declaration that certifies that they have been spayed not less than 280 days before export.

For this standard, a ***competent pregnancy tester***, for a pregnancy test conducted in:

(d) the Northern Territory — is a person accredited by the relevant agency of the Northern Territory to conduct pregnancy tests; and

(e) Western Australia — is a person accredited by the relevant agency of Western Australia to conduct pregnancy tests.

NFAS: With reference to S1.9(c), Under Element LM4 (Animal Welfare) in the Standards, feedlots that feed heifers must have a documented Pregnancy and Calving Management Plan. This is verified by AUS-MEAT at the annual audit. However there is minimal verification of a feedlots adoption or compliance with the plan. Heifers entering a feedlot in the Scheme are not required to be pregnancy tested, either prior to delivery or at induction.

Recommendation 1: Industry could consider a "No calves" policy within the Scheme.

The word "calving" could be removed from the required plan heading to read "Pregnancy Management Plan" to infer in the Standards that heifers calving in the feedlot is not acceptable.

S.10 Cattle and buffalo must only be sourced for export for breeding if they:

(a) have been weaned at least 14 days before sourcing for export;

(b) have an individual liveweight of more than 200 kg and less than 650 kg or, if outside these weights, have written prior approval from the relevant Australian Government agency;

(c) have been pregnancy tested within the 30 day period before export and certified in writing as no more than a maximum of 190 days pregnant for cattle and 220 days pregnant for buffalo at the scheduled date of departure. The certification must be provided by a veterinarian who is a member of the Australian Cattle Veterinarians and an accredited tester under the National Cattle Pregnancy Diagnosis Scheme and who pregnancy tested the cattle or buffalo.

For journeys of less than 10 days a declaration must be made in writing by a registered veterinarian who can attest to demonstrable current experience and who pregnancy tested the cattle or buffalo.

If the veterinarian:

(i) is accredited under the National Cattle Pregnancy Diagnosis Scheme; and

(ii) determines that cattle or buffalo are too small to be manually palpated safely; the veterinarian may base this certification on assessment of the animals by a method other than manual palpation.

NFAS: Not applicable

S1.11 Ewes with a weight of 40 kg or more and all does (goats) must only be sourced for export as slaughter and feeder animals if they have been pregnancy tested by ultrasound within 30 days of export and certified not to be pregnant, by written declaration, by a person able to demonstrate a suitable level of experience and skill.

(a) all female Damara sheep breeds sourced as feeder or slaughter must be pregnancy tested within 30 days of export by ultrasound and certified not to be pregnant, by written declaration, by a person able to demonstrate a suitable level of experience and skill.

NFAS: Not applicable

S1.12 Unless approved by the relevant Australian Government agency, lambs and goat kids must only be sourced for export if:

(a) they have been weaned at least 14 days before sourcing for export;

(b) lambs have a liveweight of more than 28 kg; and

(c) goat kids have a liveweight of more than 22 kg.

NFAS: Not applicable

S1.13 Sheep and goats sourced for breeding must only be sourced for export if they have been pregnancy tested using ultrasound foetal measurement within 30 days of export and certified, by written declaration, by a person able to demonstrate a suitable level of experience and skill, to be not more than a maximum of 100 days pregnant at the scheduled date of departure.

NFAS: Not applicable

S1.13A Alpacas and llamas sourced for breeding must only be sourced for export if they have been pregnancy tested using ultrasound within 30 days of export and certified, by written declaration, by a registered veterinarian with demonstrable current experience in camelid pregnancy diagnosis, to be not more than a maximum of 228 +/- 2 days pregnant at the scheduled date of departure.

NFAS: Not applicable

S1.14 Deer sourced as slaughter and feeder animals must only be sourced for export if they have been pregnancy tested by ultrasound within 30 days of export and certified, by written declaration, by a person able to demonstrate a suitable level of experience and skill, not to be pregnant.

NFAS: Not applicable

S1.14A Deer sourced for breeding must only be sourced for export if they have been pregnancy tested by ultrasound foetal measurement within 30 days of export and certified, by written declaration, by a person able to demonstrate a suitable level of experience and skill, to be not more than a maximum of 140 days pregnant at the scheduled date of departure.

NFAS: Not applicable

S1.15 Horned cattle and buffalo must only be sourced for export as slaughter and feeder animals:

(a) for cattle, if the horns are 12 cm or less in length and tipped (blunt);

(b) for buffalo, if the horns are no longer than the spread of the ears and are blunt; and

(c) if de-horned, wounds are healed.

Otherwise, horned cattle and buffalo must only be sourced for export with the approval of the relevant Australian Government agency.

NFAS: With reference to S.15 (a) the Scheme references the Australian Animal Welfare Standards and Guidelines:

- "S6.4 A person in charge must ensure the use of appropriate pain relief when dehorning cattle"
- "S6.6 A person must use appropriate tools and methods to dehorn cattle and disbud calves."

Elements LM2 (Livestock Husbandry and Presentation) and LM3 (Livestock Transport) seek outcomes in the prevention or minimisation of risk of injury, bruising, hide or skin damage during the feedlot phase and transport for processing.

S1.16 Horned sheep or rams must only be sourced for export as slaughter and feeder animals if the horns:

(a) are not turned in so as to cause damage to the head or eyes;

(b) would not endanger other animals during transport;

(c) would not restrict access to feed or water during transport; and

(d) are one full curl or less, or are tipped back to one full curl or less.

Otherwise, horned sheep or rams must only be sourced for export with the approval of the relevant Australian Government agency.

NFAS: Not applicable

S1.17 Horned goats must only be sourced for export as slaughter and feeder animals if the horns:

(a) are not turned in so as to cause damage to the head or eyes;

(b) would not endanger other animals during transport;

(c) would not restrict access to feed or water during transport; and

(d) Are no more than 15 cm long and blunt or are no more than 22 cm long with tips no more than 20 cm apart.

Otherwise, horned goats must only be sourced for export with the approval of the relevant Australian Government agency.

NFAS: Not applicable

S1.19 Sheep must only be sourced for export if they:

(a) have wool not more than 25 mm in length, unless approved by the relevant Australian Government agency based on an agreed heat stress risk assessment model; and

(b) are 10 days or more off shears; or

(c) are to be shorn during the 10 day period before export, in which case they must be accommodated in sheds on the registered premises.

NFAS: Not applicable

S1.20 Goats must not be sourced for export unless they have become conditioned to being handled and to eating and drinking from troughs for a minimum of 21 days before transfer to registered premises.

NFAS: Not applicable

S1.21 Deer must only be sourced for export if they:

(a) are at least 6 months old;

(b) have been weaned for at least 2 months before sourcing for export; and

(c) have become conditioned to being handled and to eating and drinking from troughs for a minimum of 14 days.

NFAS: Not applicable

S1.22 Male deer must only be sourced for export if:

(a) they have had hard antler removed leaving only buttons;

(b) they are not in the first week after velveting;

(c) velveting wounds have healed; and

(d) they are not in rut, if they are over 1 year of age.

NFAS: Not applicable

S1.23 Camels, including wild-caught camels, must only be sourced for export if they:

(a) have become conditioned to being handled and to eating and drinking from troughs for a minimum of 14 days; and

(b) meet transport and shipping height requirements of the intended transport (ie camels standing in their natural position do not touch any overhead structures).

Bull camels that are more than 5 years of age and are in rut must not be sourced for export in the period 1 May and 30 September.

NFAS: Not applicable

S1.25 A record of all vaccines, veterinary medicines and agricultural chemicals used to vaccinate or treat livestock sourced for export must be kept for at least 2 years after the date of export.

NFAS: Element FS2 (Safe and Responsible Animal Treatment) addresses the need for systems "to ensure that animal treatments are stored and administered in a safe and responsible manner to minimise the risk of chemical residues and physical hazards in livestock intended for human consumption".

ALFA in conjunction with MLA has developed the Antimicrobial Stewardship Guidelines for the Australian Feedlot Industry. These guidelines are being adopted by industry after their release in 2018 and provide a continuous improvement framework that will help lot feeders understand and ensure appropriate use of antimicrobials and therefore reduce the risk of antimicrobial resistance. The guidelines are aligned with Australia's First National Antimicrobial Resistance Strategy (Australian Government 2015).

The Guidelines address five stewardship principles which are collectively termed the '5Rs' - responsibility, review, reduce, refine and replace. These principles will help guide lot feeders toward best practice management use of antimicrobials and prevent overuse.

Recommendation 2: Industry could consider the inclusion of the Antimicrobial Stewardship Guidelines in the Scheme.

AUS-MEAT could verify at the annual audit that feedlots have a documented strategy and implementation plan that address the five principles in the Guidelines.

S1.26 Female livestock must not be treated with a prostaglandin drug within 14 days of export, and not during the 60 day period before export unless they have been pregnancy tested immediately before prostaglandin treatment and declared to be in the first trimester of pregnancy or not detectably pregnant.

NFAS: Element LM4 (Animal Welfare) in the Standards stipulates feedlots that feed heifers must have a documented Pregnancy and Calving Management Plan.

S1.27 Livestock sourced for export that become sick or injured during on-farm preparation must be excluded from export, and arrangements must be made for their prompt and humane handling and care.

NFAS: Element FS4 (Preparation for Dispatch of Livestock) states that "systems have been implemented to ensure that the selected livestock are fit for transport and that the risk of stress and contamination of livestock during assembly and transport is minimised".

3.1.3.2 Standard 2 - Land transport of livestock

2.1 Guiding principle

Land transport is planned and is undertaken on a competently operated and suitable vehicle, with the livestock being handled in a manner that prevents injury and minimises stress throughout the journey.

2.2 Required outcomes

(1) Only livestock fit to travel are presented for loading.

(2) Livestock are loaded in a manner that prevents injury and minimises stress.

(3) Transport of livestock is undertaken in a manner that meets these Standards, any requirements of a state or territory relating to the transport of livestock, and importing country requirements.

(4) Livestock are unloaded in a manner that prevents injury and minimises stress.

2.3 Standards

S2.1 The land transport of livestock for export must meet any relevant animal health and welfare and road transport requirements under state and territory legislation and relevant requirements under national Model Codes of Practice for the Welfare of Animals.

> **NFAS**: The Scheme references the Livestock Production Assurance (LPA) Standards, Australian Animal Welfare Standards and Guidelines for Cattle and the Animal Welfare Standards and Guidelines – Land Transport of Livestock (as amended or superseded).
>
> The Scheme refers to Elements FS2 (Safe and Responsible Animal Treatment), FS4 (Preparation for Dispatch of Livestock), LM1 (Livestock Identification), LM2 (Livestock Husbandry and Presentation), LM3 (Livestock Transport) and LM4 (Animal Welfare) for cattle destined for export to meet legislated animal health and welfare requirements.
>
> The Scheme also references "A national guide to the selection of animals fit to transport (Revised edition 2012)". This guide is currently under review.

S2.2 The land transport must meet any importing country requirements for the land transport phase in the export chain.

> **NFAS**: Not applicable

S2.3 The land transport must be undertaken in accordance with a travel plan. This travel plan must be completed for all interstate journeys greater than 2 hours and journeys of more than 8 hours duration.

Each plan must address the following:

(a) species, class, condition and number of livestock;

(b) transport vehicles;

(c) loading densities and penning requirements;

(d) duration of the journey, including rest periods for driver and livestock;

(e) the method of loading and unloading of the livestock;

(f) inspection of livestock before loading;

(g) the feed and water requirements and curfew times applicable to the livestock under this Standard, including to livestock sourced from saleyards;

(h) the expected weather conditions before and during transport;

(i) the route and the types of roads traversed;

(k) completion of vendor declarations or waybill regarding the property of source and the time of departure; and

(l) contingency plans for managing transport breakdown, accidents, escapes, deaths, downers and injuries.

NFAS: The Scheme is not prescriptive in relation to land transport in accordance with a travel plan.

The Scheme refers to Elements FS4 (Preparation for Dispatch of Livestock), LM2 (Livestock Husbandry and Presentation), LM3 (Livestock Transport) and LM4 (Animal Welfare) for cattle being transported.

Elements QM8 (Risk Management and Contingency Planning) and LM5 (Excessive Heat Load) also address the need for contingency planning to address the unexpected and seasonal weather conditions.

S2.4 Livestock must be prepared for land transportation from the property of source in line with requirements outlined in Appendix 2.3.

NFAS: The Scheme refers to the Animal Welfare Standards and Guidelines – Land Transport of Livestock (as amended or superseded).

S2.8 The following feed and water curfews must be observed for livestock before their loading for land transport from the property of source:

(b) livestock on green feed must be held off green feed (but may be given access to dry feed) for at least 12 hours; and

(c) livestock may be held off water (but may be given access to dry feed) for up to 12 hours.

NFAS: The Scheme refers to the Animal Welfare Standards and Guidelines – Land Transport of Livestock (as amended or superseded) and the Australian Animal Welfare Standards and Guidelines for Cattle.

The Scheme is not prescriptive in relation to feed and water curfews prior to loading out of the feedlot.

Feedlots apply specific curfew criteria when sourcing or purchasing cattle depending on the property distance from the feedlot and the likely duration time of travel.

S2.9 Livestock must not be deprived of water beyond the limits specified for each species and class of animal in Appendix 2.1.

NFAS: The Scheme refers to the Animal Welfare Standards and Guidelines – Land Transport of Livestock (as amended or superseded) and the Australian Animal Welfare Standards and Guidelines for Cattle.

S2.10 When livestock are loaded for transport by land:

(a) animals of different species must not be mixed in a single pen;

(b) classes of animals of the same species must not be mixed;

(c) young animals must be separated from older animals;

(d) animals of a dissimilar size must be separated; and

(e) Cattle lacking horns may be mixed with cattle with horns up to 12cm in length and tipped (blunt);

(f) Sheep lacking horns may be mixed with sheep with horns up to one curl in length and of such a shape as not to cause eye damage;

(g) Goats lacking horns may be mixed with goats with horns up to 22 cm in length.

NFAS: The Scheme refers to the Animal Welfare Standards and Guidelines – Land Transport of Livestock (as amended or superseded) and the Australian Animal Welfare Standards and Guidelines for Cattle.

Elements LM2 (Livestock Husbandry and Presentation), LM3 (Livestock Transport) and LM4 (Animal Welfare) address the appropriate outcomes required for the land transport of cattle away from the feedlot.

S2.11 Livestock must be inspected prior to loading and any animal showing signs consistent with the rejection criteria in Standard S1.7 of *Standard 1 –Sourcing and on farm preparation of livestock*, or any other condition that could cause the animal's health and welfare to decline during transport or export preparation, must not be transported.

NFAS: The Scheme refers to the Animal Welfare Standards and Guidelines – Land Transport of Livestock (as amended or superseded) and the Australian Animal Welfare Standards and Guidelines for Cattle.

The Scheme also references "A national guide to the selection of animals fit to transport (Revised edition 2012)". This guide is currently under review.

The Scheme is not prescriptive in relation to land transport in accordance with a travel plan.

S2.12 Livestock must not be loaded until the travel plan is completed. The following

documentation must accompany each load of the consignment:

(b) a signed declaration as to the identification of the livestock and the property of source; and

(d) a journey log that commences at loading, is maintained through the journey and finalised on completion of unloading, and is used to record the actual journey details.

The livestock transport driver must be aware of the travel plan prior to commencement of the journey.

The documentation relating to each consignment must be kept for at least 2 years after the date of export.

NFAS: The Scheme is not prescriptive in relation to land transport in accordance with a travel plan.

The Scheme refers to the Animal Welfare Standards and Guidelines – Land Transport of Livestock (as amended or superseded) and the Australian Animal Welfare Standards and Guidelines for Cattle.

The Scheme refers to Elements FS4 (Preparation for Dispatch of Livestock), LM2 (Livestock Husbandry and Presentation), LM3 (Livestock Transport) and LM4 (Animal Welfare) for cattle being transported.

S2.13 Livestock must be loaded in a manner that prevents injury and minimises stress. In particular:

(a) the use of electric prods must be restricted to the minimum necessary to assist loading, and be in accordance with state/territory legislation. Electric prods must not be applied to the face or ano-genital area. Prods are not to be used for camelids or deer;

(b) where animals need to be lifted to assist loading, they must not be lifted by the skin or wool.

(c) 'metallic rattles' can be used for livestock to encourage movement in response to sound and, if necessary, polypipe may be used humanely to persuade animals to move; and

(d) well-trained dogs may be used to help with the loading of livestock (other than camelids and deer). Dogs must be muzzled. The number of dogs used should be the minimum necessary to complete the task.

NFAS: The Scheme refers to the Animal Welfare Standards and Guidelines – Land Transport of Livestock (as amended or superseded) and the Australian Animal Welfare Standards and Guidelines for Cattle.

The Scheme refers to Elements FS4 (Preparation for Dispatch of Livestock), LM2 (Livestock Husbandry and Presentation), LM3 (Livestock Transport) and LM4 (Animal Welfare) for cattle being transported.

S2.14 Loading density and penning arrangements for land transport must conform to stocking densities and penning arrangements as given in Appendix 2.2.

NFAS: The Scheme refers to the Animal Welfare Standards and Guidelines – Land Transport of Livestock (as amended or superseded) and the Australian Animal Welfare Standards and Guidelines for Cattle.

The Scheme refers to Elements FS4 (Preparation for Dispatch of Livestock), LM2 (Livestock Husbandry and Presentation), LM3 (Livestock Transport) and LM4 (Animal Welfare) for cattle being transported.

The Standards provide guidance in Appendix 8 for appropriate loading densities for cattle. However this table is not referenced under any elements in the Standards (see recommendation 16).

S2.15 At loading for land transport, the person responsible for the land transport vehicle must assume responsibility for the livestock.

NFAS: The Scheme refers to the Animal Welfare Standards and Guidelines – Land Transport of Livestock (as amended or superseded) and the Australian Animal Welfare Standards and Guidelines for Cattle.

The Scheme refers to Elements LM3 (Livestock Transport) and LM4 (Animal Welfare) for cattle being transported.

S2.16 Livestock must be checked to ensure that they are evenly distributed and remain fit to travel:

(a) immediately before departure;

(b) within 30–60 minutes of commencement of the journey;

(c) at least every 2–3 hours as road conditions warrant; and

(d) immediately before departure after any stop.

NFAS: The Scheme refers to the Animal Welfare Standards and Guidelines – Land Transport of Livestock (as amended or superseded) and the Australian Animal Welfare Standards and Guidelines for Cattle.

Although the Standards are not prescriptive in relation to checking times for livestock being transported, the following Elements LM3 (Livestock Transport) and LM4 (Animal Welfare) provide for cattle being transported.

S2.17 Working dogs must not be transported in the same pen as livestock.

NFAS: The Scheme refers to the Animal Welfare Standards and Guidelines – Land Transport of Livestock (as amended or superseded) and the Australian Animal Welfare Standards and Guidelines for Cattle.

The Scheme refers to Element FS4 (Preparation for Dispatch of Livestock) for cattle being transported.

S2.18 Livestock must be unloaded and rested in suitable facilities and offered food and water at appropriate intervals during the journey, as specified in Appendix 2.1 and in accordance with state/territory legislation.

NFAS: The Scheme refers to the Animal Welfare Standards and Guidelines – Land Transport of Livestock (as amended or superseded) and the Australian Animal Welfare Standards and Guidelines for Cattle.

The Scheme refers to Elements LM3 (Livestock Transport) and LM4 (Animal Welfare) for cattle being transported.

S2.19 At unloading, livestock become the responsibility of the person designated with responsibility for the livestock at the registered premises. That person must be notified of any aspect of the journey that might affect the future welfare of the livestock.

NFAS: The Scheme refers to the Animal Welfare Standards and Guidelines – Land Transport of Livestock (as amended or superseded) and the Australian Animal Welfare Standards and Guidelines for Cattle.

The Scheme refers to Elements LM3 (Livestock Transport) and LM4 (Animal Welfare) for cattle being transported.

Element LM6 (Biosecurity) requires feedlots to formulate a Biosecurity Management Plan which incorporates the “inspection on arrival at the feedlot” of all cattle to “assess the animal health status and ensure that a record of inspection is maintained”.

Industry certified Animal Welfare officer training also provides additional competencies for people assessing cattle on arrival at the feedlot.

S2.20 Livestock that are distressed or injured at unloading must be given immediate assistance.

If euthanasia is necessary, it must be carried out humanely.

NFAS: The Scheme refers to the Animal Welfare Standards and Guidelines – Land Transport of Livestock (as amended or superseded) and the Australian Animal Welfare Standards and Guidelines for Cattle.

The Scheme refers to Elements LM3 (Livestock Transport) and LM4 (Animal Welfare) for cattle being transported.

Element LM6 (Biosecurity) requires feedlots to formulate a Biosecurity Management Plan which incorporates the “inspection on arrival at the feedlot” of all cattle to “assess the animal health status and ensure that a record of inspection is maintained”.

Industry certified Animal Welfare officer training also provides additional competencies for people assessing cattle on arrival at the feedlot.

Industry has also developed guidelines for euthanasia of cattle – "Guidelines for managers and supervisors on criteria and methods of euthanasia for compromised cattle in feedlots".

Recommendation 3: Industry could consider a verification process during the annual audit by AUS-MEAT that ensures feedlots have a copy of the reference document "Guidelines for managers and supervisors on criteria and methods of euthanasia for compromised cattle in feedlots".

S2.21 Livestock must be unloaded into registered premises to rest and adapt for their export journey if the duration of the land transport journey is more than 14 hours.

NFAS: The Scheme refers to the Animal Welfare Standards and Guidelines – Land Transport of Livestock (as amended or superseded) and the Australian Animal Welfare Standards and Guidelines for Cattle.

The Scheme refers to Elements LM3 (Livestock Transport) and LM4 (Animal Welfare) for cattle being transported.

S2.22 Livestock must be unloaded into the registered premises by competent stock handlers in a manner that prevents injury and minimises stress. Facilities must be designed, constructed and maintained to enable safe and efficient unloading of livestock.

NFAS: The Scheme refers to the Animal Welfare Standards and Guidelines – Land Transport of Livestock (as amended or superseded) and the Australian Animal Welfare Standards and Guidelines for Cattle.

The Scheme refers to Elements FS4 (Preparation for Dispatch of Livestock), LM3 (Livestock Transport) and LM4 (Animal Welfare) for cattle being transported to or away from the feedlot.

S2.24 All relevant standards for the land transport of livestock for export relating to loading, handling during transport and unloading must also be applied to transport from the registered premises to the port of export.

NFAS: The Scheme refers to the Animal Welfare Standards and Guidelines – Land Transport of Livestock (as amended or superseded), the Australian Animal Welfare Standards and Guidelines for Cattle and the industry guideline document "Is it fit to load?".

The Scheme refers to Elements LM3 (Livestock Transport) and LM4 (Animal Welfare) for cattle being transported to or away from the feedlot.

Appendix 2.1 Maximum water deprivation times and rest periods for livestock

2.1.1 Water deprivation times generally

(1) The time limit for any given journey by livestock and the requirement for rest periods are primarily determined by the maximum time that animals can be deprived of access to adequate water of a quality to maintain good health and welfare. This is termed the ***water deprivation time***.

(2) The water deprivation time is the total continuous period of water deprivation, starting when stock last had access to water, and must include:

(a) time off water during mustering;

(b) time off water when yarded after mustering;

(c) curfew or 'empty out' time (see below);

(d) all time on the vehicle, whether moving or stationary; and

(e) any time without water after unloading, such as at a saleyard, spelling centre or registered premises.

(3) ***Curfew*** or ***empty out*** time is the deliberate and variable period of water and/or 'green' fresh feed deprivation intended to minimise faecal and urine spoilage of the transport vehicle, subsequent problems with animals slipping, and contamination of the environment.

(4) The maximum water deprivation times and rest period requirements are described below.

(5) If animals of any species become dehydrated, precautions need to be taken to ensure that they do not gorge themselves when given access to water.

2.1.2 Cattle

(1) The *Australian Model Code of Practice for the Land Transportation of Cattle* gives water deprivation times for different classes of cattle. Live export by sea involves mature stock weighing at least 200 kg.

Maximum water deprivation times for cattle:

	Normal time	**Extended time**
Mature stock	36 hours	48 hours

Extended water deprivation times

(2) Extended water deprivation times are permissible if and only if:

(a) animals are travelling well and not showing signs of fatigue, thirst or distress;

(b) adverse weather conditions are neither prevailing nor predicted;

(c) the extension will allow the journey to be completed within a 48 hour period of water deprivation, and the animals are to be rested with water and feed for at least 18 hours immediately upon arrival at the registered premises; and

(d) the journey's duration, excluding time off water before loading onto the transport vehicle, is less than 14 hours.

Rest periods

(3) Cattle older than 6 months must be spelled for 12 to 24 hours after each 36 hours water deprivation time for a normal journey, or for 36 hours after journeys of 36 to 48 hours.

3.1.3.3 Standard 3 - Management of livestock in registered premises

3.1 Guiding principle

Livestock are assembled at registered premises, where the husbandry and management practices ensure that the livestock are adequately prepared for the export voyage.

3.2 Required outcomes

(1) Facilities at registered premises are appropriate for the type and species of livestock to be held.

(2) The health and welfare needs of the livestock are appropriately catered for in a secure environment.

(3) Livestock leaving the premises are fit for the export voyage and meet importing country requirements.

(4) Livestock rejected for export are managed humanely.

3.3 Standards

S3.0 The location of the registered premises, used for inspection for 'leave for loading', must not be more than 8 hours journey time from the port of embarkation, with the exception of camels for export through northern ports, unless approved by a relevant Australian Government agency.

NFAS: Not applicable

S3.1 The operator of registered premises must employ sufficient appropriately trained staff for the effective day-to-day operation of the premises and management of the livestock.

NFAS: Element QM1 (Training) in the Standards requires that "staff are adequately trained to ensure that they have the appropriate skills and knowledge to competently perform the duties required of them by the NFAS Standards".

S3.2 Livestock handling facilities and sheds at registered premises must comply with the following:

(a) Sheds must be constructed with sufficient drainage and ventilation to ensure that the shed is free draining.

(b) Sheds with slatted or mesh floors must be designed and maintained to prevent entrapment of feet.

(c) Livestock handling facilities must be constructed to handle the number of livestock (ie the number of stock at the premises, whatever that may be, depending on the consignment size) with a minimum of stress and injury.

(d) Floors of yards, sheds, pens and loading ramps must have non-slip surfaces.

NFAS: Elements FS4 (Preparation for Dispatch of Livestock), LM2 (Livestock Husbandry and Presentation), LM3 (Livestock Transport) and LM4 (Animal Welfare) provide guidance to ensuring handling facilities are constructed and maintained to handle livestock with a minimum of stress and injury.

Accredited feedlots are required to undertake internal audits and animal welfare audits at least six monthly. This process is verified at the annual audit by AUS-MEAT.

S3.3 Isolation of livestock:

(a) Where a period of pre-export quarantine or isolation is required by the importing country, animals forming the consignment must at all times be physically isolated from all other animals (whether for an alternative export market or domestic use) to prevent contact.

(b) Where handling facilities used for loading, holding, treating or inspecting livestock (including roadway and lanes) are to be used for both domestic and export livestock (including livestock of differing export status), the operator of the premises must have procedures in place to ensure that:

(i) handling facilities are not used simultaneously by livestock of differing pre-export quarantine or isolation status;

(ii) a minimum livestock traffic separation of 2 m is maintained at all times, or livestock are separated by a physical barrier such as a fenced road or lane or a fully fenced empty paddock, unless specified otherwise by the importing country; and

(iii) handling facilities and equipment used by different consignments of animals are managed in accordance with the pre-export quarantine or isolation requirements of each importing country.

NFAS: The Scheme refers to Elements FS4 (Preparation for Dispatch of Livestock), FS5 (Livestock Transactions and Movements), LM1 (Livestock Identification), LM2 (Livestock Husbandry and Presentation), LM3 (Livestock Transport) and LM4 (Animal Welfare) for cattle requiring separation.

Element LM6 (Biosecurity) requires feedlots to formulate a Biosecurity Management Plan which incorporates the “inspection on arrival at the feedlot” of all cattle to “assess the animal health status and ensure that a record of inspection is maintained”. This element also refers to any required isolation of livestock on the feedlot.

S3.4 To control drainage, surface water, groundwater and effluent run-off, the premises must be located or constructed in such a manner that:

(a) surface water and livestock effluent are directed away from laneways, livestock handling areas, livestock confinement areas and feed storage areas;

(b) the livestock confinement area of the registered premises is free draining and remains firm under foot; and

(c) the surfaces around feeders and water troughs are evenly graded and compacted to form a hard, durable surface that readily sheds surface water.

NFAS: The Standards reference under Module – Environmental Management the Elements EM1 (Environmental Management), EM2 (Surface Water), EM3 (Ground water), EM4 (Community) and EM5 (Ecology).

S3.5 The registered premises must be either constructed or located in such a manner as to provide animals with protection from extreme climatic conditions by means of:

(a) shade;

(b) windbreaks;

(c) shelter; or

(d) other means approved by the registration authority.

(Note: Specific requirements may vary according to the type of registered premises, taking into account the species, class and maximum number of animals to be held at the premises and the types of operations to be carried out).

NFAS: The Standards reference under Module – Environmental Management the Element EM1 (Environmental Management), including the requirements of the National Beef Cattle Feedlot Environmental Code of Practice. Feedlots must also meet the requirements and regulations of the relevant authorities.

The Standards do not specify premises or activities in relation to shade, windbreaks or shelter to provide cattle with protection from extreme climatic conditions.

Element QM8 (Risk Assessment and Contingency Planning) provides for feedlots to have "systems in place to identify and mitigate the impact of potential emergency situations".

S3.6 Fencing at registered premises must:

(a) be appropriate to hold livestock and to prevent the entry of livestock;

(b) be maintained in a good state of repair;

(c) be inspected before the entry of each consignment and twice a week while livestock are in the registered premises; and

(d) be consistent with the importing country requirements.

NFAS: Elements FS4 (Preparation for Dispatch of Livestock), LM2 (Livestock Husbandry and Presentation), LM3 (Livestock Transport) and LM4 (Animal Welfare) provide guidance

to ensuring handling facilities are constructed and maintained to handle livestock with a minimum of stress and injury.

Accredited feedlots are required to undertake internal audits and animal welfare audits at least six monthly. This process is verified at the annual audit by AUS-MEAT.

S3.7 To ensure adequate supply of feed and water:

(a) where feeders, self-feeders and water troughs are used, they must be of a design that allows for complete cleaning of all surfaces, prevents spoilage of feed during inclement weather, and minimises faecal contamination and injuries

(b) all livestock feed for use at the registered premises must be stored in a manner that maintains the integrity and nutritional value of the feed, and protects it from weather, pests and external contaminants (including chemical spray drift) and from direct access by animals

(c) where feeders and self-feeders are used, the feed trough allowance for sheep and goats held in paddocks at the registered premises is to be calculated on a paddock-by-paddock basis and must be:

(i) for ration feeding, no less than 5 cm of feed trough per head;

(ii) for ad *libitum* feeding, no less than 3 cm of feed trough per head;

(iii) during any or all of May, June, July, August, September and October feeding must occur from fully sheltered feed troughs, with the exception of areas of Australia north of latitude 26° south.

(e) the quantity of feed available should meet at least minimum feed requirements, which are:

(i) cattle/buffalo — 2.5% of their bodyweight, of a quality feed able to meet daily maintenance requirements;

(ii) sheep and goats — 3% of their bodyweight per day for sheep younger than 4 tooth and 2% of their bodyweight per day for 4 tooth or older, of a quality feed able to meet daily maintenance requirements; and

(iii) deer — 2% of their bodyweight per day of a quality feed able to meet daily maintenance requirements.

(f) all livestock in the registered premises must have access to drinking water at all times (unless under curfew)

(g) water troughs must be:

(i) positioned apart from hay and feed sources to prevent fouling; and

(ii) kept clean.

(h) the water quality must be suitable for the livestock and there must be sufficient backup storage or a contingency plan to ensure continuity of supply at peak demand for 2 days.

NFAS: Elements FS3 (Fodder Crop, Grain and Pasture Treatments and Stock Foods), FS4 (Preparation for Dispatch of Livestock), LM2 (Livestock Husbandry and Presentation), LM3 (Livestock Transport) and LM4 (Animal Welfare) provide guidance to ensuring handling facilities are constructed and maintained to handle livestock with a minimum of stress and injury.

Accredited feedlots are required to undertake internal audits and animal welfare audits at least six monthly. This process is verified at the annual audit by AUS-MEAT.

Element QM8 (Risk Assessment and Contingency Planning) provides for feedlots to have "systems in place to identify and mitigate the impact of potential emergency situations".

S3.8 For preparation of sheep and goats in premises south of latitude 26° south that are held:

(a) in paddocks during any or all of May, June, July, August, September and October, premises must have procedures to ensure that:

(i) sheep and goats to be exported by sea are held at the premises for 5 clear days (excluding the days of arrival and departure) before export;

(ii) livestock are fed *ad libitum* during that period; and

(iii) during the last 3 days of that period, livestock are fed *ad libitum*, but only on pelletised feed equivalent to that normally used during an export journey.

(b) in paddocks during any or all of November, December, January, February, March and April, premises must have procedures to ensure that:

(i) sheep and goats to be exported by sea are held at the premises for 3 clear days (excluding the days of arrival and departure) before export; and

(ii) livestock are fed *ad libitum* during that period and only on pelletised feed equivalent to that normally used during an export journey.

(c) in sheds during any or all months of the year, premises must have procedures to ensure that:

(i) sheep and goats to be exported by sea are held at the premises for 3 clear days (excluding the days of arrival and departure) before export; and

(ii) livestock are fed *ad libitum* during that period and only on pelletised feed equivalent to that normally used during an export journey.

NFAS: Not applicable

S3.8A The minimum length of time that livestock must remain in a registered premises prior to departure is as follows:

(a) for cattle or buffalo:

(i) a long haul voyage — 2 clear days;

(ii) for a short haul voyage in a vessel with multiple port loadings or multiple port discharges — 1 clear day;

(iii) for a short haul voyage in a vessel with 1 port of loading or 1 port of discharge — 24 hours;

(Note: In calculating the number of clear days exclude the first day (arrival day) and last day (departure day)).

NFAS: Not applicable

S3.9 Export to the Middle East:

(a) The operator of the registered premises must not prepare the following classes of sheep for export to the Middle East by sea during the period from May to October,:

(i) For livestock held in paddocks:

· pastoral and station sheep;

· lambs (less than 34 kg and no permanent incisors); and

· sheep and goats that have been held on trucks for more than 14 hours.

(ii) For livestock held in paddocks or sheds:

· full-mouth wethers with a body condition score greater than 4;

· broken-mouth sheep; and

· pregnant ewes.

(b) All sheep for export to the Middle East by ship during the period from May to October held in paddocks in the registered premises must have wool not more than 25 mm in length, unless approved by the relevant Australian Government agency based on an agreed heat stress risk assessment model and must be at least 10 days off shears on arrival at the premises.

NFAS: Not applicable

S3.10 The operator of the registered premises must have arrangements in place at the premises to prevent unauthorised entry and access to the feed when livestock are being prepared for export. Access to the premises must be controlled at all times, with:

(a) all entry points to premises being clearly signed;

(b) only those persons necessary for the day-to-day operation of the premises and state and territory government officials having direct access to the area of the premises; and

(c) all non-employees reporting to reception for appropriate biosecurity checks relevant to the requirements of the facility.

NFAS: The Standards refer to Element LM6 (Biosecurity), requiring feedlots to formulate a Biosecurity Management Plan and "conduct a risk assessment addressing the biosecurity risk at the feedlot site".

S3.11 Stocking density at registered premises must provide at least the following minimum space per head (cattle with horns must be provided with additional space), unless a variation is required and approved by the relevant Australian Government agency:

(a) for cattle or camels held for 30 days or more, a minimum of 9 m2, based on an individual liveweight of 500 kg (this allowance can be varied by 0.09 m2 for each 5 kg change in individual liveweight)

(b) for cattle or camels held for less than 30 days, a minimum of 4 m2, based on an individual liveweight of 500 kg (this allowance can be varied by 0.04 m2 for each 5 kg change in individual liveweight)

(c) for sheep and goats held in sheds for 10 days or more, based on an individual liveweight of 54 kg:

(i) penned in groups of less than 8 animals, a minimum of 0.9 m2

(ii) penned in groups of 9–15 animals, a minimum of 0.8 m2

(iii) penned in groups of 16–30 animals, a minimum of 0.6 m2

(iv) penned in groups of thirty-one (31) or more animals, a minimum of 0.5 m2

(d) for sheep and goats held in sheds for less than 10 days, based on an individual liveweight of 54 kg:

(i) penned in groups of less than 8 animals, a minimum of 0.6 m2

(ii) penned in groups of 9–15 animals, a minimum of 0.53 m2

(iii) penned in groups of 16–30 animals, a minimum of 0.4 m2

(iv) penned in groups of 31 or more animals, a minimum of 0.33 m2

NFAS: Accredited feedlots have specific licence criteria in relation to stocking density. Feedlots must also meet the requirements and regulations of the relevant authorities as part of their Approved Arrangements or Development Application. AUS-MEAT verify feedlot licence and conditions during the annual audit.

In the Standards, Elements LM4 (Animal Welfare) and EM1 (Environmental Management) make reference to stocking density.

S3.12 When receiving and identifying livestock, the operator must obtain a copy of the vendor declarations regarding the property of source and health and welfare status of the livestock before accepting the livestock for the purpose of preparation for export.

NFAS: The Standards reference Elements FS5 (Livestock Transactions and Movements), LM1 (Livestock Identification) and LM6 (Biosecurity) for the acceptance of cattle onto the feedlot.

S3.13 Unloading and inspection:

(a) Livestock must be unloaded as soon as possible after arrival at the registered premises. Facilities must enable safe and efficient unloading of livestock.

(b) Livestock must be individually inspected at unloading to determine whether they are suitable for preparation for export.

(c) Livestock for export must be held and assembled at the registered premises in accordance with the relevant approved NOI and CRMP.

NFAS: The Standards reference Elements FS5 (Livestock Transactions and Movements), LM1 (Livestock Identification) and LM6 (Biosecurity) for the unloading and inspection of cattle arriving at the feedlot.

S3.14 All livestock accepted into the registered premises must be offered water and feed as soon as possible and no more than 12 hours after arrival.

NFAS: Elements LM3 (Livestock Transport), LM4 (Animal Welfare), LM5 (Excessive Heat Load) and LM6 (Biosecurity) provide guidance in managing cattle arriving at the feedlot.

S3.15 Livestock must be penned in accordance with the criteria in S2.10 (a) to (e).

NFAS: Not applicable

S3.16 Daily monitoring of health, welfare and mortality must include the following:

(a) All livestock must be inspected daily by a competent stock person

(b) All sick or injured livestock must be given immediate treatment, and veterinary advice must be sought if the cause of a sickness or injury is not obvious, or if action taken to prevent or treat the problem is ineffective

(c) Investigation by a registered veterinarian must be conducted if mortalities in any one paddock or shed exceed 0.1% or 3 deaths, whichever is the greater, on any one day for cattle and buffalo, or 0.25% or 3 deaths, whichever is the greater, on any one day for any other species of livestock. Dead livestock must be collected and disposed of on a daily basis. Animals must not be able to access the area for disposal of carcases

(d) Records of each consignment must be kept for at least 2 years after the date of export.

NFAS: Elements QM1 (Training), LM2 (Livestock Husbandry and Presentation), LM3 (Livestock Transport), LM4 (Animal Welfare), LM5 (Excessive Heat Load), LM6 (Biosecurity) and LM7 (Livestock Incident Reporting) all provide guidance in the monitoring of health, welfare and mortality of cattle on the feedlot.

S3.17 Any livestock identified at unloading as being distressed, injured or otherwise unsuitable for export must be marked by a permanent method and isolated from the rest of the consignment. A record must be kept that details identity, the method of treatment or euthanasia and disposal of all rejected animals. Criteria for rejection are outlined in Appendix 3.1.

NFAS: As this ASEL Standard could apply to feedlots, Elements QM1 (Training), LM2 (Livestock Husbandry and Presentation), LM3 (Livestock Transport), LM4 (Animal Welfare), LM5 (Excessive Heat Load), LM6 (Biosecurity) and LM7 (Livestock Incident Reporting) in the NFAS Standards all provide guidance in the management of livestock unloaded at the feedlot, during the feeding period, and during loading out from the feedlot.

3.1.3.4 Standard 4 - Vessel preparation and loading

4.1 Guiding principle

The sea voyage is planned and is undertaken on an appropriately provisioned vessel certified for the carriage of livestock, and the livestock are loaded in a manner that prevents injury and minimises stress.

4.2 Required outcomes

(1) Livestock are healthy, fit to travel and comply with importing country requirements.

(2) The vessel meets Australian requirements for the safe carriage of livestock.

(3) Sufficient personnel must be available both at loading and during the voyage to ensure that livestock husbandry and welfare needs are addressed.

(4) Livestock are handled and loaded in a manner that prevents injury and minimises stress.

(5) The travel and loading plans adequately address the health and welfare of the livestock.

(6) A health certificate and an export permit are issued by AQIS.

4.3 Standards

This section and the Standards refer specifically to sea voyages, and therefore is not necessarily relevant to the NFAS. However a brief comment is provided for each Standard.

S4.1 A vessel to be used for the export of livestock must comply with:

(a) all Australian and international vessel biosecurity requirements; and

(b) all requirements for the safe carriage of livestock.

NFAS: The Scheme refers to the Animal Welfare Standards and Guidelines – Land Transport of Livestock (as amended or superseded) and the Australian Animal Welfare Standards and Guidelines for Cattle.

S4.1A If a ship that is permanently equipped for the carriage of livestock is to be used for the export of livestock of a particular species from a port in Australia:

(a) a valid ACCL must be in force for the ship; and

(b) the ACCL must specify the species of livestock to which it relates.

(Note: As part of having a valid ACCL, the vessel must have adequate operational communication equipment to enable daily ship to-shore communications to be conducted).

NFAS: Not applicable

S4.1B If a ship that is not permanently equipped for the carriage of livestock is to be used for the export of livestock of a particular species from a port in Australia:

(a) the livestock must be carried in a PLU approved under Marine Orders Part 43;

(b) the PLUs and the ship must conform to the applicable requirements of Appendix 4.4; and

(c) the arrangements for the carriage of PLU's on board the ship must be approved by a surveyor appointed under section 190 of the *Navigation Act 1912* in accordance with Marine Orders Part 43.

(Note: Under Marine Orders Part 43 (clause 37.1), portable equipment is taken to include boxes, platforms and containers. A Portable Livestock Unit is a form of portable equipment suitable for transporting livestock**).**

NFAS: Not applicable

S4.3 Before loading of livestock for export begins, a loading plan must be prepared in accordance with the specifications in Appendix 4.1, including details of:

(a) the net available pen area on the ship (excluding the area of the hospital pens) according to the vessel's record of equipment for the carriage of livestock; and

(b) the number of livestock that may be loaded on the vessel, based on the minimum pen area per head for the relevant livestock species and class as specified in Appendix 4.1, Tables A4.1.1–A4.1.7.

NFAS: Elements LM2 (Livestock Husbandry and Presentation), LM3 (Livestock Transport) and LM4 (Animal Welfare)

S4.4 Pregnant cattle/camels must be kept in pens that have an average floor area for each animal of at least:

(a) for pregnant heifers of a *Bos taurus* breed — the minimum area required for cattle under Table A4.1.2;

(b) for pregnant heifers of a *Bos indicus* breed — the minimum area required for cattle under Table A4.1.1;

(c) for pregnant cows of a *Bos taurus* breed — an area 5% larger than the minimum area required for cattle under Table A4.1.2;

(d) for pregnant cows of a *Bos indicus* breed — an area 5% larger than the minimum area required for cattle under Table A4.1.1; and

(e) for pregnant camels — an area 5% larger than the minimum area required for camels under Table A4.1.7.

In this standard:

cow means a female bovine animal that has produced a calf or is over 3 years of age.

heifer means a female bovine animal less than 3 years of age that has not produced a calf.

NFAS: The Scheme refers to the Animal Welfare Standards and Guidelines – Land Transport of Livestock (as amended or superseded) and the Australian Animal Welfare Standards and Guidelines for Cattle.

Elements LM2 (Livestock Husbandry and Presentation), LM3 (Livestock Transport) and LM4 (Animal Welfare)

S4.5 An accredited stock person who is employed or contracted by the exporter and who is not ordinarily a member of the ship's crew must be appointed to accompany each consignment of livestock for export to its destination. In addition, if required by the relevant Australian Government agency, an accredited veterinarian must be appointed to accompany a consignment.

NFAS: Elements QM1 (Training), LM2 (Livestock Husbandry and Presentation), LM3 (Livestock Transport) and LM4 (Animal Welfare)

S4.6 Sufficient personnel must be available both at loading and during the voyage to ensure that livestock husbandry and welfare needs are addressed.

NFAS: Elements LM2 (Livestock Husbandry and Presentation) and LM3 (Livestock Transport)

S4.7 Upon arrival of the livestock at the port of embarkation:

(a) responsibility for the livestock must be transferred to a competent person nominated by the exporter; and

(b) that person must be notified of any aspect of transport to the port of embarkation that might affect the future health and welfare of the livestock.

NFAS: Elements LM2 (Livestock Husbandry and Presentation) and LM3 (Livestock Transport)

S4.8 To ensure that only fit and healthy livestock are transported and are loaded on board:

(a) the exporter must arrange for the livestock to be inspected for health and welfare and fitness to travel, immediately before they are loaded onto the vessel;

(b) only livestock that are healthy and fit to travel can be loaded;

(c) any livestock rejected for export must be distinctively identified, and

humane and effective arrangements must be made for their removal from the port;

(d) if euthanasia is necessary, it must be carried out humanely and promptly; and

(e) dead livestock must be removed from the port, and carcases must be disposed of in compliance with all relevant health and environmental legislation.

NFAS: Elements FS4 (Preparation for Dispatch of Livestock), LM2 (Livestock Husbandry and Presentation) and LM3 (Livestock Transport)

S4.9 When livestock for export are loaded on vessels with enclosed decks, the ventilation system must be run continuously from the commencement of loading.

NFAS: Not applicable

S4.10 Livestock for export must be loaded onto the vessel by competent stock handlers in a manner that prevents injury and minimises stress.

NFAS: Elements QM1 (Training), FS4 (Preparation for Dispatch of Livestock), LM2 (Livestock Husbandry and Presentation), LM3 (Livestock Transport) and LM4 (Animal Welfare)

S4.11 Livestock for export must be presented for loading, and penned on the vessel, in lines segregated by species, class, age, weight, criteria in S2.10(e)(i) to (iii), and any other relevant characteristic (and, where relevant, port of destination), in accordance with the approved loading plan.

NFAS: Elements QM1 (Training), FS4 (Preparation for Dispatch of Livestock), LM1 (Livestock Identification), LM2 (Livestock Husbandry and Presentation), LM3 (Livestock Transport) and LM4 (Animal Welfare)

S4.12 Stocking densities and pen-group weight-range tolerances for species of livestock must be in accordance with specifications in Appendix 4.1 and heat stress assessment using an agreed heat stress risk assessment unless a variation is required and approved by the relevant Australian Government agency:

Humane and effective arrangements must be made for the handling and care of any livestock surplus to requirements.

NFAS: Elements QM1 (Training), FS4 (Preparation for Dispatch of Livestock), LM1 (Livestock Identification), LM2 (Livestock Husbandry and Presentation), LM3 (Livestock Transport), LM4 (Animal Welfare) and LM5 (Excessive Heat Load)

S4.13 All livestock for export must be offered feed and water as soon as possible after being loaded on the vessel, but no later than 12 hours after loading.

NFAS: Not applicable

S4.14 Supplies of feed and water:

(a) Adequate water of a quality to maintain good health and suitable feed to satisfy the energy requirements of the livestock for the duration of the voyage, and statutory reserves as specified in Appendix 4.2, must be loaded.

(b) The feed and water provisions must take into consideration the livestock species, class, age and expected weather conditions.

NFAS: Not applicable to the Scheme in the context of sea voyages.

S4.15 Bedding must be provided in accordance with specifications in Appendix 4.3.

NFAS: Not applicable to the Scheme in the context of sea voyages.

S4.16 As the livestock for export are loaded on board the vessel at the port of export, responsibility for the livestock transfers to the master of the vessel, who must be notified of any aspect of the preparation of the livestock for export that might affect their future health and welfare.

NFAS: Element LM3 (Livestock Transport).

3.1.3.5 Standard 5 - Onboard management of livestock

5.1 Guiding principle

Onboard facilities, management and husbandry must be adequate to maintain the health and welfare of livestock throughout the sea voyage.

5.2 Required outcomes

(1) The voyage is completed safely.

(2) Adequate livestock services are maintained throughout the voyage.

(3) Onboard care and management of the livestock is adequate to maintain their health and welfare throughout the voyage.

(4) Statutory reporting requirements are met, both during and after the voyage.

5.3 Standards

This section and the Standards refer specifically to the onboard management of livestock, and therefore is not necessarily relevant to the NFAS. However a brief comment is provided for each Standard based on the criteria applying in a feedlot.

S5.1 The onboard management of livestock for export by sea must ensure that the health, welfare and physical needs of livestock are met during the voyage:

(a) An accredited stock person must accompany each consignment of livestock and must remain with the consignment until the vessel has completed discharging at the final port of discharge.

(b) An accredited veterinarian must accompany each consignment of livestock where required by the relevant Australian Government agency and must remain with the consignment until the vessel has completed discharging at the final port of discharge.

(c) Accredited stock persons and/or veterinarians must work with the vessel's master and crew to maintain the health and welfare of the livestock on board.

(d) All personnel handling and caring for livestock or who are otherwise responsible for animals during the voyage must be able to demonstrate an adequate level of experience and skill to allow them to undertake their duties.

NFAS: Elements QM1 (Training), FS4 (Preparation for Dispatch of Livestock), LM3 (Livestock Transport) and LM4 (Animal Welfare)

S5.2 Any livestock for export identified after loading as being sick or injured must:

(a) be given immediate treatment; and

(b) be killed humanely and without delay, where euthanasia is necessary.

NFAS: Elements QM1 (Training), FS4 (Preparation for Dispatch of Livestock), LM3 (Livestock Transport) and LM4 (Animal Welfare)

S5.3 The consignment must be checked before departure to ensure that the livestock have been loaded according to the loading plan.

NFAS: Elements LM3 (Livestock Transport) and LM4 (Animal Welfare)

S5.4 All livestock for export must be offered feed and water as soon as possible after being loaded on the vessel, and within no more than 12 hours.

NFAS: The Scheme refers to the Animal Welfare Standards and Guidelines – Land Transport of Livestock (as amended or superseded) and the Australian Animal Welfare Standards and Guidelines for Cattle.

S5.5 All livestock on the vessel must have access to adequate water of a quality to maintain good health and suitable feed to satisfy their energy requirements, taking into consideration any particular needs of the livestock species, class and age:

(a) There must be a contingency plan to provide satisfactory tending, feeding and watering of the livestock in the event of a malfunction of the automatic feeding or watering systems, but without compromising the safe navigation of the vessel.

(b) Adequate feed and water must be supplied to livestock waiting to be discharged, and during the discharge period.

NFAS: Not applicable

S5.6 Livestock and livestock services on the vessel must be regularly inspected (day and night) to ensure that the health and welfare of the livestock are maintained while the livestock are on the vessel:

(a) A meeting must be held daily to discuss all issues relating to the health and welfare of the livestock. This must include the master and/or the master's representative, accredited stock person and veterinarian.

(b) Livestock must be systematically inspected to assess their health and welfare.

(c) Feed and water supply systems must be monitored day and night and maintained in good order.

(d) The pen stocking density must be checked regularly throughout the voyage and adjustments made as required.

(e) Ventilation must be monitored regularly each day to ensure adequate thermoregulation of the livestock.

(f) Washing down of decks and disposal of faeces and litter must be carried out with regard to the health and welfare of livestock.

NFAS: The Scheme refers to the Animal Welfare Standards and Guidelines – Land Transport of Livestock (as amended or superseded). The transport operator has a chain of responsibility in the welfare of cattle during transit.

S5.7 Any livestock identified as being sick or injured must:

(a) be given prompt treatment;

(b) be transferred to a hospital pen, if required; and

(c) if necessary, be euthanased humanely and without delay (the carcases of any dead livestock must be disposed of in accordance with the requirements of Annex V of MARPOL 73/78.

(Note: International Convention for the Prevention of Pollution from Vessels, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78). Annex V: Prevention of pollution by garbage from vessels).

NFAS: Elements LM3 (Livestock Transport) and LM4 (Animal Welfare)

S5.8 Veterinary drugs must be stored and used according to veterinary directions and manufacturers' recommendations, and treatment records must be maintained.

NFAS: Elements QM1 (Training), QM5 (Chemical Inventory), FS2 (Safe and Responsible Animal Treatment), LM1 (Livestock Identification), LM3 (Livestock Transport) and LM4 (Animal Welfare)

S5.9 When bedding is used, it must be maintained in adequate condition to ensure the health and welfare of the livestock.

NFAS: Elements LM3 (Livestock Transport), LM4 (Animal Welfare) and LM5 (Excessive Heat Load)

S5.10 A contingency plan for the following emergencies must be prepared for each consignment as part of the consignment risk management plan:

(a) mechanical breakdown;

(b) a feed or water shortage during the voyage;

(c) an outbreak of a disease during the voyage;

(d) extreme weather conditions during the voyage; and

(e) rejection of the consignment by the overseas market.

NFAS: Elements QM8 (Risk Assessment and Contingency Planning)

S5.11 If a notifiable incident occurs at any time, the relevant Australian Government agency must be advised as soon as possible and within 12 hours. In relation to a notifiable incident involving a mortality equal to or greater than the reportable level, a report must be provided that includes the following:

(a) details of the mortalities (eg number, species, suspected cause);

(b) factors that may have contributed to the deaths; and

(c) the current location of the vessel and, if appropriate, its destination and estimated time of arrival.

NFAS: Not applicable

S5.12 For journeys greater or equal to 10 days, an accredited stock person must provide daily reports on the health and welfare of the livestock to the relevant Australian Government agency, commencing on day 1 of the voyage. The report must include the information outlined in Appendix 5.1. Where an accredited veterinarian is on board, the veterinarian rather than the stock person must provide the daily report.

NFAS: Not applicable

S5.13 Regardless of the journey duration, within 5 days of completion of discharge at the final port of discharge, an accredited stock person must provide an end-of-voyage report on the health and welfare of the livestock to the relevant Australian Government agency. The report must include the information outlined in Appendix 5.2. Where an accredited veterinarian is on board, the veterinarian rather than the stock person must provide the end-of-voyage report.

NFAS: Not applicable

3.1.3.6 Standard 6 - Air transport of livestock

6.1 Guiding principles

Animals are prepared according to required protocols, are fit to travel, and the journey is planned and undertaken in a manner that meets the importing country requirements for the air transport of livestock.

6.2 Required outcomes

(1) Livestock sourced for export must meet any requirement under a law of a state or territory relating to the sourcing of livestock. State and territory governments are responsible for ensuring that these requirements are met.

(2) Livestock sourced for export must meet these Standards and importing country requirements. AQIS is responsible for ensuring that these Standards and requirements are met.

(3) Livestock are safely delivered to an airport of the importing country.

(4) Statutory reporting requirements are met after the flight.

(5) Livestock sourced for export that become sick or injured during on-farm preparation must be excluded from export, and arrangements must be made for their prompt and humane handling and care.

6.3 Standards

This section and the Standards refer specifically to the air transport of livestock, and therefore is not necessarily relevant to the NFAS. No commentary has been provided.

3.2 McCarthy Review, DAWR Responses and the NFAS

The release of footage covering on-board treatment of sheep over a series of voyages to the Middle East in 2017 shocked the Australian community, undermining public confidence in the trade. For the livestock export trade to continue, the public expects the Australian industry to uphold and comply with the highest animal welfare standards throughout the entire supply chain.

In response to the footage, the Commonwealth government commissioned a review to advise on conditions and any changes to the administration of the Australian Standards for the Export of Livestock (ASEL) and/or actions that would be required to assure the health and welfare outcomes for sheep being transported to the Middle East during the northern hemisphere summer.

The findings of the review may have implications for the trade. However the terms of reference were clear and referred specifically to what is required to assure the health and welfare of the sheep during the northern hemisphere summer period.

The review was undertaken with a view to provide a roadmap for the way forward. It was not undertaken with a view to being a blue-print for new legislation, nor was it meant, in any way, to replace or usurp the work being undertaken by the ASEL Review Technical Advisory Committee.

Twenty-three recommendations were provided in the McCarthy review of the live sheep trade to the Middle East.

The Department of Agriculture and Water Resources (DAWR) provided feedback to each recommendation in the review (displayed in italics below).

The author has made comment on both the McCarthy review recommendations and the DAWR responses as they relate to the NFA (in blue).

3.2.1 Recommendation 1—Compliance

The Department of Agriculture and Water Resources (the department) must ensure that exporters, through their approved arrangements, comply with any legislative requirements, ASEL and any other conditions of their approved arrangements.

DAWR Support: *Additional information received from Independent Observers (including footage from these observers), and improved Australian Government Authorised Veterinarian (AAV) reporting requirements will support verification and compliance activities.*

Conditions will be applied to require exporters to take account of the additional reporting information when preparing future voyages to ensure the health and welfare of animals during voyages. Legislative amendments proposed by the Government will strengthen available penalties for non-compliant exporters and improve powers available to address non-compliance.

NFAS: Feedlots must comply with any legislative requirements (Local and/or State) and any other conditions of their approved arrangements as part of the feedlot licence conditions. AUS-MEAT auditors verify feedlot compliance at the annual audit.

> **Recommendation 4**: The NFAS could strengthen the scrutiny and verification of approved arrangements by auditors during the annual audit. This would require additional training of auditors.

3.2.2 Recommendation 2—Stocking Densities

Based on the available science, and as an interim measure, sheep destined to the Middle East from Australia during the northern hemisphere summer should be allocated space allometrically using a k-value of 0.033 or such further space as required by the industry heat stress risk assessment model. Use of this allometric stocking density should be reviewed by the ASEL Review Technical Advisory Committee and/or an independent taskforce at the end of the forthcoming northern hemisphere summer.

DAWR Support: *Allocating space on vessels allometrically and a review of the impact of the model by the ASEL Review Technical Advisory Committee at the end of this year's northern hemisphere summer.*

Do not support at this stage *allocating further space through a revised industry heat stress risk assessment model until further public and expert consultation and analysis is undertaken, see Recommendations 4 and 12 below.*

NFAS: Elements LM4 (Animal Welfare) and EM1 (Environmental Management) specifically refer to stocking density in feedlots. Feedlot stocking density should be managed in the range of 9 to 25 square metres per head or per Standard Cattle Unit (SCU), whichever is applicable in their State.

Feedlot licences issued by Local and State jurisdictions relate to stocking density and allowable numbers of cattle on feed at any one time in the facility. The history of stocking density and/or cattle numbers on feed at the facility is assessed and verified by the auditor during the annual audit.

In practice feedlots can, and do, adjust stocking density throughout the year depending on the type or class of cattle, pen orientation in the feedlot, seasonal conditions, weather conditions and the health status of cattle.

Internal and external audits are undertaken as part of the Scheme, with a verification process that a feedlot is compliant with its established stocking density or feedlot capacity. The verification step usually involves assessing the overall feedlot capacity (licence and constructed capacity) with the numbers of cattle on feed, or alternatively, the equivalent number of Standard Cattle Units (SCUs). This area is undoubtedly challenging for auditors when assessing feedlot compliance throughout the year.

If this recommendation were to apply to land transport away from the feedlot, Element LM3 (Livestock Transport) refers to livestock loading densities under the performance indicators being "appropriate for the type and class of animal being transported, seasonal conditions and required transport journey". Also "a person in charge must exercise duty of care to ensure the welfare of livestock under their control and compliance with the Animal Welfare Standards and Guidelines – Land Transport of Livestock (as amended or superseded)".

Appendix 8 in the Standards provides guidance on an appropriate loading density for twelve selected liveweight categories of cattle. However this table is not referenced in the Standards document, and nor is the source of the information referenced in the Appendix. There is also no correlation provided between liveweight and Standard Cattle Units in relation to appropriate loading densities for transport vehicles.

3.2.3 Recommendation 3—Heat Stress Risk Assessment

Industry should move from a risk assessment based on mortality to a risk assessment based on animal welfare.

DAWR Support: *The department agrees that mortality, in isolation, is an insufficient measure of animal health and welfare. The department proposes further public consultation and analysis to assess the specific heat stress risk assessment settings are required to give effect to this (see Recommendation 4 below). Additional information*

is also becoming available from Independent Observers and there is research currently underway to identify animal welfare indicators that could be used for this purpose (see Recommendation 6).

NFAS: Elements QM8 (Risk Assessment and Contingency Planning) and LM5 (Excessive Heat Load) provide feedlots with guidance in developing procedures and processes for successfully managing cattle during excessive heat load conditions.

Element QM8 encourages feedlots to have conducted risk assessments on various aspects of the business, and have systems in place to mitigate against the impact of emergency situations.

Element LM5 is specific in providing guidance to manage cattle during excessive heat load weather events, including undertaking a risk assessment (Katestone RAP) for each category or class of cattle prior to each summer, formulating mitigation strategies for the risks identified, and having the capability to calculate daily Heat Load Index (HLI) and Accumulated Heat Load Units (AHLU) from local weather recordings. As part of LM5 the feedlot must have a documented Excessive Heat Load Management Plan, which is verified at the annual audit. The auditor also seeks evidence that the risk assessment process (Katestone RAP) has been undertaken prior to each summer.

The Katestone website and forecasting service contains materials for feedlot operators to formulate a proactive approach to managing risk for cattle during the summer months – including a Pre-summer checklist, Managing summer heat workbook, Pre-summer risk assessment log, Cattle observations log, Cattle panting score reference guide and an HLI Calculator spreadsheet.

The current Katestone RAP takes into consideration the ability of cattle to tolerate heat load depending on variable factors such as cattle breed (genotype), coat colour, degree of finish (days on feed), cattle health status, water trough temperature and pen conditions (for example whether the pen is shaded or unshaded, and the pen surface manure load or management practices employed).

For this reason the threshold at which heat load starts to accumulate also varies depending on these factors. For the purposes of forecasting, various heat load thresholds have been incorporated in the model to account for these factors (for example - AHLU86 and AHLU95 where 86 and 95 are the heat load thresholds upper limit (UL) respectively).

The RAP calculator is used to calculate the HLI threshold to use for a particular operation. If the threshold calculated for the operation falls between the values utilised in the forecasts, then the feedlot has to estimate the results for the situation by interpolating between the forecast values. The RAP also gives an assessment of the risk of heat load events based on the site specific data entered and historical climatic data.

The results provided in the model consist of probabilities of specific types of events occurring. The events are classified firstly by the intensity of the event and secondly by the duration of that event. The intensity is categorised as high risk (daily maximum accumulated heat load is between 50 and 100 accumulated heat load units) or extreme risk (daily maximum accumulated heat load exceeds 100 accumulated heat load units). The duration is the number of consecutive days that the accumulated heat load maintains the specified intensity. These are classified as events of two day duration, three day duration etc. All events exceeding a duration of seven days are binned into a 7 and over category.

The probabilities consist of the number of instances that a specific event is observed, expressed as the number of events per number of years.

Pen observations prior to and during an excessive heat load event are conducted by trained animal handlers (The Panting Score table developed by MLA is in Appendix C). These observations can be correlated with the Katestone model's AHLU Risk Indicator Key displayed below:

Table 1: Accumulated Heat Load Unit (AHLU) Indicator Key (Katestone)

AHLU	Heat load indicator	Cattle indications
0	Negligible	No load
1-20	Low risk	No load or panting score 1
21-50	Medium risk	Panting score 1-2
51-100	High risk	Panting score 2-4
Over 100	Extreme risk	Panting score 4

Prior to and during excessive heat load events, feedlots undertake cattle observations to understand the level of cattle comfort and any changes in behaviour. This surveillance or continual cattle assessment is predominantly undertaken using manual recording of cattle observations for each pen of cattle on the feedlot (including panting score data using the industry template), and correlating the observations with feed consumption and local weather data.

Improvements could be made to the correlation and analysis of the observational data to provide feedlot operators with improved decision making tools as an excessive heat load develops or during an event. The focus of all decisions is to mitigate cattle from accumulating excessive heat load, thereby reducing cattle well-being and impacting negatively on feeding performance.

Recommendation 5: Industry could undertake research to develop a new risk assessment and forecasting service. This work could consider the inclusion of cattle welfare measures that would assist in defining acceptable levels of cattle well-being and/or distress, at the same time increasing the scope of mitigation factors that feedlots can undertake leading into or during an excessive heat load event.

Recommendation 6: Industry could undertake research to assess the validity of including pen stocking density as an additional parameter in the Katestone Risk Analysis Program (RAP).

Decreasing stocking density prior to summer could also be included in the series of potential mitigation strategies that feedlots could implement as part of their EHL Management Plan.

Recommendation 7: Industry could undertake research for the development of software and/or an App that could provide feedlots with the means to record observational data live (at pen), which can be automatically correlated with feed intake and local weather data to provide analysis/predictor of current cattle comfort.

Industry could research the development of a meaningful index as an output.

3.2.4 F

As an interim measure, it is recommended that the risk be set at a 2% probability of 5% percent of the sheep becoming affected by heat stress (Heat stress score 3—see Table 1). These settings should be reviewed by the ASEL Review Technical Advisory Committee at the end of this northern hemisphere summer period and again, annually by an independent taskforce.

DAWR Support, subject to testing and consultation: *The department will adopt a heat stress risk assessment approach to managing animal welfare outcomes. Dr McCarthy has not been able to consult and test his analysis on this issue in the short time available during his review, so the department will undertake that process over the next three months. This critical proposal by Dr McCarthy involves a new regulatory model and warrants an opportunity for all interested parties to contribute to the development of a new approach.*

NFAS: As discussed above, the NFAS has requirements of feedlots to undertake comprehensive risk assessments and heat load management planning prior to each summer. Feedlots in higher risk climatic areas are especially vigilant in the preparation for summer. AUS-MEAT conducts verification exercises during the annual feedlot audit to ascertain that feedlots are complying with the Scheme.

During the annual audit, auditors review the feedlots EHL Management Plan and the risk assessments conducted by the feedlot (using the Katestone RAP). There is a good case to suggest that auditors need to be vigilant in this area to ensure feedlots are meeting the Scheme requirements. Seeking formal evidence of the risk analysis for each category of cattle for each summer month, reviewing the EHL Management Plan for the feedlot including mitigation strategies, observing weather data records and the calculation of HLI and AHLU, and reviewing cattle observation records during the audit will increase the integrity of the Scheme in relation to the preparation for potential excessive climate events during summer.

Recommendation 8: Industry could undertake research to establish a cattle heat load risk assessment approach to managing animal welfare outcomes. This approach could be included in a new RAP model and forecasting service.

Recommendation 9: AUS-MEAT could train and facilitate auditors to increase the level of verification when assessing the strengths of feedlot preparation for managing excessive heat load during summer. This particularly includes verifying risk assessments, management plans, weather records and cattle observations.

Currently there is no recommended measure in the Katestone model or RAP that would prevent cattle being held in the feedlot during an excessive heat load event. However feedlots may have in their EHL Management Plan a

Recommendation 10: Industry could undertake research in relation to establishing

mitigation strategy that encourages cattle to be let out of the feedlot into suitable grazing areas around the feedlot in the event of an emergency.

3.2.5 Recommendation 5—Heat Stress Risk Assessment

That the required changes to the industry HSRA model be made immediately and then included in Version 5 of the HSRA model.

DAWR Support, subject to further testing and consultation (*see Recommendation 4****).***

NFAS: The risk assessment process for excessive heat load in the Scheme has been covered in previous discussion, including the Katestone Model and Risk Analysis Program (RAP).

> **Recommendation 11**: Industry could undertake research to ascertain thresholds within the Katestone RAP that indicate a required change to stocking density in specific pens prior to or during an excessive heat load event.
>
> Concurrently or alternatively, stocking density could contribute to the RAP.

3.2.6 Recommendation 6—Heat Tolerance Level

As an interim measure, industry should adopt Table 1 (of this review)—'An amalgamation of heat stress indicators' to determine the acceptable heat tolerance level.

DAWR Support: *Table 1 of the review provides a single standardised system for accredited veterinarians on vessels to assess degrees of heat stress in sheep. Further review and assessment of the scores and related symptoms of heat stress should be conducted after the northern hemisphere summer trade, as additional information becomes available, by the ASEL Review Technical Advisory Committee. This includes outcomes of research on animal welfare indicators being undertaken by Murdoch University, funded through the industry research and development program, as well as information gained from Independent Observers and other enhanced monitoring activities.*

NFAS: Element LM5 (Excessive Heat Load) indicates that monitoring of cattle leading into and during a heat load event is a critical component of the management strategy for feedlots.

The risk assessment process for excessive heat load in the Scheme has been covered in previous discussion, including the Katestone Model and Risk Analysis Program (RAP). The feedlot industry has adopted much of the previous research into managing heat load in cattle during summer. The important facets for feedlots have also been adopted in the Scheme, and the provision for feedlot accountability is during the annual AUS-MEAT audit.

The Katestone model provides a forecasting service based on an amalgamation of cattle and environmental factors that contribute to heat load, providing a series of numerical indicators that feedlots can monitor. There is potential to build on the current knowledge with research into additional valid indicators, and also exploring the notion of a meaningful heat load index for each pen of cattle based on live observational or behavioural data (at pen), feed intake data and local weather data. This index could be a predictor of daily cattle comfort, enhancing the capability of feedlots to take specific mitigation steps for specific pens of cattle in the feedlot, rather than the "blanket approach" many feedlots take currently.

Heat stress indicators are well defined by industry for cattle during excessive heat load events. Feed intake and cattle observations (behaviour and panting scores) are both well recognised and adopted strategies for assessing the welfare of cattle during summer.

Industry training material delivered on an annual basis provides clear guidelines, criteria and tools for managing cattle during summer and heat load events.

> **Recommendation 12**: Industry could undertake research into actions that verify daily monitoring of cattle records, and that these records are available at internal and external audits of the feedlot.

3.2.7 Recommendation 7—Heat Stress Risk Assessment

A future version of the industry HSRA model to be developed, adopted and used by industry during the northern hemisphere summer of 2019 should have the capacity to assess:

a) the duration of time that sheep are exposed to high heat loads without respite

b) ventilation design rather than assessing risk based on airflow alone

In addition, the way in which the model manages open decks should be reviewed.

DAWR Support: *Development of a future model should also consider additional inputs, including investigating alternate ventilation measures, and the use of animal welfare indicators.*

This will also be informed by the further consultation and analysis on heat stress risk assessment (see Recommendation 4).

NFAS: The current model for risk assessment has been discussed previously.

3.2.8 Recommendation 8—Heat Stress Risk Assessment

A future version of the industry heat stress risk assessment model to be developed, adopted and used by industry during the northern hemisphere summer of 2019 should reassess:

a) the 'heat tolerance' level

b) the probability risk settings.

DAWR Support: *As per Recommendation 7 the future model should also consider additional inputs, including investigating alternate ventilation measures, and the use of animal welfare indicators. This will also be informed by the further consultation and analysis on heat stress risk assessment (see Recommendation 4).*

NFAS: The current model for risk assessment has been discussed previously. Within Element LM5, a feedlot must be able to demonstrate the ability to undertake the risk assessment process (RAP) and calculate and monitor both HLI and AHLU for the various classes of cattle at suitable intervals through the summer season. Also a feedlot must be able to demonstrate a documented EHL Management Plan specific to the cattle on feed, the feedlot environment and the business's risk profile.

The cattle panting score observation chart is an integral part of a feedlots capability to monitor cattle during summer and excessive heat load events. The various panting scores in the chart and the corresponding pen observations provide indicators of cattle welfare. However the indicators could be improved to assist interpretations in relation to heat tolerance levels and cattle comfort.

> **Recommendation 13**: Industry could undertake research into improved indicators of cattle welfare to assist interpretations in relation to heat tolerance levels and cattle comfort.

3.2.9 [illegible]

The report strongly supports the recommendation from the ASEL Review Technical Advisory Committee that a vessel's pen air turnover be independently audited before travelling to the Middle East in the 2018 northern hemisphere summer.

DAWR Support: *The Australian Maritime Safety Authority (AMSA) will provide information on actual ship ventilation equipment and pen area to calculate pen air turnover (PAT). This information will need to be verified by appropriately qualified mechanical engineers. This will validate the accuracy of the PAT entered into the Heat Stress Risk Assessment model. The department will work with AMSA to implement this recommendation by 1 July 2018 or as soon as practicable.*

NFAS: There is no reference in the NFAS, Katestone RAP or forecasting model to air turnover as a mitigating strategy during EHL events. Wind speed does however form part of the equation in determining both HLI and AHLU.

Industry has previously considered potential research into the application of ventilated airflow in the mitigation of heat load in cattle.

> **Recommendation 14**: Industry could undertake research to assess the impact of directional airflow (for example orchard fans) onto susceptible cattle during heat load situations.

3.2.10 Recommendation 10—Register of vessels

A relevant government agency should maintain a register of vessels whose pen air turnover (PAT) information has been certified following auditing and verification.

DAWR Support: *AMSA maintains records of shipboard equipment and pen area dimensions in the vessel's equipment register, and confirms the ongoing condition/performance through audit. The department will maintain a register of vessel PAT audits. Proposed timeframe is by 1 July 2018 or as soon as practicable.*

NFAS: All feedlots in the Scheme are licensed by Local and State authorities specific to the area the feedlot is constructed – and is verified annually by the Scheme auditor. The program owner collates and maintains records

of feedlot compliance (feedlot capacity, design, performance, pen cleaning, stocking density etc) compiled during the annual audit.

AUS-MEAT could consider increasing the level of collecting evidence-based data during the annual audit, rather than just screening for the existence of data and records. In other words auditors could be required to scrutinise the records for evidence of performance and compliance.

For example, the following areas could be drilled into at audit on an evidence basis to check the performance of the feedlot in relation to heat load management:

- EHL Management Plan – familiarity with the detail of the document and its currency
- Risk analysis – verifying the Katestone RAP outputs with the classes and categories of cattle actually on feed during the summer season
- Contingency planning – verifying the mitigation strategies feedlots have planned with the on-ground capability (additional water troughs, documented heat load rations)
- Observation records – verify that susceptible cattle have been monitored during the summer season
- Automatic weather station – verify the outputs from the on-site weather station for the summer season, or
- Calculation of HLI and AHLU – verify the outputs of either an automatic weather station and Katestone, or a weather station and the manual calculation of HLI and AHLU
- Incident reporting – verify the number of mortalities during the summer season and any correlation with excessive heat load events. Verify the feedlots reporting responsibilities where applicable.

3.2.11 Recommendation 11—Verification of PAT information

It would be a condition of an approved arrangement that all livestock vessel's PAT information has been independently verified where the vessel is destined for the Middle East during the northern hemisphere summer.

DAWR Support in part: *The department will consider the most appropriate means of giving effect to this. Requirements for independent PAT verification and assurance can be imposed on exporters and others under a range of powers available under the legislative framework, including through licensing requirements or future standards orders made by legislative instrument.*

NFAS: The Scheme requires a registered veterinarian to have oversight of the development and implementation of an EHL Management Plan. Feedlots have responsibility for formulating comprehensive risk assessment, contingency plans and criteria for managing heat load in summer seasons. AUS-MEAT currently verify the existence of this material, but do not make judgement on the veracity of the content.

Industry could consider a condition of accreditation that all feedlots submit a registered veterinarian approved EHL Management Plan prior to each summer. This would require AUS-MEAT to undertake a desk top audit of each feedlot's plan.

> **Recommendation 15**: Industry could consider a condition of accreditation in the Scheme that all feedlots submit an EHL Management Plan prior to each summer season approved by a registered veterinarian. AUS-MEAT would verify the existence and content by desk top audit.

3.2.12 Recommendation 12—Curfew adjustments for stocking density

The weight of animals for the purposes of stocking density should specify curfew and adjustments should be made to reflect a 12-hour curfew (i.e. the livestock industry standard).

DAWR Support: *There is a need to standardise weight estimates for loading and input into the heat stress risk assessment model. However, the department considers it preferable to extend this recommendation further to include an estimate of arrival weight in the Middle East, the point at which the sheep experience high heat and humidity. For example, for a 50kg sheep, assuming an average weight gain of 100 grams per day, per animal, would increase in weight on a 24 day voyage by 2.4 kilograms. The department will take this into account in addition to the allometric space calculation (see Recommendation 2).*

NFAS: Element LM3 (Livestock Transport) refers to livestock loading densities under the performance indicators being "appropriate for the type and class of animal being transported, seasonal conditions and required transport journey". Also "a person in charge must exercise duty of care to ensure the welfare of livestock under their control and compliance with the Animal Welfare Standards and Guidelines – Land Transport of Livestock (as amended or superseded)".

Currently there are no guidelines or performance indicators that specifically refer to the application of curfews for cattle prior to transport away from the feedlot. Appendix 8 in the Standards provides guidance on an appropriate loading density for twelve selected liveweight categories of cattle. However this table is not referenced in the Standards document, and nor is the source of the information referenced in the Appendix.

> **Recommendation 16**: Industry could include in the Standards appropriate loading density for transport of cattle away from the feedlot.
>
> Consideration could be given to providing a relationship between loading density in liveweight and equivalence expressed in terms of Standard Cattle Units (SCU).

> **Recommendation 17**: Industry could consider research into appropriate curfew times for grain fed cattle prior to loading.
>
> Consideration would need to be given to feedlot location (or duration of travel), class of cattle (breed, time on feed), seasonal conditions, abattoir lairage (including access to shade, feed and water prior to slaughter) and time lapse from delivery to slaughter.

3.2.13 Recommendation 13—Compliant loading of animals

Authorised officers should check and verify the weights of sufficient animals to be satisfied that the vessel is to be or has been loaded in a way that is consistent with a compliant heat stress risk assessment and ASEL. This may be conducted at any point in the supply chain.

DAWR Support: *A check of animal weights is currently undertaken by department veterinary officers through a sample inspection and review process at registered premises prior to loading. This is to assess the accuracy of the exporter's proposed load plan and heat stress risk assessment.*

With the addition of Independent Observers on all voyages, part of their role is to conduct a full check of the load plans, enabling further verification of the live weights of the animals on board, as well as further verification of the condition score, class of animal and coat length specified in the exporter's heat stress risk assessment.

NFAS: Elements LM3 (Livestock Transport) and LM5 (Excessive Heat Load) in the Scheme address the area of loading livestock away from the feedlot, particularly during heat load conditions.

If this recommendation was applied to feedlot stocking density, then feedlots have the capability to adjust stocking density to help mitigate against heat stress in summer seasons. The method of applying an area in square metres to either a single animal or a theoretical Standard Cattle Unit (derived from a conversion of liveweight of the animal adjusted by a scaling factor) enables feedlots to stock their pens appropriately, and adjust the stocking density for ranges of cattle types, feeding regimes, climatic conditions, pen types (and locations) and seasonal conditions.

As previously discussed, research could be undertaken to measure the influence of changing stocking density in feeding pens for different scenarios – Standard Cattle Units(SCU), days on feed, body condition score, breed, genotype, coat colour, shade/unshaded, water trough temperature and others.

When this recommendation is applied to loading cattle on transport away from the feedlot, the Scheme provides minimal guidance. As discussed previously, feedlot operators assess load density at the time of loading in conjunction with the transport operator. Due to the high value nature of grain fed cattle, loading density is usually conservative.

The requirement for periodical internal audits in the Scheme provides feedlots with the opportunity to assess the level of compliance when loading cattle out of the feedlot.

However industry could consider producing guidelines for the appropriate preparation of grain fed cattle for transport away from the feedlot, specifically referring to the different classes of cattle (for example, low head day versus high head day), seasons, curfew times, loading density and travel duration. Time of loading and destination arrival times could also be considered in the guidelines.

> **Recommendation 18**: Industry could consider the development of guidelines for loading cattle for despatch. These guidelines could be included in the Scheme.
>
> The following criteria could be considered in the development of the guidelines - classes of cattle (for example, low head day versus high head day), seasons, curfew times, loading density and travel duration (including recommendations for time of loading and abattoir destination arrival times).

3.2.14 Recommendation 14—Use of sawdust

There is no need for sawdust for bedding under normal circumstances on sheep voyages but the use of sawdust strategically before and/or during the voyage should be included in an exporter's heat stress management plan, if required, for targeted areas on the vessel.

DAWR Support: *The department is currently placing conditions on some voyages to the Middle East to require carriage of additional bedding to improve the environment for livestock.*

NFAS: There are no performance indicators in the Scheme that specifically refer to the use of sawdust in transport vehicles. LM3 (Livestock Transport) refers to "stock crates utilised for transporting livestock are designed and maintained to prevent injury and bruising to livestock" and crates are also "maintained so that the floor provides traction".

Industry is currently undertaking research into the provision of bedding for cattle under different feedlot conditions. Industry is also considering a review of current transport crate designs and any opportunities for improvement given the changing nature of cattle production in feedlots.

Feedlot operators currently apply bedding (sawdust, cotton hulls) to transport vehicles for cattle that travel long distances, high head day cattle and during weather extremes (cold or hot weather). Industry may consider the development of some basic guidelines to assist in improving cattle welfare, both for cattle transferring to the feedlot or for despatch to the abattoir.

> **Recommendation 19**: Industry could consider the development of guidelines for the transport of incoming and outgoing cattle under various circumstances and parameters.
>
> These guidelines could be developed in association with the loading density guidelines for incorporation into the Standards.

3.2.15 F

Both the Australian Government Accredited Veterinarian (AAV) and the Independent Observer (IO) should be given information regarding the purchase lines of all sheep included in the consignment (i.e. the denominator) to identify 'line effects' within the mortality pattern on board. This can be encoded if confidentially is an issue. Line effects identified over the course of the voyage should be investigated once the voyage has been completed.

DAWR Support in part: *There may be benefit in industry investigating line effects. Accredited veterinarians could collect information for exporters to feed into industry research. The Independent Observer's role is to report on the effectiveness of exporter arrangements for managing animal health and welfare on voyages.*

NFAS: The Scheme has no provision or requirement to monitor and review purchase lines of cattle. However, most feedlots undertake an internal review of purchase lines at the conclusion of the feeding period as part of their commercial activity.

Many feedlots share this information with the vendors of purchased lines. Industry could consider establishing a defined reporting framework back to farmers and vendors on the health performance of cattle through the feeding period (for example, Livestock Data Link).

3.2.16 Recommendation 16—Roles and responsibilities

With the advent of IOs, a taskforce should be established to determine the roles and responsibilities of AAVs, IOs and accredited stockmen. This responsibility may fall to the ASEL Review Technical Advisory Committee.

DAWR Support: *The department is currently developing an ongoing Independent Observer program, including further articulating their roles and responsibilities. The key purpose of Independent Observers is to report on the performance in the delivery of animal health and welfare outcomes during voyages. The ASEL Review Technical Advisory Committee is also examining the roles and responsibilities of AAVs and stockmen by end 2018.*

NFAS: All feedlots in the Scheme are required to have access to a registered veterinarian. This person provides guidance in the management of animal health, employee training in livestock surveillance and the formulation of

Excessive Heat Load and Pregnant Heifer Management Plans. The veterinarian is an integral resource in the daily operations of accredited feedlots.

Element LM4 (Animal Welfare) seeks an outcome where "the welfare of livestock is not compromised whilst within the control of persons responsible for their care and well-being, and that prompt and appropriate remedial action is taken when required".

All accredited feedlots undertake periodical internal audits to ensure that continuous improvement is being achieved. Also a dedicated Animal Welfare internal audit is required to be conducted at six month intervals. The external annual audit by AUS-MEAT also verifies the systems and processes being undertaken, completion of internal audits and the level of assistance being provided by the feedlot veterinarian.

Each accredited feedlot must have a suitably trained person to act as a Quality Assurance officer (non-certified). The person requires a good understanding of feedlot practices, procedures and processes. As the size of operation increases, so does the required number of officers as per the Rules of the Scheme (up to a maximum of 4 people).

Each accredited feedlot is also required to have a person or persons certified to handle Agricultural and Veterinary Chemicals. AUS-MEAT auditors verify at the annual audit the number of people that have undertaken the training and their certification status.

Industry has also invested in the development and delivery of certified Animal Welfare Officer training to the feedlot sector. Approximately 242 people from 81 feedlots have completed the training through 2015 and 2016. ALFA will deliver additional training to industry during 2018.

Recommendation 20: Industry could consider formal training and certification of feedlot Quality Assurance officers within the Scheme.

Recommendation 21: Industry could consider the inclusion and requirement for certified Animal Welfare officers within the Scheme.

Recommendation 22: Industry could consider the amalgamation of requirements of accredited feedlots to have trained and certified Quality Assurance and Animal Welfare officers.

This would require an update to the existing program content and delivery.

3.2.17 Recommendation 17—Animal carcasses

All livestock vessels travelling to the designated special zones in the Middle East during the northern hemisphere summer should be equipped with a serviceable hogger and/or a refrigerated container of suitable size to hold animal carcasses whilst in port (or at sea if required). This requirement should be included in an approved arrangement and AMSA should be notified of the requirement.

DAWR Support in part: *The department will pursue with industry those measures that address this outcome noting that AMSA Marine Order 43 does not require vessels to be equipped with hoggers. If such equipment is on board, it must be listed on AMSA's record of vessel equipment and checked as part of their inspection/survey*

regime. Refrigerated containers, if used, need to be stowed and secured. AMSA advises most livestock vessels are not designed for the carriage of containers.

NFAS: All feedlots in the Scheme must undertake a risk assessment of their activities and provide documented contingencies. Element QM8 (Risk Assessment and Contingency Planning) encourages the outcome where "systems are in place to identify and mitigate the impact of potential emergency situations". This includes the emergency slaughter and disposal of cattle.

Following a review of the Scheme undertaken in 2015, the areas of risk assessment and contingency planning have been strengthened and adopted by industry in 2017.

One area that is not prescriptive in the Scheme is the mass disposal of carcasses. Although feedlots must display an element of planning for such an event, each locality has specific requirements for the disposal of large numbers of livestock. Industry could consider the adoption within the Scheme of feedlots displaying documented approval for the on-site or off-site disposal of a large number of cattle or carcasses in the event of an emergency incident.

> **Recommendation 23**: Industry could consider feedlots in the Scheme having written approval from Local and/or State authorities for the mass disposal of animals on-site or off-site.
>
> This approval could be verified during the annual audit by AUS-MEAT.

3.2.18 R

The reportable mortality level for sheep exported by sea to the Middle East should be reduced from 2% to 1%.

DAWR Support: *This will be implemented immediately for all future voyages.*

NFAS: Element LM7 (Livestock Incident Reporting) stipulates that "requirements are undertaken when an unusual number of sick animals or deaths occur". Appendix 7 in the Standards displays a comprehensive decision diagram to assist feedlots in complying with their responsibilities.

The reporting trigger levels over a 24 hour time period for activating incident reporting are segregated into three levels of responsibility. Each threshold in the table refers to the number of animals rather than percentages of cattle affected. This allows feedlot operators and employees to make very clinical decisions in relation to their reporting responsibilities, rather have to undertake comprehensive calculations in an emergency. When the number of deaths exceed the threshold for:

- Level 1 – advise veterinarian and activate internal feedlot review and reporting
- Level 2 – advise veterinarian and activate internal feedlot review and reporting, and inform ALFA who will activate the feedlot industry response action (watching brief)
- Level 3 – advise veterinarian and advise ALFA who will activate the feedlot industry incidence response and action the ALFA Crisis Response Management Plan, including notifying the State CVO, RSPCA, Safemeat and FLIAC.

With the exception of those feedlots under 1,000 head or standard cattle units, the reporting threshold at each level equates to less than 1% of the cattle on feed. Although the smaller feedlots have technically higher thresholds in percentage terms, the number of cattle deaths that require actions is low in absolute terms.

The table below is an extract from the Standards Appendix 7, with additional data added displaying the relationship with percentage of cattle on feed for each category:

Table 2: Morbidity and mortality triggers over a 24 hour period for activating incident reporting.

	Level 1		Level 2	Level 3
Cattle on Feed (head)	**Morbidity (pulls)**	**Mortality (deaths)**	**Mortality (deaths)**	**Mortality (deaths)**
50 to 150	20	3 (6.0 – 2.0%)	6 (12 – 4.0%)	15 (30 – 10.0%)
151 to 500	20	3 (2.0 – 0.6%)	7 (4.0 – 1.4%)	16 (10.0 – 3.2%)
501 to 1000	20	3 (0.6 – 0.3%)	8 (1.4 – 0.8%)	17 (3.2 – 1.7%)
1001 to 3000	30	3	11	20 (1.7 – 0.6%)
3001 to 5000	40	4	12	21
5001 to 7500	55	6	30+	60+
7501 to 10,000	70	7	30+	60+
10,001 to 20, 000	140	9	50+	100+
20,001 to 40, 000	280	11 (0.05–0.03%)	50+ (0.25–0.13%)	100+ (0.13–0.25%)
40,001 head or above	350	15	50+	100+

The integrity of external auditing of feedlot incidents, and the feedlot responses, is critical in ensuring industry returns the trust of external stakeholders.

Recommendation 24: Industry could consider increasing the level of scrutiny during the annual audit in relation to feedlot incidents and any associated reporting responsibilities.

Recommendation 25: Industry could consider a series of reporting levels where information could be shared with external stakeholders increasing the level of industry transparency and trust.

3.2.19 Recommendation 19—Daily reporting

The use of both a panting score and a heat stress score should be a mandatory requirement in the daily report. A training module may be required to ensure that score allocation is consistent across industry.

DAWR Support: *This will be implemented immediately for all future voyages. The department will test with AAV's the need for further training.*

NFAS: The Scheme does not mandate daily reporting except in emergency situations where internal or external reporting may be required. For summer seasons the Scheme requires all feedlots to have reviewed their EHL Management Plan, risk assessments and contingency planning.

ALFA and MLA provide annual training to industry in the preparation and management of excessive heat load in cattle, with Element LM5 (Excessive Heat Load) in the Standards providing additional guidance.

A feedlot EHL Management Plan may indicate the use of cattle observations and the recording of cattle panting scores or behaviours in pens throughout the feedlot as an indicator of the level of heat stress being experienced. However this is not mandatory in the Scheme and currently external auditors do not verify documented cattle observation records for the previous summer. However the auditor does verify the existence of an EHL Management Plan.

As previously indicated, industry could consider an increased level of verification during the annual audit that feedlots are undertaking and recording cattle observations prior to and during excessive heat load events.

3.2.20 Recommendation 20—Automated watering systems

All vessels carrying sheep to the Middle East during the northern hemisphere summer should have automated livestock watering systems.

DAWR Support: *This will be implemented immediately for all future voyages.*

NFAS: The feedlot industry has sophisticated water supply mechanisms for delivering drinking water to cattle. Largely the process is automated, and feedlots have support secondary mechanisms in the event the primary system fails.

3.2.21 Recommendation 21—Heat Stress Management Plan

A meaningful heat stress management plan could be a part of an exporter's approved arrangement. This plan should address the contingencies outlined in this review.

DAWR Support: *This will be implemented immediately for all future voyages.*

NFAS: All feedlots in the Scheme must have an EHL Management Plan specific to the cattle on feed, the feedlot environment and the business's risk profile. This is verified during the annual audit for compliance. The Scheme also has a requirement that the plan is reviewed prior to each summer, including the risk assessments and contingency planning.

3.2.22 Recommendation 22—First port of unloading

Where Kuwait is one of the vessel's destination ports, this should be the vessel's first port of unloading.

DAWR Support: *This has already been implemented for voyages travelling to or through the Middle East.*

NFAS: The Standards in the Scheme make reference to "a person in charge must exercise duty of care to ensure the welfare of livestock under their control and compliance with the Animal Welfare Standards and Guidelines – Land Transport of Livestock (as amended or superseded)".

McCarthy's recommendation 22 was deemed not applicable to the Scheme.

3.2.23 Recommendation 23—Monitoring equipment

All vessels travelling to the Middle East during the 2019 northern hemisphere summer and after should have automated continuous environmental monitoring equipment installed as a condition of any approved arrangement.

DAWR Support in principle: *Further work is required to investigate the feasibility and practicality of currently available or new/upcoming technology to monitor and report on environmental conditions. Effective application of these technologies will be a critical consideration in the department's consultation on the review's heat stress management recommendations.*

NFAS: All feedlots in the Scheme must have an EHL Management Plan, that includes reference to Element LM5 (Excessive Heat Load) where "the likelihood of an Excessive Heat Load event is monitored, and prompt and appropriate remedial action is taken when required". This includes feedlots being able "to demonstrate that they can (a) calculate and monitor both HLI and AHLU, and (b) conduct a RAP for the various classes of cattle at the feedlot site", and at suitable intervals through the summer season.

The Scheme is not prescriptive about the requirement for automated continuous environmental monitoring equipment on feedlots. Industry has undertaken research projects into the availability, reliability and cost effectiveness of various automated weather monitoring equipment to encourage industry adoption of suitable technology in the management of heat load in cattle during summer seasons (for example, MLA project B.FLT.4000 - Review of Automatic weather stations) . ALFA has also considered on a number of previous occasions the potential to ensure feedlots have suitable weather monitoring capability through the Scheme.

Recommendation 26: Industry could consider the requirement for all accredited feedlots to have working, automated continuous environmental monitoring equipment during the summer season.

Outputs could be verified at the annual audit by AUS-MEAT.

Table two in Appendix B shows the comparison in summary of the recommendations made in the McCarthy Review, the DAWR responses and the relevant Standards in the National Feedlot Accreditation Scheme (NFAS). This review provides guidance on the relevance for the feedlot sector of the recommendations from McCarthy's report and the responses from the DAWR, and where appropriate suggests potential considerations for industry and actions.

Recommendation 27: Industry could consider an update of section 3.2 Reference Material in the Rules to include the following documents for feedlots to have on hand:

- Antimicrobial Stewardship Guidelines for Feedlots
- Euthanasia Guidelines for Feedlot Cattle.

4 Discussion

This review has suggested a number of practical considerations that industry can consider to address the continuous improvement of the NFAS. Whilst many of the suggestions are currently undertaken on a broad scale within the feedlot sector, many are not yet imbedded in the NFAS and therefore have not yet achieved minimum rates of adoption. Industry should consider many of the recommendations in the context of continual improvement and opportunities for increased transparency.

There also exists number of research opportunities to explore innovative techniques and strategies for increasing the welfare of feedlot cattle in the introduction phase, whilst at the feedlot and during transit to the manufacturing plants. Improvements to predictive tools and animal welfare indicators are just a sample of the opportunities to improve. A work stream of research can be cross-linked with the existing research being undertaken to execute a beneficial strategy addressing a number of factors relating to the management of feedlot cattle.

It should also be noted that the Commonwealth Government indicated the Australian Standards for the Export of Livestock (ASEL) were slated for review in late 2018 to early 2019. The outcomes of this review may require further investigation for the relevance to the National Feedlot Accreditation Scheme (NFAS).

There were five main objectives in this review:

a) Identifies areas where there are the same or similar regulatory/QA requirements in the live export and Australia feedlot sector. This should include, but is not limited to, heat stress management plans, heat stress risk assessment, reportable mortality levels and incident reporting requirements.

Areas of similarity were identified and discussed, with a number of recommendations for industry to consider.

b) Identifies the differences between the live export and the Australia feedlot sector requirements and where there is potential 'Regulatory Creep' risk. This should compare and identify the practical and technical differences between the requirements and why those differences occur.

Areas of difference were identified and discussed, with a number of recommendations for industry to consider.

c) Identify and recommend where the NFAS Rules and Standards may require review and/or change.

There are a number of recommendations for industry to consider in relation to industry reviewing and/or changing elements within the NFAS.

d) Identify where relevant requirements of the live export sector, though similar, should not apply to the Australian feedlot production system.

Areas where relevant requirements of the live export sector should not apply to the feedlot production system were identified, with a number of recommendations for industry to consider.

5 Conclusions/recommendations

5.1 Conclusions

For McCarthy it was apparent that the industry has been shaped by a repeating cycle of reactivity. Furthermore, he identified a tendency for the regulator to focus on peripheral, easy to enforce aspects, and not the address the more difficult, core issues like stocking density. In general McCarthy suggested that there be more focus on key issues, and less on peripheral issues that divert time and resources. In keeping with this, McCarthy suggested there was no point in amending (or adding) conditions to the approved arrangements if the regulatory framework around the export of sheep to the Middle East during the northern hemisphere summer is ineffective.

Another feature that McCarthy identified is the apparent number of unevolved or evolving capabilities that litter the landscape. For the most part, the industry has completed a large body of quality research and development, but far too little of it has been picked up and turned into something operational. McCarthy suggested that industry should take this opportunity to identify any obstruction and forge forward with new technology, much of which can transform the industry and better prepare it for the challenges ahead.

For the Commonwealth government the McCarthy Review represents a significant shift in the regulation of live sheep exports and the Department of Agriculture and Water Resources acknowledges that changes will have significant implications for all parties associated with the live export trade. The two most significant immediate recommendations relate to stocking density and a revised heat stress assessment model.

1. On **stocking density**, the Review has recommended that that an 'allometric' approach be adopted for the forthcoming northern hemisphere summer. This will increase the space for sheep on board vessels by between 11 to 39 per cent, depending on their weight, compared to the stocking density requirements under the Australian Standards for the Export of Livestock (ASEL).
2. On the **heat stress risk assessment** model, the Review recommends moving from an assessment based on mortality to one based on animal welfare, with a risk threshold of a 2 per cent probability that 5 per cent of sheep on a voyage experience heat stress. This represents a significant shift from current standards and will have significant further implications for stocking densities.

The Department has supported the recommendations from the McCarthy Review and will be working to implement them, following further public consultation and testing of the findings relating to heat stress risk assessment (Recommendations 3, 4, 5, 7 and 8). Steps will be taken to implement most measures immediately for the forthcoming northern summer period and the remainder will be subject to further public consultation with the community generally, animal science and welfare experts and industry.

For the feedlot sector, the McCarthy review, the responses from the DAWR and the live export sector may trigger future interrogation of the NFAS and its effectiveness in mitigating against poor cattle welfare outcomes, particularly during the Australian summer seasons.

Industry could undertake research into various aspects of appropriate stocking density in beef cattle feedlots (as outlined in the recommendations). Although the past focus of industry research has primarily been on improving the management of environmental factors such as pen floor manure loads, odour and dust in various climatic conditions, there is an identified need to study the impacts of stocking density on cattle well-being, particularly during summer seasons.

The feedlot industry has also invested in research over two decades to provide lot feeders with a comprehensive array of tools and strategies for forecasting excessive heat load weather events (including site specific) and

potential mitigation strategies. To date feedlots have been encouraged to observe closely for signs of excessive heat load in cattle and take actions as required to mitigate against mortalities.

However industry should now consider researching the appropriate levels of risk thresholds (for example, shifts in dietary intake and/or water consumption, panting scores) that would initiate feedlots to take actions in maintaining sound cattle welfare and well-being. In other words, what are the proactive levels to take action in the prevention of cattle suffering from heat distress. The increased adoption of shade, functioning automated weather stations, feed intake analysis, consistent and meaningful cattle observations and a revitalised forecasting model would lead to improving the management of risk during excessive heat load events.

The NFAS has provided the cattle feedlot industry with a suitable template to cultivate best management practice within the industry across a number of important criteria. The scheme has been adopted broadly across industry, administered cost effectively, and been a fine example of on-farm quality assurance delivering to customers. Also, the benefits of feedlot accreditation have enabled the cattle grain feeding sector to become an important component in the Australian beef value chain.

NFAS continues to evolve and improve as relevant criteria are addressed within the scheme. It is imperative that this approach to encouraging best management through a certified scheme is continued to ensure the industry is not negatively influenced by environmentalists, animal activists or governments. Mechanisms to ensure industry participation for those seeking to adopt well researched and innovative management techniques should be encouraged.

The industry is still evolving, the reliance on feedlots predictable production outcomes is increasing, consumers expectations in regard to food production are changing, and government's approach to industry is continually waxing and waning. The necessity for a robust industry scheme has never been greater. The speed of change and development in the world today is unprecedented. This review has highlighted some challenges for industry as it addresses the current changes in production methods, livestock handling and management, and consumer's perception of feedlots. The future requirements of the scheme will need to be soundly researched, debated and implemented with consensus across industry.

5.2 Recommendations

Recommendation 1: Industry could consider a "No calves" policy within the Scheme.

The word "calving" could be removed from the required plan heading to read "Pregnancy Management Plan" to infer in the Standards that heifers calving in the feedlot is not acceptable.

Recommendation 2: Industry could consider the inclusion of the Antimicrobial Stewardship Guidelines in the Scheme.

AUS-MEAT could verify at the annual audit that feedlots have a documented strategy and implementation plan that address the five principles in the Guidelines.

Recommendation 3: Industry could consider a verification process during the annual audit by AUS-MEAT that ensures feedlots have a copy of the reference document "Guidelines for managers and supervisors on criteria and methods of euthanasia for compromised cattle in feedlots".

Recommendation 4: The NFAS could strengthen the scrutiny and verification of approved arrangements by auditors during the annual audit. This would require additional training of auditors.

Recommendation 5: Industry could undertake research to develop a new risk assessment and forecasting service. This work could consider the inclusion of cattle welfare measures that would assist in defining acceptable levels of cattle well-being and/or distress, at the same time increasing the scope of mitigation factors that feedlots can undertake leading into or during an excessive heat load event.

Recommendation 6: Industry could undertake research to assess the validity of including pen stocking density as an additional parameter in the Katestone Risk Analysis Program (RAP).

Decreasing stocking density prior to summer could also be included in the series of potential mitigation strategies that feedlots could implement as part of their EHL Management Plan.

Recommendation 7: Industry could undertake research for the development of software and/or an App that could provide feedlots with the means to record observational data live (at pen), which can be automatically correlated with feed intake and local weather data to provide analysis/predictor of current cattle comfort.

Industry could research the development of a meaningful index as an output.

Recommendation 8: Industry could undertake research to establish a cattle heat load risk assessment approach to managing animal welfare outcomes. This approach could be included in a new RAP model and forecasting service.

Recommendation 9: AUS-MEAT could train and facilitate auditors to increase the level of verification when assessing the strengths of feedlot preparation for managing excessive heat load during summer. This particularly includes verifying risk assessments, management plans, weather records and cattle observations.

Recommendation 10: Industry could undertake research in relation to establishing welfare indicators or a cattle welfare index that could contribute to the mitigation strategy of letting susceptible cattle out of pens onto nearby grazing land during an emergency.

Recommendation 11: Industry could undertake research to ascertain thresholds within the Katestone RAP that indicate a required change to stocking density in specific pens prior to or during an excessive heat load event.

Concurrently or alternatively, stocking density could contribute to the RAP.

Recommendation 12: Industry could undertake research into actions that verify daily monitoring of cattle records, and that these records are available at internal and external audits of the feedlot.

Recommendation 13: Industry could undertake research into improved indicators of cattle welfare to assist interpretations in relation to heat tolerance levels and cattle comfort.

Recommendation 14: Industry could undertake research to assess the impact of directional airflow (for example orchard fans) onto susceptible cattle during heat load situations.

Recommendation 15: Industry could consider a condition of accreditation in the Scheme that all feedlots submit an EHL Management Plan prior to each summer season approved by a registered veterinarian. AUS-MEAT would verify the existence and content by desk top audit.

Recommendation 16: Industry could include in the Standards appropriate loading density for transport of cattle away from the feedlot.

Consideration could be given to providing a relationship between loading density in liveweight and equivalence expressed in terms of Standard Cattle Units (SCU).

Recommendation 17: Industry could consider research into appropriate curfew times for grain fed cattle prior to loading.

Consideration would need to be given to feedlot location (or duration of travel), class of cattle (breed, time on feed), seasonal conditions, abattoir lairage (including access to shade, feed and water prior to slaughter) and time lapse from delivery to slaughter.

Recommendation 18: Industry could consider the development of guidelines for loading cattle for despatch. These guidelines could be included in the Scheme.

The following criteria could be considered in the development of the guidelines - classes of cattle (for example, low head day versus high head day), seasons, curfew times, loading density and travel duration (including recommendations for time of loading and abattoir destination arrival times).

Recommendation 19: Industry could consider the development of guidelines for the transport of incoming and outgoing cattle under various circumstances and parameters.

These guidelines could be developed in association with the loading density guidelines for incorporation into the Standards.

Recommendation 20: Industry could consider formal training and certification of feedlot Quality Assurance officers within the Scheme.

Recommendation 21: Industry could consider the inclusion and requirement for certified Animal Welfare officers within the Scheme.

Recommendation 22: Industry could consider the amalgamation of requirements of accredited feedlots to have trained and certified Quality Assurance and Animal Welfare officers.

This would require an update to the existing program content and delivery.

Recommendation 23: Industry could consider feedlots in the Scheme having written approval from Local and/or State authorities for the mass disposal of animals on-site or off-site.

This approval could be verified during the annual audit by AUS-MEAT.

Recommendation 24: Industry could consider increasing the level of scrutiny during the annual audit in relation to feedlot incidents and any associated reporting responsibilities.

Recommendation 25: Industry could consider a series of reporting levels where information could be shared with external stakeholders increasing the level of industry transparency and trust.

Recommendation 26: Industry could consider the requirement for all accredited feedlots to have working, automated continuous environmental monitoring equipment during the summer season.

Outputs could be verified at the annual audit by AUS-MEAT.

Recommendation 27: Industry could consider an update of section 3.2 Reference Material in the Rules to include the following documents for feedlots to have on hand:

- Antimicrobial Stewardship Guidelines for Feedlots
- Euthanasia Guidelines for Feedlot Cattle.

6 Bibliography

1) Australian Standards for the Export of Livestock (Version 2.3) (Commonwealth Government) 2011

2) Independent Review of Conditions for the Export of Sheep to the Middle East during the Northern Hemisphere Summer (Dr Michael McCarthy) May 2018

3) National Feedlot Accreditation Scheme (AUS-MEAT) November 2017

4) Heat Load in Feedlot Cattle (MLA Tips & Tools) 2014

7 Appendices

7.1 Appendix A

Australian Standards for the Export of Livestock (ASEL)				National Feedlot Accreditation Scheme (NFAS)
Standard	**Guiding Principle**	**Required Outcomes**	**Number and Standard**	**Relevant Standard and Criteria**
1 Sourcing and on-farm preparation of livestock	Sourcing of appropriately prepared livestock that are fit to travel is critical to successful health and welfare outcomes during export.	(1) Livestock sourced for export must meet any requirement under a law of a state or territory relating to the sourcing of livestock. State and territory governments are responsible for ensuring that these requirements are met. (2) Livestock sourced for export must meet these Standards and importing country requirements. (3) Livestock sourced for export that become sick or injured during on-farm preparation must be excluded from export, and arrangements must be made for their prompt and humane handling and care. (4) AQIS must be satisfied that these Standards and importing country requirements are met before issuing a health certificate and export permit.	S1.1 Livestock sourced for export must meet any relevant animal health and welfare requirements under state and territory legislation and relevant requirements under national Model Codes of Practice for the Welfare of Animals. S1.2 Livestock sourced for export must meet importing country requirements. S1.3 Livestock sourced for export must be: (a) identified to the property of source; (b) accompanied by a correctly completed and signed declaration as to the identification of the livestock and property of source; and (c) individually identified where testing is required during preparation. S1.4 Livestock sourced for export and intended for human consumption must comply with Australian food safety requirements, including standards for chemical residues or environmental contaminants. S1.5 Fat *Bos taurus* cattle must not be sourced for export from or through the ports of Darwin, Weipa or Wyndham from 1 October to 31 December (inclusive). **Note**. "Fat" means having a body condition score, under Table A1.1.2, of 5 or more: see clause 1.5. S1.5A *Bos taurus* cattle bred in an area of Australia south of latitude 26° south must not be sourced for export to the Middle East from May to October unless an agreed livestock heat stress risk assessment indicates that the risk is manageable. [less than a 2% risk of 5% mortality] S1.7 Livestock sourced for export must be fit to enter the export chain. S1.8 Livestock must not be sourced for export if they are in an	**FS4 - Preparation for Dispatch of Livestock** **LM1 - Livestock Identification** **LM2 - Livestock Husbandry and Presentation** **LM3 - Livestock Transport** Reference AAWS&G and "Fit to Load Guide" **LM4 - Animal Welfare** Not applicable – only in terms of beef (**Food Safety Management module**) Not applicable to NFAS feedlots for export - but livestock at feedlot entry must be identified to property of source (LPA, LPA NVD), be accompanied by a correctly completed and signed declaration as to identification and property of origin, and all cattle must be individually identified (NLIS). **Food Safety Management module** Not applicable to NFAS Not applicable to NFAS **Food Safety Management module** Not applicable to NFAS Not applicable to NFAS **LM4 - Animal Welfare** NFAS feedlots must have a documented Pregnancy and Calving Management Plan. Industry could consider a "No calves" in feedlots policy? Pregnancy tested prior to feedlot entry –

			emaciated or overfat body condition. S1.9 Cattle and buffalo sourced for export as slaughter and feeder animals: (a) must have been weaned at least 14 days before sourcing for export; (b) must have an individual liveweight of more than 200 kg and less than 650 kg or, if outside these weights, have written prior approval from the relevant Australian Government agency; (c) must have been determined not to be pregnant, using the following criteria: (i) have been pregnancy tested during the 30 day period before export and certified in writing as not detectably pregnant by the registered veterinarian or competent Pregnancy tester who pregnancy tested the cattle or buffalo; or (ii) be accompanied by a vendor declaration that certifies that they have been spayed using the Willis dropped ovary technique not less than 30 days before export; or (iii) be accompanied by a vendor declaration that certifies that they have been spayed not less than 280 days before export. S1.15 Horned cattle and buffalo must only be sourced for export as slaughter and feeder animals: (a) for cattle, if the horns are 12 cm or less in length and tipped (blunt); (b) for buffalo, if the horns are no longer than the spread of the ears and are blunt; and (c) if de-horned, wounds are healed. Otherwise, horned cattle and buffalo must only be sourced for export with the approval of the relevant Australian Government agency. S1.25 A record of all vaccines, veterinary medicines and agricultural chemicals used to vaccinate or treat livestock sourced for export must be kept for at least 2 years after the date of export. S1.26 Female livestock must not be treated with a prostaglandin drug within 14 days of export, and not during the 60 day period before export unless they have been pregnancy tested immediately before prostaglandin treatment and declared to be in the first trimester of pregnancy or not detectably pregnant. S1.27 Livestock sourced for export that become sick or injured during	currently not mandated by NFAS? Not required in NFAS? Company specific requirements for feedlot entry. **LM2 - Livestock Husbandry and Presentation** Livestock husbandry and presentation at slaughter **LM3 - Livestock Transport** Livestock transport to processing. Generally accepted that cattle with horns are tipped to 2/3 length of ear at induction if required. Industry could consider "No horn tipping" policy on feedlots? Or only with the use of pain relief? Reference AAWS&G **FS2 - Safe and Responsible Animal Treatments** **LM4 - Animal Welfare** NFAS feedlots must have a documented Pregnancy and Calving Management Plan. Industry could consider a "No calves" in feedlots policy? Pregnancy tested prior to feedlot entry – currently not mandated by NFAS? **FS4 - Preparation for Dispatch of Livestock**

			on-farm preparation must be excluded from export, and arrangements must be made for their prompt and humane handling and care.	
2 Land transport of livestock	Land transport is planned and is undertaken on a competently operated and suitable vehicle, with the livestock being handled in a manner that prevents injury and minimises stress throughout the journey.	(1) Only livestock fit to travel are presented for loading. (2) Livestock are loaded in a manner that prevents injury and minimises stress. (3) Transport of livestock is undertaken in a manner that meets these Standards, any requirements of a state or territory relating to the transport of livestock, and importing country requirements. (4) Livestock are unloaded in a manner that prevents injury and minimises stress.	S2.1 The land transport of livestock for export must meet any relevant animal health and welfare and road transport requirements under state and territory legislation and relevant requirements under national Model Codes of Practice for the Welfare of Animals. S2.2 The land transport must meet any importing country requirements for the land transport phase in the export chain. S2.3 The land transport must be undertaken in accordance with a travel plan. This travel plan must be completed for all interstate journeys greater than 2 hours and journeys of more than 8 hours duration. Each plan must address the following: (a) species, class, condition and number of livestock; (b) transport vehicles; (c) loading densities and penning requirements; (d) duration of the journey, including rest periods for driver and livestock; (e) the method of loading and unloading of the livestock; (f) inspection of livestock before loading; (g) the feed and water requirements and curfew times applicable to the livestock under this Standard, including to livestock sourced from saleyards; (h) the expected weather conditions before and during transport; (i) the route and the types of roads traversed; (k) completion of vendor declarations or waybill regarding the property of source and the time of departure; and (l) contingency plans for managing transport breakdown, accidents, escapes, deaths, downers and injuries. S2.4 Livestock must be prepared for land transportation from the property of source in line with requirements outlined in Appendix 2.3. S2.8 The following feed and water curfews must be observed for livestock before their loading for land transport from the property of source: (a) livestock on green feed must be held off green feed (but may be given access to dry feed) for at least 12	**LM2 - Livestock Husbandry and Presentation** **LM3 - Livestock Transport** Reference AAWS&G and "Fit to Load Guide" Not applicable to NFAS NFAS is not prescriptive – but the required outcomes for land transport of cattle are included. **FS4 - Preparation for Dispatch of Livestock** **LM2 - Livestock Husbandry and Presentation** **LM3 - Livestock Transport** Reference AAWS&G and "Fit to Load Guide" Industry could consider incorporating the requirement in NFAS for a travel plan for all cattle journeys of more than 8 hours duration? **FS4 - Preparation for Dispatch of Livestock** **LM2 - Livestock Husbandry and Presentation** **LM3 - Livestock Transport** Reference AAWS&G and "Fit to Load Guide" NFAS is not prescriptive – but the required outcomes for land transport of cattle are included. **FS4 - Preparation for Dispatch of Livestock** **LM2 - Livestock Husbandry and Presentation** **LM3 - Livestock Transport** Reference AAWS&G and "Fit to Load Guide" Industry could consider incorporating the requirement in NFAS for well researched and appropriate water and feed curfews prior to loading? NFAS is not prescriptive. **FS4 - Preparation for Dispatch of Livestock** **LM3 - Livestock Transport**

			hours; and (b) livestock may be held off water (but may be given access to dry feed) for up to 12 hours. S2.9 Livestock must not be deprived of water beyond the limits specified for each species and class of animal in Appendix 2.1. S2.10 When livestock are loaded for transport by land: (a) animals of different species must not be mixed in a single pen; (b) classes of animals of the same species must not be mixed; (c) young animals must be separated from older animals; (d) animals of a dissimilar size must be separated; and (e) Cattle lacking horns may be mixed with cattle with horns up to 12cm in length and tipped (blunt); S2.11 Livestock must be inspected prior to loading and any animal showing signs consistent with the rejection criteria in Standard S1.7 of *Standard 1 – Sourcing and on farm preparation of livestock*, or any other condition that could cause the animal's health and welfare to decline during transport or export preparation, must not be transported. S2.12 Livestock must not be loaded until the travel plan is completed. The following documentation must accompany each load of the consignment: (a) a signed declaration as to the identification of the livestock and the property of source; and (b) a journey log that commences at loading, is maintained through the journey and finalised on completion of unloading, and is used to record the actual journey details. The livestock transport driver must be aware of the travel plan prior to commencement of the journey. The documentation relating to each consignment must be kept for at least 2 years after the date of export. S2.13 Livestock must be loaded in a manner that prevents injury and minimises stress. In particular: (a) the use of electric prods must be restricted to the minimum necessary to assist loading, and be in accordance with state/territory legislation. Electric prods must not be applied to the face or ano-genital area. (c) 'metallic rattles' can be used for livestock to encourage movement in response to sound and, if necessary, polypipe may be used humanely to persuade animals to move; and (d) well-trained dogs may be used to help with the loading of livestock	Reference AAWS&G and "Fit to Load Guide" NFAS is not prescriptive – but the required outcomes for land transport of cattle are included. **FS4 - Preparation for Dispatch of Livestock** **LM2 - Livestock Husbandry and Presentation** **LM3 - Livestock Transport** Reference AAWS&G and "Fit to Load Guide" Cattle (especially for MSA) are segregated during transport by market category, specification and liveweight. **LM2 - Livestock Husbandry and Presentation** **LM3 - Livestock Transport** Reference AAWS&G and "Fit to Load Guide" **LM4 - Animal Welfare** **LM2 - Livestock Husbandry and Presentation** **LM3 - Livestock Transport** Reference AAWS&G and "Fit to Load Guide" **LM4 - Animal Welfare** Travel plan is not prescribed in NFAS. **LM3 - Livestock Transport** Reference AAWS&G and "Fit to Load Guide" **LM4 - Animal Welfare** **FS4 - Preparation for Dispatch of Livestock** **LM2 - Livestock Husbandry and Presentation** **LM3 - Livestock Transport** Reference AAWS&G and "Fit to Load Guide" **LM3 - Livestock Transport** Reference AAWS&G and "Fit to Load Guide" **LM3 - Livestock Transport** Reference AAWS&G and "Fit to Load Guide"

			(other than camelids and deer). Dogs must be muzzled. The number of dogs used should be the minimum necessary to complete the task. S2.14 Loading density and penning arrangements for land transport must conform to stocking densities and penning arrangements as given in Appendix 2.2. S2.15 At loading for land transport, the person responsible for the land transport vehicle must assume responsibility for the livestock. S2.16 Livestock must be checked to ensure that they are evenly distributed and remain fit to travel: (a) immediately before departure; (b) within 30–60 minutes of commencement of the journey; (c) at least every 2–3 hours as road conditions warrant; and (d) immediately before departure after any stop. S2.17 Working dogs must not be transported in the same pen as livestock. S2.18 Livestock must be unloaded and rested in suitable facilities and offered food and water at appropriate intervals during the journey, as specified in Appendix 2.1 and in accordance with state/territory legislation. S2.19 At unloading, livestock become the responsibility of the person designated with responsibility for the livestock at the registered premises. That person must be notified of any aspect of the journey that might affect the future welfare of the livestock. S2.20 Livestock that are distressed or injured at unloading must be given immediate assistance. If euthanasia is necessary, it must be carried out humanely. S2.21 Livestock must be unloaded into registered premises to rest and adapt for their export journey if the duration of the land transport journey is more than 14 hours. S2.22 Livestock must be unloaded into the registered premises by competent stock handlers in a manner that prevents injury and minimises stress. Facilities must be designed, constructed and maintained to enable safe and efficient unloading of livestock. S2.24 All relevant standards for the	NFAS is not prescriptive in relation to the journey. **FS4 - Preparation for Dispatch of Livestock** **LM3 - Livestock Transport** Reference AAWS&G and "Fit to Load Guide" **LM3 - Livestock Transport** Reference AAWS&G and "Fit to Load Guide" **LM4 - Animal Welfare** **LM3 - Livestock Transport** Reference AAWS&G and "Fit to Load Guide" **LM4 - Animal Welfare** **LM3 - Livestock Transport** Reference AAWS&G and "Fit to Load Guide" **LM4 - Animal Welfare** NFAS references the industry Euthanasia Manual. **LM3 - Livestock Transport** Reference AAWS&G and "Fit to Load Guide" **LM4 - Animal Welfare** NFAS not prescriptive regarding journeys of more than 8 hours duration. **FS4 - Preparation for Dispatch of Livestock** **LM2 - Livestock Husbandry and Presentation** **LM3 - Livestock Transport** Reference AAWS&G. NFAS not prescriptive in relation to the receival of cattle at the feedlot, but the outcomes required are. **LM3 - Livestock Transport** Reference AAWS&G and "Fit to Load Guide" **LM4 - Animal Welfare**

			land transport of livestock for export relating to loading, handling during transport and unloading must also be applied to transport from the registered premises to the port of export.	

3 **Management of livestock in registered premises**	Livestock are assembled at registered premises, where the husbandry and management practices ensure that the livestock are adequately prepared for the export voyage.	(1) Facilities at registered premises are appropriate for the type and species of livestock to be held. (2) The health and welfare needs of the livestock are appropriately catered for in a secure environment. (3) Livestock leaving the premises are fit for the export voyage and meet importing country requirements. (4) Livestock rejected for export are managed humanely.	S3.0 The location of the registered premises, used for inspection for 'leave for loading', must not be more than 8 hours journey time from the port of embarkation, with the exception of camels for export through northern ports, unless approved by a relevant Australian Government agency. S3.1 The operator of registered premises must employ sufficient appropriately trained staff for the effective day-to-day operation of the premises and management of the livestock. S3.2 Livestock handling facilities and sheds at registered premises must comply with the following: (a) Sheds must be constructed with sufficient drainage and ventilation to ensure that the shed is free draining. (b) Sheds with slatted or mesh floors must be designed and maintained to prevent entrapment of feet. (c) Livestock handling facilities must be constructed to handle the number of livestock (ie the number of stock at the premises, whatever that may be, depending on the consignment size) with a minimum of stress and injury. (d) Floors of yards, sheds, pens and loading ramps must have non-slip surfaces. S3.3 Isolation of livestock: (a) Where a period of pre-export quarantine or isolation is required by the importing country, animals forming the consignment must at all times be physically isolated from all other animals (whether for an alternative export market or domestic use) to prevent contact. (b) Where handling facilities used for loading, holding, treating or inspecting livestock (including roadway and lanes) are to be used for both domestic and export livestock (including livestock of differing export status), the operator of the premises must have procedures in place to ensure that: (i) handling facilities are not used simultaneously by livestock of differing pre-export quarantine or isolation status; (ii) a minimum livestock traffic separation of 2 m is maintained at all times, or livestock are separated by a physical barrier such as a fenced road or lane or a fully fenced empty paddock, unless specified otherwise by the importing country; and (iii) handling facilities and equipment used by different consignments of animals are managed in accordance with the	Not referenced in NFAS. **QM1 - Training** Staff are adequately trained to ensure they have the appropriate skills and knowledge to competently perform the duties required of them by the NFAS Standards. **LM2 - Livestock Husbandry and Presentation** **LM6 - Biosecurity** The likelihood of disease entry into and spread from the Feedlot and associated utilization area is minimised. **EM1 – Environmental Management** Environmental management requirements of the National Beef Cattle Feedlot Environmental Code of Practice and the relevant authority regulations have been met. **EM2 - Surface Water** Feedlots are operated to prevent or minimise adverse impacts on surface waters external to the feedlot controlled drainage area and external to the manure and effluent utilisation area. **EM3 - Ground Water** Feedlots are operated to prevent or minimise adverse impacts on groundwater. **EM4 - Community**

			pre-export quarantine or isolation requirements of each importing country. S3.4 To control drainage, surface water, groundwater and effluent run-off, the premises must be located or constructed in such a manner that: (a) surface water and livestock effluent are directed away from laneways, livestock handling areas, livestock confinement areas and feed storage areas; (b) the livestock confinement area of the registered premises is free draining and remains firm under foot; and (c) the surfaces around feeders and water troughs are evenly graded and compacted to form a hard, durable surface that readily sheds surface water. S3.5 The registered premises must be either constructed or located in such a manner as to provide animals with protection from extreme climatic conditions by means of: (a) shade; (b) windbreaks; (c) shelter; or (d) other means approved by the registration authority. **Note**. Specific requirements may vary according to the type of registered premises, taking into account the species, class and maximum number of animals to be held at the premises and the types of operations to be carried out. S3.6 Fencing at registered premises must: (a) be appropriate to hold livestock and to prevent the entry of livestock; (b) be maintained in a good state of repair; (c) be inspected before the entry of each consignment and twice a week while livestock are in the registered premises; and (d) be consistent with the importing country requirements. S3.7 To ensure adequate supply of feed and water: (a) where feeders, self-feeders and water troughs are used, they must be of a design that allows for complete cleaning of all surfaces, prevents spoilage of feed during inclement weather, and minimises faecal contamination and injuries (b) all livestock feed for use at the registered premises must be stored	Feedlots are operated to prevent or minimise adverse impacts on the amenity of the surrounding community. **EM5 - Ecology** Feedlots are operated to prevent or minimise adverse impacts on native flora and fauna and ecological communities. **EM1 – Environmental Management** Environmental management requirements of the National Beef Cattle Feedlot Environmental Code of Practice and the relevant authority regulations have been met. **LM4 - Animal Welfare** **LM5 - Excessive Heat Load** Reference AAWS&G re shade, shelter etc **LM3 - Livestock Transport** Reference AAWS&G. **LM4 - Animal Welfare** **FS3 - Fodder Crop, Grain and Pasture Treatments and Stock Foods** Systems have been implemented to manage the exposure of livestock to foods containing unacceptable chemical contamination to minimise the risk of chemical residues in livestock and to eliminate the risk of animal products being fed to ruminant livestock intended for human consumption. **LM4 - Animal Welfare** The welfare of livestock is not compromised whilst within the control of persons responsible for their care and wellbeing, and that prompt and appropriate remedial action is taken when required. **LM5 - Excessive Heat Load** The likelihood of an Excessive Heat Load event is monitored, and prompt and appropriate remedial action is taken when required. **LM6 - Biosecurity** The likelihood of disease entry into and spread from the Feedlot and associated utilization area is minimised. **LM6 - Biosecurity** The likelihood of disease entry into

			in a manner that maintains the integrity and nutritional value of the feed, and protects it from weather, pests and external contaminants (including chemical spray drift) and from direct access by animals. (e) the quantity of feed available should meet at least minimum feed requirements, which are: (i) cattle/buffalo — 2.5% of their bodyweight, of a quality feed able to meet daily maintenance requirements; (f) all livestock in the registered premises must have access to drinking water at all times (unless under curfew) (g) water troughs must be: (i) positioned apart from hay and feed sources to prevent fouling; and (ii) kept clean. (h) the water quality must be suitable for the livestock and there must be sufficient backup storage or a contingency plan to ensure continuity of supply at peak demand for 2 days. S3.10 The operator of the registered premises must have arrangements in place at the premises to prevent unauthorised entry and access to the feed when livestock are being prepared for export. Access to the premises must be controlled at all times, with: (a) all entry points to premises being clearly signed; (b) only those persons necessary for the day-to-day operation of the premises and state and territory government officials having direct access to the area of the premises; and (c) all non-employees reporting to reception for appropriate biosecurity checks relevant to the requirements of the facility. S3.11 Stocking density at registered premises must provide at least the following minimum space per head (cattle with horns must be provided with additional space), unless a variation is required and approved by the relevant Australian Government agency: (a) for cattle or camels held for 30 days or more, a minimum of 9 m2, based on an individual liveweight of 500 kg (this allowance can be varied by 0.09 m2 for each 5 kg change in individual liveweight) (b) for cattle or camels held for less than 30 days, a minimum of 4 m2, based on an individual liveweight of 500 kg (this allowance can be varied by 0.04 m2 for each 5 kg change in individual liveweight)	and spread from the Feedlot and associated utilization area is minimised. NFAS not prescriptive. NFAS not prescriptive. NFAS feedlots require a Visitors Register as part of the Biosecurity Plan. Specified in feedlot license – Local and/or State approvals. NFAS Rules – definition of a feedlot. **LM4 - Animal Welfare** The welfare of livestock is not compromised whilst within the control of persons responsible for their care and wellbeing, and that prompt and appropriate remedial action is taken when required. **EM1 – Environmental Management** Environmental management requirements of the National Beef Cattle Feedlot Environmental Code of Practice and the relevant authority regulations have been met. **FS5 – Livestock Transactions & Movements** A system has been implemented to ensure traceability of the current status of all livestock with respect to treatment or exposure to relevant food safety hazards for all livestock movements between livestock production enterprises including to slaughter and live export. **LM1 - Livestock Identification** **LM6 - Biosecurity** **FS5 - Livestock Transactions & Movements** **LM1 - Livestock Identification** **LM6 - Biosecurity** **LM3 - Livestock Transport** Reference AAWS&G. **LM4 - Animal Welfare** **LM5 - Excessive Heat Load** Not applicable. **QM1 - Training** **LM2 - Livestock Husbandry and Presentation** **LM4 - Animal Welfare** **LM5 - Excessive Heat Load** **LM6 - Biosecurity** **LM7 – Incident Reporting** Incident reporting requirements are

			S3.12 When receiving and identifying livestock, the operator must obtain a copy of the vendor declarations regarding the property of source and health and welfare status of the livestock before accepting the livestock for the purpose of preparation for export.	undertaken when an unusual number of sick animals or deaths occur.
			S3.13 Unloading and inspection: (a) Livestock must be unloaded as soon as possible after arrival at the registered premises. Facilities must enable safe and efficient unloading of livestock. (b) Livestock must be individually inspected at unloading to determine whether they are suitable for preparation for export. (c) Livestock for export must be held and assembled at the registered premises in accordance with the relevant approved NOI and CRMP. S3.14 All livestock accepted into the registered premises must be offered water and feed as soon as possible and no more than 12 hours after arrival. S3.15 Livestock must be penned in accordance with the criteria in S2.10 (a) to (e). S3.16 Daily monitoring of health, welfare and mortality must include the following: (a) All livestock must be inspected daily by a competent stock person (b) All sick or injured livestock must be given immediate treatment, and veterinary advice must be sought if the cause of a sickness or injury is not obvious, or if action taken to prevent or treat the problem is ineffective (c) Investigation by a registered veterinarian must be conducted if mortalities in any one paddock or shed exceed 0.1% or 3 deaths, whichever is the greater, on any one day for cattle and buffalo, or 0.25% or 3 deaths, whichever is the greater, on any one day for any other species of livestock. Dead livestock must be collected and disposed of on a daily basis. Animals must not be able to access the area for disposal of carcases (d) Records of each consignment must be kept for at least 2 years after the date of export. S3.17 Any livestock identified at unloading as being distressed, injured or otherwise unsuitable for export must be marked by a permanent method and isolated	Not applicable – responsibility of transporter or processor.

			from the rest of the consignment. A record must be kept that details identity, the method of treatment or euthanasia and disposal of all rejected animals. Criteria for rejection are outlined in Appendix 3.1.	

4 Vessel preparation and loading	The sea voyage is planned and is undertaken on an appropriately provisioned vessel certified for the carriage of livestock, and the livestock are loaded in a manner that prevents injury and minimises stress.	(1) Livestock are healthy, fit to travel and comply with importing country requirements. (2) The vessel meets Australian requirements for the safe carriage of livestock. (3) Sufficient personnel must be available both at loading and during the voyage to ensure that livestock husbandry and welfare needs are addressed. (4) Livestock are handled and loaded in a manner that prevents injury and minimises stress. (5) The travel and loading plans adequately address the health and welfare of the livestock. (6) A health certificate and an export permit are issued by AQIS.	S4.1 A vessel to be used for the export of livestock must comply with: (a) all Australian and international vessel biosecurity requirements; and (b) all requirements for the safe carriage of livestock. S4.3 Before loading of livestock for export begins, a loading plan must be prepared in accordance with the specifications in Appendix 4.1, including details of: (a) the net available pen area on the ship (excluding the area of the hospital pens) according to the vessel's record of equipment for the carriage of livestock; and (b) the number of livestock that may be loaded on the vessel, based on the minimum pen area per head for the relevant livestock species and class as specified in Appendix 4.1, Tables A4.1.1–A4.1.7. S4.5 An accredited stock person who is employed or contracted by the exporter and who is not ordinarily a member of the ship's crew must be appointed to accompany each consignment of livestock for export to its destination. In addition, if required by the relevant Australian Government agency, an accredited veterinarian must be appointed to accompany a consignment. S4.6 Sufficient personnel must be available both at loading and during the voyage to ensure that livestock husbandry and welfare needs are addressed. S4.7 Upon arrival of the livestock at the port of embarkation: (a) responsibility for the livestock must be transferred to a competent person nominated by the exporter; and (b) that person must be notified of any aspect of transport to the port of embarkation that might affect the future health and welfare of the livestock. S4.8 To ensure that only fit and healthy livestock are transported and are loaded on board: (a) the exporter must arrange for the livestock to be inspected for health and welfare and fitness to travel, immediately before they are loaded onto the vessel; (b) only livestock that are healthy and fit to travel can be loaded; (c) any livestock rejected for export must be distinctively identified, and humane and effective arrangements must be made for their removal from the port; (d) if euthanasia is necessary, it must be carried out humanely and promptly; and (e) dead livestock must be removed	This section not applicable to NFAS except with regard to cattle being transported away from the feedlot (potentially for live export). **LM3 - Livestock Transport** **LM2 - Livestock Husbandry and Presentation** **LM3 - Livestock Transport** **LM4 - Animal Welfare** **QM1 - Training** **LM2 - Livestock Husbandry and Presentation** **LM3 - Livestock Transport** **LM4 - Animal Welfare** **LM2 - Livestock Husbandry and Presentation** **LM3 - Livestock Transport** **LM2 - Livestock Husbandry and Presentation** **LM3 - Livestock Transport** **FS4 - Preparation for Dispatch of Livestock** **LM3 - Livestock Transport** **LM3 - Livestock Transport** **QM1 - Training** **FS4 - Preparation for Dispatch of Livestock** **LM3 - Livestock Transport** **LM4 - Animal Welfare** **QM1 - Training** **LM3 - Livestock Transport** **LM4 - Animal Welfare** NFAS cattle are transported according to market specification and NFAS

			from the port, and carcases must be disposed of in compliance with all relevant health and environmental legislation. S4.9 When livestock for export are loaded on vessels with enclosed decks, the ventilation system must be run continuously from the commencement of loading. S4.10 Livestock for export must be loaded onto the vessel by competent stock handlers in a manner that prevents injury and minimises stress. S4.11 Livestock for export must be presented for loading, and penned on the vessel, in lines segregated by species, class, age, weight, criteria in S2.10(e)(i) to (iii), and any other relevant characteristic (and, where relevant, port of destination), in accordance with the approved loading plan. S4.12 Stocking densities and pen-group weight-range tolerances for species of livestock must be in accordance with specifications in Appendix 4.1 and heat stress assessment using an agreed heat stress risk assessment unless a variation is required and approved by the relevant Australian Government agency: Humane and effective arrangements must be made for the handling and care of any livestock surplus to requirements. S4.13 All livestock for export must be offered feed and water as soon as possible after being loaded on the vessel, but no later than 12 hours after loading. S4.14 Supplies of feed and water: (a) Adequate water of a quality to maintain good health and suitable feed to satisfy the energy requirements of the livestock for the duration of the voyage, and statutory reserves as specified in Appendix 4.2, must be loaded. (b) The feed and water provisions must take into consideration the livestock species, class, age and expected weather conditions. S4.15 Bedding must be provided in accordance with specifications in Appendix 4.3. S4.16 As the livestock for export are loaded on board the vessel at the port of export, responsibility for the livestock transfers to the master of	Vendor Declaration. **LM3 - Livestock Transport** **LM4 - Animal Welfare** **LM5 - Excessive Heat Load** Not applicable. Not applicable. **LM2 - Livestock Husbandry and Presentation** **LM3 - Livestock Transport** NFAS not prescriptive in relation to bedding in transport. However, feedlots do employ bedding for heavy, high head day or long haul cattle. Industry could consider incorporating the requirement in NFAS for a travel plan for all cattle journeys of more than 8 hours duration? **LM3 - Livestock Transport**

			the vessel, who must be notified of any aspect of the preparation of the livestock for export that might affect their future health and welfare.	
5 Onboard management of livestock	Onboard facilities, management and husbandry must be adequate to maintain the health and welfare of livestock throughout the sea voyage.	(1) The voyage is completed safely. (2) Adequate livestock services are maintained throughout the voyage. (3) Onboard care and management of the livestock is adequate to maintain their health and welfare throughout the voyage. (4) Statutory reporting requirements are met, both during and after the voyage.	S5.1 The onboard management of livestock for export by sea must ensure that the health, welfare and physical needs of livestock are met during the voyage: (a) An accredited stock person must accompany each consignment of livestock and must remain with the consignment until the vessel has completed discharging at the final port of discharge. (b) An accredited veterinarian must accompany each consignment of livestock where required by the relevant Australian Government agency and must remain with the consignment until the vessel has completed discharging at the final port of discharge. (c) Accredited stock persons and/or veterinarians must work with the vessel's master and crew to maintain the health and welfare of the livestock on board. (d) All personnel handling and caring for livestock or who are otherwise responsible for animals during the voyage must be able to demonstrate an adequate level of experience and skill to allow them to undertake their duties. S5.2 Any livestock for export identified after loading as being sick or injured must: (a) be given immediate treatment; and (b) be killed humanely and without delay, where euthanasia is necessary. S5.3 The consignment must be checked before departure to ensure that the livestock have been loaded according to the loading plan. S5.4 All livestock for export must be offered feed and water as soon as possible after being loaded on the vessel, and within no more than 12 hours. S5.5 All livestock on the vessel must have access to adequate water of a quality to maintain good health and suitable feed to satisfy their energy requirements, taking into consideration any particular needs of the livestock species, class and age: (a) There must be a contingency plan to provide satisfactory tending, feeding and watering of the livestock in the event of a malfunction of the automatic feeding or watering systems, but without compromising the safe navigation of the vessel. (b) Adequate feed and water must be supplied to livestock waiting to	**FS4 - Preparation for Dispatch of Livestock?** **LM3 - Livestock Transport** Reference AAWS&G **LM4 - Animal Welfare** **FS4 - Preparation for Dispatch of Livestock?** **LM3 - Livestock Transport** Reference AAWS&G **LM4 - Animal Welfare** **LM3 - Livestock Transport** Reference AAWS&G Not applicable. Not applicable. **LM3 - Livestock Transport** Reference AAWS&G Responsibility lies with the transport operator.

			be discharged, and during the discharge period. S5.6 Livestock and livestock services on the vessel must be regularly inspected (day and night) to ensure that the health and welfare of the livestock are maintained while the livestock are on the vessel: (a) A meeting must be held daily to discuss all issues relating to the health and welfare of the livestock. This must include the master and/or the master's representative, accredited stock person and veterinarian. (b) Livestock must be systematically inspected to assess their health and welfare. (c) Feed and water supply systems must be monitored day and night and maintained in good order. (d) The pen stocking density must be checked regularly throughout the voyage and adjustments made as required. (e) Ventilation must be monitored regularly each day to ensure adequate thermoregulation of the livestock. (f) Washing down of decks and disposal of faeces and litter must be carried out with regard to the health and welfare of livestock. S5.7 Any livestock identified as being sick or injured must: (a) be given prompt treatment; (b) be transferred to a hospital pen, if required; and (c) if necessary, be euthanased humanely and without delay (the carcases of any dead livestock must be disposed of in accordance with the requirements of Annex V of MARPOL 73/78. S5.8 Veterinary drugs must be stored and used according to veterinary directions and manufacturers' recommendations, and treatment records must be maintained. S5.9 When bedding is used, it must be maintained in adequate condition to ensure the health and welfare of the livestock. S5.10 A contingency plan for the following emergencies must be prepared for each consignment as part of the consignment risk	**LM3 - Livestock Transport** Reference AAWS&G **LM4 - Animal Welfare** Reference to industry Euthanasia Manual. **QM1 – Training** **QM5 – Chemical Inventory** Only legally obtained and properly labelled chemicals are available for use on the property and that an accurate inventory of all chemicals purchased and stored on the enterprise is maintained. **FS2 - Safe and Responsible Animal Treatments** Systems have been implemented to ensure that animal treatments are stored and administered in a safe and responsible manner to minimise the risk of chemical residues and physical hazards in livestock intended for human consumption. **LM1 - Livestock Identification** **LM3 - Livestock Transport** Reference AAWS&G **LM4 - Animal Welfare** **LM3 - Livestock Transport** Reference AAWS&G **LM4 - Animal Welfare** **LM5 - Excessive Heat Load** **QM8 - Risk Assessment & Contingency Planning** Systems are in place to identify and mitigate the impact of potential emergency situations. **QM2 - Internal Auditing and Corrective Actions** Internal audits are performed to review ongoing compliance of the enterprise's activities to the NFAS Standards and appropriate corrective and preventative actions are undertaken when non-conformances are identified. **QM8 - Risk Assessment & Contingency Planning** Systems are in place to identify and mitigate the impact of potential emergency situations. **LM7 – Incident Reporting** Incident reporting requirements are undertaken when an unusual number of sick animals or deaths occur. **EM6 – Environmental Incident Reporting** Systems are in place to ensure any incidents that have the potential to cause environmental harm are reported to the relevant stakeholders.

			management plan: (a) mechanical breakdown; (b) a feed or water shortage during the voyage; (c) an outbreak of a disease during the voyage; (d) extreme weather conditions during the voyage; and (e) rejection of the consignment by the overseas market.	Not applicable.
			S5.11 If a notifiable incident occurs at any time, the relevant Australian Government agency must be advised as soon as possible and within 12 hours. In relation to a notifiable incident involving a mortality equal to or greater than the reportable level, a report must be provided that includes the following: (a) details of the mortalities (eg number, species, suspected cause); (b) factors that may have contributed to the deaths; and (c) the current location of the vessel and, if appropriate, its destination and estimated time of arrival.	Not applicable.
			S5.12 For journeys greater or equal to 10 days, an accredited stock person must provide daily reports on the health and welfare of the livestock to the relevant Australian Government agency, commencing on day 1 of the voyage. The report must include the information outlined in Appendix 5.1. Where an accredited veterinarian is on board, the veterinarian rather than the stock person must provide the daily report.	
			S5.13 Regardless of the journey duration, within 5 days of completion of discharge at the final port of discharge, an accredited stock person must provide an end-of-voyage report on the health and welfare of the livestock to the relevant Australian Government agency. The report must include the information outlined in Appendix 5.2. Where an accredited veterinarian is on board, the veterinarian rather than the stock person must provide the end-of-voyage report.	

6 Air transport of livestock	Animals are prepared according to required protocols, are fit to travel, and the journey is planned and undertaken in a manner that meets the importing country requirements for the air transport of livestock.	(1) Livestock sourced for export must meet any requirement under a law of a state or territory relating to the sourcing of livestock. State and territory governments are responsible for ensuring that these requirements are met. (2) Livestock sourced for export must meet these Standards and importing country requirements. AQIS is responsible for ensuring that these Standards and requirements are met. (3) Livestock are safely delivered to an airport of the importing country. (4) Statutory reporting requirements are met after the flight. (5) Livestock sourced for export that become sick or injured during on-farm preparation must be excluded from export, and arrangements must be made for their prompt and humane handling and care.		Not applicable.

7.2 Appendix B

McCarthy Review recommendation	DAWR Response	NFAS	Comment
Recommendation 1 - Compliance The Department of Agriculture and Water Resources (the department) must ensure that exporters, through their approved arrangements, comply with any legislative requirements, ASEL and any other conditions of their approved arrangements.	**Support**. Additional information received from Independent Observers (including footage from these observers), and improved Australian Government Authorised Veterinarian (AAV) reporting requirements will support verification and compliance activities. Conditions will be applied to require exporters to take account of the additional reporting information when preparing future voyages to ensure the health and welfare of animals during voyages. Legislative amendments proposed by the Government will strengthen available penalties for non-compliant exporters and improve powers available to address non-compliance.	Feedlots undertake bi-annual internal audits and AUS-MEAT conducts an annual external compliance audit.	The NFAS could strengthen the scrutiny of approved arrangements at the annual audit.
Recommendation 2— Stocking Densities Based on the available science, and as an interim measure, sheep destined to the Middle East from Australia during the northern hemisphere summer should be allocated space allometricaly using a k-value of 0.033 or such further space as required by the industry heat stress risk assessment model. Use of this allometric stocking density should be reviewed by the ASEL Review Technical Advisory Committee and/or an independent taskforce at the end of the forthcoming northern hemisphere summer.	**Support**. Allocating space on vessels allometrically and a review of the impact of the model by the ASEL Review Technical Advisory Committee at the end of this year's northern hemisphere summer. Do not support at this stage allocating further space through a revised industry heat stress risk assessment model until further public and expert consultation and analysis is undertaken, see Recommendations 4 and 12 below.	"Element LM4 - Animal Welfare Performance Indicator 3 – Stocking of hospital pens is managed within the feedlot's allowable stocking density on an individual pen basis." "Element EM1 – Environmental Management. Outcome: Environment management requirements of the National Beef Cattle Feedlot Environmental Code of Practice have been met. Performance Indicator 9: Stocking density is managed in the range of 9 to 25 square metres per head or per SCU, whichever is applicable in their State. Exemptions may be granted by AUS-MEAT when the feedlot has obtained approval in writing from the relevant State authority allowing it to operate outside 9 to 25 square metres per head or per SCU stocking density.	In practice feedlots can and do adjust stocking densities to allow for unhealthy cattle, different classes of cattle (scu) and weather conditions.

		Performance Indicator 10: A minimum stocking density of 2.5 square metres per head or per SCU is provided for shedded cattle." Feedlot licenses are issued by Local and State jurisdictions in relation to stocking density or allowable numbers of cattle on the feedlot at any point in time. The history of livestock numbers and/or stocking density is scrutinised and assessed at each annual external audit.	
Recommendation 3— Heat Stress Risk Assessment Industry should move from a risk assessment based on mortality to a risk assessment based on animal welfare.	**Support**. The department agrees that mortality, in isolation, is an insufficient measure of animal health and welfare. The department proposes further public consultation and analysis to assess the specific heat stress risk assessment settings are required to give effect to this (see Recommendation 4 below). Additional information is also becoming available from Independent Observers and there is research currently underway to identify animal welfare indicators that could be used for this purpose (see Recommendation 6).	"Element QM8 – Risk Assessment &Contingency Planning Outcome: Systems are in place to identify and mitigate the impact of potential emergency situations." This element encourages feedlots to have systems in place to identify and mitigate the impact of emergency situations (such as EHL) "Element LM5 – Excessive Heat Load Outcome: The likelihood of an Excessive Heat Load event is monitored, and prompt and appropriate remedial action is taken when required." Performance indicators display a requirement for feedlots to demonstrate the ability and resources to conduct a Risk Assessment (Katestone RAP) and have the ability to calculate HLI and AHLU. Feedlots must also have a documented Excessive Heat Load Management Plan that indicates thresholds, responsibilities, monitoring and mitigation activities and record keeping.	Risk assessment and contingency planning is crucial in the identification of and mitigation for emergency situations. Katestone Risk Analysis Program and the feedlot EHL Management Plan focus on the provision of positive animal welfare outcomes during excessive heat load events. Element LM7 – Livestock Incident Reporting – requirement to report internally or externally when the numbers of sick or dead cattle reach designated thresholds. Currently feedlot EHL Management Plans display reporting thresholds to management, vets, nutritionists and other stakeholders.

Recommendation 4—Heat Stress Risk Assessment As an interim measure, it is recommended that the risk be set at a 2% probability of 5% of the sheep becoming affected by heat stress (Heat stress score 3—see Table 1). These settings should be reviewed by the ASEL Review Technical Advisory Committee at the end of this northern hemisphere summer period and again, annually by an independent taskforce.	**Support, subject to testing and consultation**. The department will adopt a heat stress risk assessment approach to managing animal welfare outcomes. Dr McCarthy has not been able to consult and test his analysis on this issue in the short time available during his review, so the department will undertake that process over the next three months. This critical proposal by Dr McCarthy involves a new regulatory model and warrants an opportunity for all interested parties to contribute to the development of a new approach.	NFAS relies on the Katestone RAP to guide feedlots in assessing risk during excessive heat load, and the provision of potential mitigation strategies. These are documented in the feedlots EHL Management Plan.	Currently there is no recommended measure in the Katestone RAP that would prevent cattle being held in the feedlot during an EHL event.
Recommendation 5—Heat Stress Risk Assessment That the required changes to the industry HSRA model be made immediately and then included in Version 5 of the HSRA model.	**Support, subject to further testing and consultation** (see Recommendation 4).	"Element LM5 – Excessive Heat Load Outcome: The likelihood of an Excessive Heat Load event is monitored, and prompt and appropriate remedial action is taken when required." References the RAP for assessing various classes of cattle in the feedlot.	Further research could be undertaken to ascertain thresholds within the RAP that may indicate a required change to stocking density during EHL events.
Recommendation 6—Heat Tolerance Level As an interim measure, industry should adopt Table 1 (of this review)—'An amalgamation of heat stress indicators' to determine the acceptable heat tolerance level.	**Support**. Table 1 of the review provides a single standardised system for accredited veterinarians on vessels to assess degrees of heat stress in sheep. Further review and assessment of the scores and related symptoms of heat stress should be conducted after the northern hemisphere summer trade, as additional information becomes available, by the ASEL Review Technical Advisory Committee. This includes outcomes of research on animal welfare indicators being undertaken by Murdoch University, funded through the industry research and development program, as well as information gained from Independent Observers and other enhanced monitoring activities.	"Element LM5 – Excessive Heat Load Outcome: The likelihood of an Excessive Heat Load event is monitored, and prompt and appropriate remedial action is taken when required. Performance Indicator 8 - Monitoring of cattle during EHL events is a critical component of the EHL Management Plan for all feedlots." Industry has invested in research to develop a cattle heat load observation guide (Panting scores) that can be used when monitoring and recording daily cattle welfare.	Heat stress indicators are well defined for cattle during EHL events. Industry training material provides clear criteria and management tools for assessing cattle during EHL events. Research could be considered to encourage NFAS to adopt actions that require daily monitoring records to be available at internal and external audit.

Recommendation 7— Heat Stress Risk Assessment A future version of the industry HSRA model to be developed, adopted and used by industry during the northern hemisphere summer of 2019 should have the capacity to assess: (a) the duration of time that sheep are exposed to high heat loads without respite (b) ventilation design rather than assessing risk based on airflow alone. In addition, the way in which the model manages open decks should be reviewed.	**Support**. Development of a future model should also consider additional inputs, including investigating alternate ventilation measures, and the use of animal welfare indicators. This will also be informed by the further consultation and analysis on heat stress risk assessment (see Recommendation 4).	"Element LM5 – Excessive Heat Load Outcome: The likelihood of an Excessive Heat Load event is monitored, and prompt and appropriate remedial action is taken when required. Performance Indicator 1 – feedlots must be able to demonstrate that they can calculate and monitor both HLI and AHLU, and conduct a RAP for the various classes of cattle at suitable intervals through the summer season."	Further research could be undertaken by industry to include stocking density criteria in the RAP. Changes in stocking density for each cattle class during normal summer or EHL events at susceptible feedlots and classes of cattle in the RAP could be explored.
Recommendation 8— Heat Stress Risk Assessment A future version of the industry heat stress risk assessment model to be developed, adopted and used by industry during the northern hemisphere summer of 2019 should reassess: (a) the 'heat tolerance' level, and (b) the probability risk settings.	**Support**. As per Recommendation 7, the future model should also consider additional inputs, including investigating alternate ventilation measures, and the use of animal welfare indicators. This will also be informed by the further consultation and analysis on heat stress risk assessment (see Recommendation 4).	"Element LM5 – Excessive Heat Load Outcome: The likelihood of an Excessive Heat Load event is monitored, and prompt and appropriate remedial action is taken when required. Performance Indicator 1 – feedlots must be able to demonstrate that they can calculate and monitor both HLI and AHLU, and conduct a RAP for the various classes of cattle at suitable intervals through the summer season." Each feedlot has a EHL Management Plan specific to the cattle on feed, the feedlot environment and the business's risk profile.	The animal welfare indicators as per the Panting Score observation chart could be improved to make interpretations in relation to cattle welfare (heat tolerance levels and cattle comfort).
Recommendation 9— Pen Air Turnover The report strongly supports the recommendation from the ASEL Review Technical Advisory Committee that a vessel's pen air turnover be independently audited before travelling to the Middle East in the 2018 northern hemisphere summer.	**Support**. The Australian Maritime Safety Authority (AMSA) will provide information on actual ship ventilation equipment and pen area to calculate pen air turnover (PAT). This information will need to be verified by appropriately qualified mechanical engineers. This will validate the accuracy of the PAT entered into the Heat Stress Risk Assessment model. The department will work with AMSA to implement this recommendation by 1 July	There is no reference in the NFAS to air turnover as a mitigation strategy during EHL events.	Research could be undertaken to assess the impact of directional airflow onto susceptible cattle during EHL events. Research could be undertaken to assess appropriate stocking density variations for different classes of cattle during EHL events. Outcomes could be considered for updating the RAP.

	2018 or as soon as practicable.		
Recommendation 10— Register of vessels A relevant government agency should maintain a register of vessels whose pen air turnover (PAT) information has been certified following auditing and verification.	**Support**. AMSA maintains records of shipboard equipment and pen area dimensions in the vessel's equipment register, and confirms the ongoing condition/performance through audit. The department will maintain a register of vessel PAT audits. Proposed timeframe is by 1 July 2018 or as soon as practicable.	The program owner AUS-MEAT collates and maintains records of feedlot compliance (pen cleaning, stocking density etc) during annual audit.	AUS-MEAT could consider more evidence-based collection of data at the annual audit (rather than screening for the existence of data and records, actually scrutinise the records for evidence of compliance or performance).
Recommendation 11— Verification of PAT information It would be a condition of an approved arrangement that all livestock vessel's PAT information has been independently verified where the vessel is destined for the Middle East during the northern hemisphere summer.	**Support in part**. The department will consider the most appropriate means of giving effect to this. Requirements for independent PAT verification and assurance can be imposed on exporters and others under a range of powers available under the legislative framework, including through licensing requirements or future standards orders made by legislative instrument.	The NFAS requires the oversight of a registered veterinarian in developing and implementing the EHL Management Plan.	ALFA/AUS-MEAT/FLIAC could consider a condition of accreditation that all feedlots submit a veterinarian approved EHL Management Plan prior to each summer.

Recommendation 12— Curfew adjustments for stocking density The weight of animals for the purposes of stocking density should specify curfew and adjustments should be made to reflect a 12-hour curfew (i.e. the livestock industry standard).	**Support**. There is a need to standardise weight estimates for loading and input into the heat stress risk assessment model. However, the department considers it preferable to extend this recommendation further to include an estimate of arrival weight in the Middle East, the point at which the sheep experience high heat and humidity. For example, for a 50kg sheep, assuming an average weight gain of 100 grams per day, per animal, would increase in weight on a 24 day voyage by 2.4 kilograms. The department will take this into account in addition to the allometric space calculation (see Recommendation two).	The NFAS references standard cattle units (scu) for feedlot capacity and stocking density. The RAP used in planning EHL management during summer references days on feed, feeding period, cattle type, coat colour and health status – there is no reference to weight or stocking density. There is no reference to pen condition.	Research could be undertaken to assess the impact of cattle weight in the RAP, as it relates to standard cattle units (scu). Research could be undertaken to assess the impact of variations in stocking density in the RAP, and as it relates to standard cattle units (scu).
Recommendation 13— Compliant loading of animals Authorised officers should check and verify the weights of sufficient animals to be satisfied that the vessel is to be or has been loaded in a way that is consistent with a compliant heat stress risk assessment and ASEL. This may be conducted at any point in the supply chain.	**Support**. A check of animal weights is currently undertaken by department veterinary officers through a sample inspection and review process at registered premises prior to loading. This is to assess the accuracy of the exporter's proposed load plan and heat stress risk assessment. With the addition of Independent Observers on all voyages, part of their role is to conduct a full check of the load plans, enabling further verification of the live weights of the animals on board, as well as further verification of the condition score, class of animal and coat length specified in the exporter's heat stress risk assessment.	"Element LM5 – Excessive Heat Load Outcome: The likelihood of an Excessive Heat Load event is monitored, and prompt and appropriate remedial action is taken when required. Performance Indicator 1 – feedlots must be able to demonstrate that they can calculate and monitor both HLI and AHLU, and conduct a RAP for the various classes of cattle at suitable intervals through the summer season." Each feedlot has a EHL Management Plan specific to the cattle on feed, the feedlot environment and the business's risk profile.	Feedlots have the capability to adjust stocking density to mitigate against heat stress in an EHL event. Research could be undertaken to assess the impact of variations in stocking density in the RAP, and as it relates to standard cattle units (scu), DOF, condition score, class/breed of animal, coat colour etc. Research could be undertaken to determine the process of evaluation of stocking density at internal and external audits.

Recommendation 14— Use of sawdust There is no need for sawdust for bedding under normal circumstances on sheep voyages but the use of sawdust strategically before and/or during the voyage should be included in an exporter's heat stress management plan, if required, for targeted areas on the vessel.	**Support**. The department is currently placing conditions on some voyages to the Middle East to require carriage of additional bedding to improve the environment for livestock.	"Element LM5 – Excessive Heat Load Outcome: The likelihood of an Excessive Heat Load event is monitored, and prompt and appropriate remedial action is taken when required. Performance Indicator 1 – feedlots must be able to demonstrate that they can (a) calculate and monitor both HLI and AHLU, and (b) conduct a RAP for the various classes of cattle at the feedlot site", and at suitable intervals through the summer season. Each NFAS feedlot must have an EHL Management Plan specific to the cattle on feed, the feedlot environment and the business's risk profile. NFAS has no requirements for the inclusion of bedding. Feedlots however are encouraged to establish and review mitigation strategies.	Research has been and is currently being undertaken to determine the advantages/disadvantages of bedding in feedlot pens during weather conditions (wet, hot, cold etc). Future research could focus on the provision of bedding in hospital pens, prior to transport for processing (particularly long head day and heavy cattle) and newly arrived long haul cattle.
Recommendation 15— Purchase lines Both the Australian Government Accredited Veterinarian (AAV) and the Independent Observer (IO) should be given information regarding the purchase lines of all sheep included in the consignment (i.e. the denominator) to identify 'line effects' within the mortality pattern on board. This can be encoded if confidentially is an issue. Line effects identified over the course of the voyage should be investigated once the voyage has been completed.	**Support in part**. There may be benefit in industry investigating line effects. Accredited veterinarians could collect information for exporters to feed into industry research. The Independent Observer's role is to report on the effectiveness of exporter arrangements for managing animal health and welfare on voyages.	NFAS has no requirement to monitor and review purchase lines of cattle.	Feedlots undertake a review of purchase lines at the conclusion of the feeding period as part of their commercial activity. Many feedlots share the information with the vendors of purchased lines. Industry could consider establishing a defined reporting structure back to farmers on the health performance of cattle through the feedlot regime (IE. Livestock Data Link).

Recommendation 16—Roles and responsibilities With the advent of Independent Observers (IOs), a taskforce should be established to determine the roles and responsibilities of AAVs, IOs and accredited stockmen. This responsibility may fall to the ASEL Review Technical Advisory Committee.	**Support**. The department is currently developing an ongoing Independent Observer program, including further articulating their roles and responsibilities. The key purpose of Independent Observers is to report on the performance in the delivery of animal health and welfare outcomes during voyages. The ASEL Review Technical Advisory Committee is also examining the roles and responsibilities of AAVs and stockmen by end 2018.	"Element LM4 – Animal Welfare Outcome: The welfare of livestock is not compromised whilst within the control of persons responsible for their care and well-being, and that prompt and appropriate remedial action is taken when required." Performance Indicators: Various strategies to achieve the outcome are listed. All NFAS feedlots are required to have access to a veterinarian. All NFAS feedlots are required to undertake internal audits and are also externally audited by AUS-MEAT (program owner) on an annual basis (minimum).	Industry has invested in the development and delivery of certified Animal Welfare Officer training for industry. Over 400 people (as at December 2018) have completed AWO training. Industry could consider the inclusion of certified Animal Welfare Officers in the NFAS – similar to the requirement for NFAS feedlots to have persons on the feedlot with Ag & Vet Chem accreditation. All NFAS feedlots are required to have trained Quality Assurance Officers (non-certified) on the feedlot with a good understanding of feedlot practices, procedures and processes. Industry could give consideration to formal training and certification of QA Officers within the NFAS. Industry could give consideration to amalgamating the requirements of NFAS feedlots to have trained and certified QAO and AWO.

Recommendation 17—Animal carcasses All livestock vessels travelling to the designated special zones in the Middle East during the northern hemisphere summer should be equipped with a serviceable hogger and/or a refrigerated container of suitable size to hold animal carcasses whilst in port (or at sea if required). This requirement should be included in an approved arrangement and AMSA should be notified of the requirement.	**Support in part**. The department will pursue with industry those measures that address this outcome noting that AMSA Marine Order 43 does not require vessels to be equipped with hoggers. If such equipment is on board, it must be listed on AMSA's record of vessel equipment and checked as part of their inspection/survey regime. Refrigerated containers, if used, need to be stowed and secured. AMSA advises most livestock vessels are not designed for the carriage of containers.	"Element QM8 – Risk Assessment and Contingency Planning Outcome: Systems are in place to identify and mitigate the impact of potential emergency situations. Performance Indicator 1, dot point 10: emergency slaughter of cattle and disposal. Performance Indicator 2: Contingency plans for identified risks are documented and include: (a) actions to mitigate identified risks (b) allocations of responsibilities to relevant personnel. Performance Indicator 3: Risk register and associated contingency plans are reviewed as part of internal audit procedures."	Following the NFAS Review (2015) the areas of Risk Assessment and Contingency Planning have been strengthened within the NFAS. Industry could consider ensuring NFAS feedlots have approval from Local and State authorities for the mass disposal of animals on-site or off-site. This approval could be auditable by AUS-MEAT.

Recommendation 18—Reportable mortality level The reportable mortality level for sheep exported by sea to the Middle East should be reduced from 2% to 1%.	**Support**. This will be implemented immediately for all future voyages.	"Element LM7 – Livestock Incident Reporting Outcome: Incident reporting requirements are undertaken when an unusual number of sick animals or deaths occur. Performance Indicator 1: Procedures are in place to manage situations where an unusual number or type of sick animals or deaths occur within any 24 hour period, as outlined in Appendix 7." NFAS has clearly defined thresholds or triggers for internal and external incident reporting of sick cattle and deaths.	Following the NFAS Review (2015) the area of Livestock Incident Reporting has been clarified and strengthened within the NFAS. The integrity of external auditing of feedlot incidents is critical in ensuring industry retains the trust of external stakeholders. Industry could consider a series of reporting levels when information could be shared with external stakeholders increasing the level of industry transparency.
Recommendation 19—Daily reporting The use of both a panting score and a heat stress score should be a mandatory requirement in the daily report. A training module may be required to ensure that score allocation is consistent across industry.	**Support**. This will be implemented immediately for all future voyages. The department will test with AAV's the need for further training.	"Element LM5 – Excessive Heat Load Outcome: The likelihood of an Excessive Heat Load event is monitored, and prompt and appropriate remedial action is taken when required. Performance Indicator 1 – feedlots must be able to demonstrate that they can (a) calculate and monitor both HLI and AHLU, and (b) conduct a RAP for the various classes of cattle at the feedlot site", and at suitable intervals through the summer season. Each NFAS feedlot must have an EHL Management Plan specific to the cattle on feed, the feedlot environment and the business's risk profile. Industry provides feedlot operators with comprehensive annual training in cattle management for excessive heat load.	Feedlot EHL Management plans use observations and the recording of pen cattle panting scores as an indicator of the level of heat stress being experienced. This is not mandatory within the NFAS. AUS-MEAT auditors site EHL Management Plans during the annual audit. The program manager could consider observing document evidence of observations being undertaken during heat load events, including panting score observations. Industry could consider the inclusion of EHL management training material in the delivery of the certified AWO training. Industry could consider the inclusion of certified Animal Welfare Officers in the NFAS.
Recommendation 20—Automated watering systems All vessels carrying sheep to the Middle East during the northern hemisphere summer should have automated livestock	**Support**. This will be implemented immediately for all future voyages.	Not applicable	Not applicable

watering systems.			
Recommendation 21—Heat Stress Management Plan A meaningful heat stress management plan could be a part of an exporter's approved arrangement. This plan should address the contingencies outlined in this review.	**Support**. This will be implemented immediately for all future voyages.	"Element LM5 – Excessive Heat Load Outcome: The likelihood of an Excessive Heat Load event is monitored, and prompt and appropriate remedial action is taken when required. Performance Indicator 1 – feedlots must be able to demonstrate that they can (a) calculate and monitor both HLI and AHLU, and (b) conduct a RAP for the various classes of cattle at the feedlot site", and at suitable intervals through the summer season. Each NFAS feedlot must have an EHL Management Plan specific to the cattle on feed, the feedlot environment and the business's risk profile.	All NFAS feedlots require an EHL Management Plan. This is observed during the annual audit for compliance. The NFAS also has a requirement that the feedlot EHL Management Plan is reviewed prior to each summer, including risk assessments and contingency planning.
Recommendation 22—First port of unloading Where Kuwait is one of the vessel's destination ports, this should be the vessel's first port of unloading.	**Support**. This has already been implemented for voyages travelling to or through the Middle East.	Not applicable	Not applicable
Recommendation 23—Monitoring equipment All vessels travelling to the Middle East during the 2019 northern hemisphere summer and after should have automated continuous environmental monitoring equipment installed as a condition of any approved arrangement.	**Support in principle**. Further work is required to investigate the feasibility and practicality of currently available or new/upcoming technology to monitor and report on environmental conditions. Effective application of these technologies will be a critical consideration in the department's consultation on the review's heat stress management recommendations.	"Element LM5 – Excessive Heat Load Outcome: The likelihood of an Excessive Heat Load event is monitored, and prompt and appropriate remedial action is taken when required. Performance Indicator 1 – feedlots must be able to demonstrate that they can (a) calculate and monitor both HLI and AHLU, and (b) conduct a RAP for the various classes of cattle at the feedlot site", and at suitable intervals through the summer season. Each NFAS feedlot must have an EHL Management Plan specific to the cattle on feed, the feedlot environment and the business's risk profile.	All NFAS feedlots are required to have an EHL Management plan and be able to calculate HLI and AHLU. The requirement for automated continuous environmental monitoring equipment is not stipulated within the NFAS. Industry however has invested strongly in educating feedlot operators on the types and availability of automated weather monitoring equipment. Long term industry research in conjunction with Katestone and others has provided feedlots with the opportunity to use historical weather data for use in the predictive models of future heat load events. Industry could consider adoption of automated continuous weather

			monitoring during summer for the NFAS.

7.3 Appendix C – Breathing condition and panting score for feedlot cattle

Breathing condition	Panting score (PS)	Associated respiration rates (breaths/min)
No panting – normal Difficult to see chest movement	0	<40
Slight panting, mouth closed, no drool or foam Easy to see chest movement	1	40-70
Fast panting, drool or foam present No open mouth panting	2	70-120
As for 2 but with occasional open mouth, tongue not extended	2.5	70-120
Open mouth + some drooling Neck extended and head usually up	3	120-160
As for 3 but with tongue out slightly, occasionally fully extended for short periods + excessive drooling	3.5	120-160
Open mouth with tongue fully extended for prolonged periods + excessive drooling Neck extended and head up	4	>160
As for 4 but head held down Cattle 'breath' from flank Drooling may cease	4.5	Variable~ RR may decrease


Panting score 0


Panting score 1


Panting score 2


Panting score 2.5


Panting score 3


Panting score 3.5


Panting score 4


Panting score 4.5

Photos courtesy of John Gaughan, University of Queensland