



Australian Government
Department of Agriculture,
Water and the Environment



Australian Government
Australian Maritime Safety Authority

Post-implementation review of the McCarthy Review, Independent Observers and Marine Order 43

Department of Agriculture, Water and the Environment
Australian Maritime Safety Authority

OBPR ID: 23774



© Commonwealth of Australia 2020

Ownership of intellectual property rights

Unless otherwise noted, copyright (and any other intellectual property rights) in this publication is owned by the Commonwealth of Australia (referred to as the Commonwealth).

Creative Commons licence

All material in this publication is licensed under a [Creative Commons Attribution 4.0 International Licence](#) except content supplied by third parties, logos and the Commonwealth Coat of Arms.

Inquiries about the licence and any use of this document should be emailed to copyright@awe.gov.au.



Cataloguing data

This publication (and any material sourced from it) should be attributed as: Department of Agriculture, Water and the Environment and the Australian Maritime Safety Authority 2020, *Post-implementation review of the McCarthy Review, Independent Observers and Marine Order 43*, Department of Agriculture, Water and the Environment, Canberra. CC BY 4.0.

ISBN 978-1-76003-311-8

This publication is available at awe.gov.au/publications.

Department of Agriculture, Water and the Environment

GPO Box 858 Canberra ACT 2601

Telephone 1800 900 090

Web awe.gov.au

Disclaimer

The Australian Government acting through the Department of Agriculture, Water and the Environment and the Australian Maritime Safety Authority has exercised due care and skill in preparing and compiling the information and data in this publication. Notwithstanding, the Department of Agriculture, Water and the Environment and the Australian Maritime Safety Authority, their employees and advisers disclaim all liability, including liability for negligence and for any loss, damage, injury, expense or cost incurred by any person as a result of accessing, using or relying on any of the information or data in this publication to the maximum extent permitted by law.

Contents

Summary	v
Introduction	1
Live sheep export industry.....	2
Definition and regulation of animal welfare.....	4
The problem	6
Risk of future high mortality heat stress events.....	6
Ventilation on livestock vessels.....	7
Twin-tier decks on livestock vessels	8
Regulatory framework pre-2018.....	9
Why government action was needed	11
Objectives of government action.....	11
Case for considering government action	12
Government capacity to intervene successfully	13
Options considered	15
Option 1: Regulatory status quo.....	15
Option 2: Implementation of government decision	16
Option 3: Partial prohibition.....	21
Non-regulatory approaches	21
Impacts of the regulation	23
Businesses	23
Individual impacts.....	50
Community organisation impacts.....	51
Social and environmental impacts	51
No regulatory action taken.....	52
Regulatory costing summary.....	52
Stakeholder consultation	54
McCarthy Review	54
Northern Hemisphere summer 2019.....	55
Live sheep exports to, or through, the Middle East – Northern Hemisphere summer: Regulation impact statement.....	55
Independent Observer policy.....	56
Stakeholder meetings	57
Marine Order 43.....	58
Net benefit	61
Independent Observers.....	61

2019 prohibition period	61
Marine Order 43.....	62
How the regulation was implemented and evaluated.....	64
McCarthy Review recommendations implemented immediately.....	64
McCarthy Review recommendations implemented since its release	68
McCarthy Review recommendations not implemented by the department.....	71
Marine Order 43.....	73
Appendix A: McCarthy Review recommendations.....	75
References.....	80

Tables

Table 1 Voyages departing to Asia, 1 July 2018 to 30 June 2019.....	41
Table 2 Cattle mortality data for voyages with and without an Independent Observer, 1 July 2018 to 30 June 2019.....	41
Table 3 Average annual compliance costs (from business as usual) by sector.....	53
Table 4 Overall voyage mortality rates for cattle and buffalo (from Northern Australian ports to South-East Asian destinations) 2016 to 2018	69

Figures

Figure 1 Sheep mortality rate changes against changes in livestock export regulations, Northern Hemisphere summer and winter, 2013 to 2020.....	26
Figure 2 Reductions in sheep mortality rate during the Northern Hemisphere summer (May to October), 2013 to 2019.....	27
Figure 3 Changes in mortality rates per voyage of 10,000 sheep or more, since the Middle East Order 2018 was implemented, January 2016 to April 2020.....	28
Figure 4 Reductions in mortality rates per voyage with a Northern Hemisphere summer prohibition taken into consideration, January 2016 to April 2020	29
Figure 5 Twelve-week moving average of lambs sold through saleyards, January 2014 to July 2020.....	32
Figure 6 WA lamb and sheep slaughter, January 2010 to May 2020	32
Figure 7 Australian sheep meat exports, 2007–08 to 2019–20	34
Figure 8 Average monthly price difference between trade lamb (weighing 18–22kg) prices in the eastern states and Western Australia, 2010 to 2019.....	35
Figure 9 Weekly saleyard prices, trade lamb (weighing 18–22kg), January 2015 to July 2020....	35
Figure 10 Farm cash incomes for farms in Western Australia with more than 100 sheep, 1989 to 2019.....	36
Figure 11 ABARES forecast: Value of Australian sheep exports, 2010–11 to 2020–21	37
Figure 12 Sheep export mortality rates pre- and post-McCarthy Review, January 2013 to April 2020.....	65

Summary

This post implementation review (PIR) has been prepared jointly by the Department of Agriculture, Water and the Environment and the Australian Maritime Safety Authority to review the outcomes of the government decision to implement the recommendations of the McCarthy Review, the Independent Observer Program and the early commencement of amendments to Marine Order 43. It reviews the economic benefits and impacts of regulation implemented to limit the risk of heat stress in livestock, in particular live sheep exported to, or through, the Middle East by sea.

These changes follow a government decision to address a number of animal welfare incidents that have occurred in the live export industry which caused public concern, and in this case following the airing of footage in April 2018 of sheep suffering on board the *MV Awassi Express*. The situation required decisive action to avoid further heat stress events affecting animal welfare to meet public expectations.

At the time, the then Minister for Agriculture called for a 'short, sharp review of the live sheep trade into the Middle Eastern summer'. The government decided in June 2018 that the most appropriate way to achieve these objectives was to support the recommendations of the McCarthy Review to minimise the risk of heat stress and change the conditions for sheep travelling to, or through, the Middle East, not only in the Northern Hemisphere summer but all year round. The government also agreed to implement the Independent Observer Program to provide the necessary transparency that the government found lacking at that time. Due to the urgent need for reform, a Regulation Impact Statement (RIS) exemption was granted, and a PIR was required to be prepared within 2 years of the decision.

The options considered by the government at the time, and covered in this PIR are:

- 1) The regulatory status quo, characterised by no action taken on the McCarthy Review.
- 2) Implementation of the government response to the McCarthy Review recommendations and a 2019 Northern Hemisphere summer prohibition (June to mid-September); implementation of an Independent Observer Program; and an 18-month industry transition period for amendments to Marine Order 43.
- 3) Implementation of a prohibition on live sheep exports from 1 May to 31 October (Northern Hemisphere summer); implementation of an Independent Observer Program; and an 18-month industry transition period for amendments to Marine Order 43.

Through evaluation of the science, opinions of experts and consultation with primary stakeholders, Option 2 was selected as the most acceptable.

This PIR reviews the economic benefits and impacts of the implementation of the regulation and concludes that a level of success in improving animal welfare outcomes, by reducing the risk of heat stress, has been achieved. This success has benefited those involved in the supply chain by supporting the sustainability of the live sheep export trade.

The PIR shows how both the department and the Australian Maritime Safety Authority have consulted where possible on the changes and remained flexible to changing the regulation and

policies as new evidence and science became available. The subject of live export generates polarised views from those who work within it and the general public. Therefore, consultation rarely achieves a unanimous response. As a result, the government agencies must rely on science, although at times limited in its availability, to make its decisions that are aimed at balancing the interests of industry, our international trading partners and the wider Australian community.

The net benefit analysis shows that the subsequent regulation has broadly met its objective of providing better conditions for sheep exported to the Middle East during the Northern Hemisphere summer and improving animal health and welfare while maintaining the live animal export trade.

The PIR includes adequate information to meet the best practice regulation requirements of the Office of Best Practice Regulation (OBPR).

Introduction

This Post-implementation review (PIR) addresses the Australian Government's decision in June 2018 to amend the regulation of the live animal export industry in response to regulatory failures. A regulatory impact statement (RIS) was not completed at the time the decision was made because urgent action was needed to address animal welfare concerns while supporting the continuation of the trade. A Prime Minister's exemption from RIS requirements was granted on 22 June 2018. As a result, a PIR was required following the implementation of the new requirements.

In April 2018, video footage was aired which showed Australian sheep in severe heat stress while being transported to the Middle East on 5 consecutive voyages on the *Awassi Express*, with most footage taken during a voyage in August 2017 (the Awassi incident). This graphic footage shocked the Australian community and undermined public confidence in the live export trade and the then Department of Agriculture and Water Resources (the department – refers to the then Department of Agriculture and Water Resources and the current Department of Agriculture, Water and Environment), as the regulator. Various community stakeholders expressed views ranging from support for a ban on live sheep export, to giving greater priority to good welfare outcomes in the live sheep export trade. The livestock export industry also recognised that maintaining the welfare of exported sheep is important, for the direct benefit of the animals undergoing transport and also to support a sustainable export sheep trade.

In response to the Awassi incident, the then Minister for Agriculture and Water Resources, the Hon. David Littleproud MP, commissioned Dr Michael McCarthy to undertake a rapid [Independent review of conditions for the export of sheep to the Middle East during the Northern Hemisphere summer](#) (the McCarthy Review). This review was commissioned to advise on export 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 health and welfare outcomes for sheep being transported to the Middle East during the Northern Hemisphere summer.

The McCarthy Review ahead of the 2018 Northern Hemisphere summer stated that 'the central issues relevant to sheep health and welfare during shipping to the Middle East in the months of May to October are stocking density, ventilation and thermoregulation in the sheep'.

The McCarthy Review represented a significant opportunity to immediately shift the regulation of live sheep exports and the department acknowledged that regulatory changes would have significant implications for all parties associated with the trade. The 2 most significant immediate recommendations related to stocking density and a revised heat stress assessment model (HSRA).

On stocking density, the McCarthy Review recommended that an 'allometric' approach be adopted for the forthcoming Northern Hemisphere summer (May to October 2018). This would increase the space for sheep on board vessels by between 11 to 39%, depending on their weight, compared to the stocking density requirements under ASEL version 2.3.

On the HSRA, the McCarthy Review recommended moving from an assessment based on mortality to one based on animal welfare, with a risk threshold of a less than 2% probability that 5% of sheep on a voyage experience heat stress. This represented a significant shift from the

standards and would have significant further implications for stocking densities, which were based on a risk threshold of a less than 5% probability of a 2% mortality event on a voyage.

The government supported moving the regulatory end-point from a risk assessment based on mortality to a risk assessment based on animal welfare. However, this recommendation needed to be subject to further testing and consultation before it was implemented. Therefore, a decision was taken to postpone the implementation of those recommendations relating to heat stress. A RIS was prepared by the department in 2019 and a regulatory decision was made in early 2020. This RIS and the subsequent decision can be found on the department's website.

The McCarthy Review also made a number of other recommendations that would apply to the 2018 Northern Hemisphere summer, including:

- independent auditing of vessel ventilation systems
- checks on animal weights to assess the accuracy of proposed load plans and HSRAs
- improved bedding arrangements on voyages through the use of sawdust
- the reportable level for sheep travelling from Australia to the Middle East be reduced from 2% to 1%.

The government's response to the McCarthy Review was the catalyst for further regulatory changes approved by the government decision. These included the introduction of the Independent Observer (Observer) Program, the prohibition of the export of sheep to the Middle East in the 2019 Northern Hemisphere summer and the reduction in the transition period for amendments to [Marine Order 43](#). Ongoing compliance action against companies involved with the Awassi incident and the threat of injunctive action by animal welfare advocates resulted in a commercial decision by other exporters not to export during the 2018 Northern Hemisphere summer.

Live sheep export industry

In 2017–18, at the time the decision to implement the relevant reforms was made, Australia exported around 2 million live sheep (valued at \$239 million), which contributed 7% of the value of Australia's sheep and sheep meat exports, or about 3% of the global trade in sheep meat (ABARES 2019).

In 2017–18, 1.6 million sheep were exported live from Western Australia (WA), which equated to 82.1% of Australia's total live sheep exports. Ports in South Australia (SA) accounted for 16.8% of live sheep exports, while ports in Victoria and New South Wales (NSW) accounted for 0.8% and 0.3%, respectively (ABS 2019).

Since 1988, the Gulf Cooperation Council (GCC) countries of Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates have been the largest market for Australian live sheep exports, accounting for an average of 81% of exports. However, Australia has not exported live sheep to Saudi Arabia since 2012. The Middle East, including the GCC plus Turkey, Jordan and Israel as a whole, received an average of 96% of Australia's live sheep exports over the same period (ABARES 2018).

The Middle East is also Australia's largest export market for sheep meat. Growing populations, incomes and changing consumer preferences are driving an increased demand for pre-packaged

meat in supermarkets. In response, frozen and chilled sheep meat exports to the Middle East from Australia had increased from around 24,000 tonnes in 2006 to over 50,000 tonnes in 2018. Due to cultural preferences however, it is unlikely that frozen and chilled meat would entirely replace live sheep in the short term.

Within Australia, the live sheep export industry has a range of stakeholders, some of which derive most of their income from the industry and others which also participate significantly in other economic activities. The export supply chain includes:

- exporters
- land transporters
- livestock agents
- operators of registered premises
- other ancillary service providers
- producers
- shearers and wool agents
- ship owners and operators
- stock feed growers and manufacturers
- veterinarians.

The most significant stakeholders in the live export supply chain are sheep producers, exporters and livestock vessel operators.

Producers

The Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) farm surveys show that most sheep producers in Australia sell sheep for live export from time to time (ABARES 2019). Most of the sheep producers who sell sheep for live export are located in WA. Exporters mostly purchase sheep for live export directly from producers, although they may also purchase sheep via saleyards.

Live sheep exports complement and add to the profitability of lamb production for Australian sheep farmers. This is especially true for sheep farmers in WA where a combination of transport, market and agronomic factors have oriented the sheep industry towards live exports. WA farmers currently sell a proportion of their sheep for live export because it is more profitable than alternative markets. In WA, if the spring break is late, the short growing season due to hot summer conditions does not allow lambs to reach the weight and quality required for the Australian prime lamb market without supplementary feeding. However, in these conditions live sheep export provides WA farmers with a profitable alternative as lambs not fit for the local prime lamb market are well within the body condition requirements for the Middle Eastern trade. This means if conditions become unfavourable for the Australian lamb market, producers can sell the same sheep for live export at a reasonable price.

Due to its relative proximity, WA also has a significant transport advantage for vessels to the Middle East over eastern Australian states. In addition, industry stakeholders note that fewer domestic buyers and meat processors are present in WA sheep markets compared with eastern

Australian states, and the competition provided by the live export market provides a relatively stable price floor for WA producers.

Exporters

In 2018, there were 33 exporters licenced to export sheep by sea. The majority of sheep exports are undertaken by 15 companies with 2 exporters accounting for over 80% of the trade by volume. It is understood that this large market share is due to these companies owning the main livestock vessels that export sheep by sea to the Middle East and also close commercial connections through their parent companies to the dominant importers in their respective import markets.

It has been estimated that between 8,000 and 10,000 people are involved in the live export (sheep and cattle) industries (Clarke et al. 2007), including all ancillary industries such as transport, veterinary and feedlot services. The number of people employed exclusively in live exports is smaller than this and includes sheep buyers or stock agents, staff operating registered premises, staff of exporting companies and specialist livestock staff working on ships (who may not be employed under Australian contracts).

Some operators in the live export industry are vertically integrated, owning vessels, feed mills, abattoirs and registered premises.

Ship owners and operators

In shipping, it is common for a 'ship owner' (the people or entities that own the ship) to delegate the day-to-day management and operation of their ships to a separate company. These ship management companies are referred to as 'ship operators'.

Ship operators are identified as the company responsible for the safe management and operation of the ship under the International Safety Management (ISM) Code – an international standard for the safe operation of ships and for pollution prevention. Chapter IX of the International Convention for the Safety of Life at Sea (SOLAS) requires compliance with the ISM Code. This compliance is enforced through requirements in domestic legislation and subordinate regulation in Australia (see [Regulatory framework pre-2018](#)).

There were 16 different specialised vessels that carried live sheep to the Middle East from 2015 to 2019. Three of these vessels accounted for almost 63% of live sheep exports to the Middle East from 2015 to 2019. All the vessels that currently carry livestock from Australia are operated by foreign companies.

There were 13 vessel operators actively engaged in the live export trade in March and April 2018. These operators, which are all foreign entities, remain actively engaged in the trade today.

The commercial markets for Australian livestock determine where vessels operate at any given time. Generally, destinations are in the Middle East and Asia.

Definition and regulation of animal welfare

The concept of animal welfare can be difficult to define absolutely as it has a number of dimensions, including psychological and physical aspects, people's subjective evaluations, as well as historic and cultural differences. The *Macquarie Dictionary Online (2020)* defines animal welfare as the treatment of animals in such a way as to promote their health and wellbeing.

International standards

There are internationally agreed concepts of animal welfare. The World Animal Health Organisation (OIE) is an intergovernmental organisation responsible for improving animal health worldwide and its objectives include promoting animal welfare. In 2019, its 182 member countries, including Australia, agreed upon guiding principles for animal welfare, which note that there is a critical relationship between animal health and animal welfare.

The OIE (2019) animal welfare general considerations state:

Animal welfare means the physical and mental state of an animal in relation to the conditions in which it lives and dies.

An animal experiences good welfare if the animal is healthy, comfortable, well-nourished, safe, is not suffering from unpleasant states such as pain, fear and distress, and is able to express behaviours that are important for its physical and mental state.

Good animal welfare requires disease prevention and veterinary care, appropriate shelter, management and nutrition, a stimulating and safe environment, humane handling and humane slaughter or killing. While animal welfare refers to the state of the animal, the treatment that an animal receives is covered by other terms such as animal care, animal husbandry, and humane treatment.

Australia's regulatory approach

Under the Australian Constitution, the Australian Government's responsibility for animal welfare is essentially limited to issues related to international trade. The Australian Government has responsibility for trade and international agreements, in relation to the welfare of animals involved in the live animal export trade and animals processed at export abattoirs.

The welfare of animals, including sheep, within Australia is a state and territory government responsibility. State and territory governments regulate, enforce or otherwise ensure animal welfare in their state or territory. The Australian Government works together with the states and territories to develop nationally consistent standards and guidelines to assist the development of regulations in each jurisdiction. An example of such regulation is the Australian Animal Welfare Standards and Guidelines for the Land Transport of Livestock. The Australian Government is working with all states and territories to improve the national framework of regulation that applies to livestock in the export supply chain. This action aims to improve animal health and welfare outcomes and better support international trade.

The problem

By its nature, live animal exports present a high risk to animal health and welfare. There have been instances of non-compliance with animal welfare standards and instances of animal cruelty that have not been anticipated by the regulatory framework or evoked an appropriate regulatory response (Moss Review 2018). There was evidence of heat stress events which occurred on voyages to the Middle East, resulting in poor animal welfare outcomes and associated high mortality (McCarthy Review 2018).

Multiple studies have linked heat stress to poor animal welfare. Caulfield et al. (2014) specifically identified that heat stress is a major contributor to poor animal welfare associated with long-haul live export voyages, negatively affecting livestock health and productivity.

The balance between animal welfare and a sustainable live export trade is the key issue that both industry and government must effectively deal with. An inability to resolve the issue could possibly result in the government phasing out of live exports, a trade worth \$1.7 billion and employing 10,000 people within the industry and communities that rely on it.

Risk of future high mortality heat stress events

Extreme temperatures and humidity in the Middle East during the Northern Hemisphere summer give rise to conditions that have the potential to cause heat stress in sheep and negatively impact their welfare and cause death. Section 1A.30(h) of the [Export Control \(Animals\) Order 2004](#), in force at the time of the Awassi incident, provided among other things that:

The Secretary may grant an export permit for live-stock if:

...the travel arrangements for the live-stock are adequate for their health and welfare.

It was clear from the Awassi incident that the requirements placed on exporters did not adequately protect animal welfare or ensure that the department would receive accurate information about animal welfare outcomes from each voyage. The government also believed that another heat stress event may lead to an increase of public opinion and political pressure against live sheep exports, which could reduce the trade and potentially lead to its closure. This would be contrary to the government's policy position of supporting live export while condemning all animal cruelty. To ensure animal welfare and the sustainability of the live sheep trade, it was essential that the risk of heat stress was effectively managed and certainty provided to both the community and the industry. As such, improved animal welfare outcomes were crucial to the ongoing sustainability of the live sheep export trade.

Sinclair et al. (2018) found that the majority of Australians had negative views towards the live export trade and that media exposés increased the proportion believing the trade should end. Futureye (2018) found that over 80% of the public found live animal exports moderately to extremely concerning, and 60% thought live animal exports should be banned.

Live animal exports are also regulated by the Australian Maritime Safety Authority (AMSA), which administers Marine Order 43 (Cargo and cargo handling–livestock) 2018 (M043), made

under the [Navigation Act 2012](#). The Order sets out the vessel construction and material requirements for the provision of livestock services, for the safe stowage and carriage of livestock, and for the safe operation of vessels engaged in carrying livestock. These provisions support and work alongside the suite of animal welfare legislation administered by the department.

In April 2018, AMSA was already in the process of reviewing and amending MO43. Among other changes, the amended Order would have included an upgraded ventilation requirement and allowed livestock to be carried only on single-tier decks for new livestock vessel approval. These changes aimed to address new research findings on the impacts of existing ventilation and livestock carriage arrangements for animal welfare.

For existing vessels, a 5-year transition period was recommended by AMSA's Livestock Advisory Committee (LAC) meeting in March 2018. When the Awassi incident occurred, a 5-year industry transition period was no longer considered acceptable to the community. There was a need to take action more urgently to address the public concerns over animal welfare. Not promptly addressing these concerns would have created a risk of significant negative impacts for the livestock export industry.

Ventilation on livestock vessels

Vessels that carry livestock must have adequate ventilation available for the animals to provide fresh air and remove heat, moisture and volatile contaminants to address the risk of heat stress on voyages. Ventilation can include mechanical systems or natural ventilation, depending on whether the decks and animal pens are enclosed or open to the air outside the vessel. Air velocity, or the speed at which the air moves across decks and animal pens, is also important. Where air velocity is insufficient, there is an increased risk of heat stress mortality on voyages.

MO43 previously required all vessels constructed or converted on or after 27 May 2004 to have mechanical ventilation capable of providing a minimum air velocity of 0.5 metres per second across every part of a pen. Older existing livestock vessels were not obligated to meet this requirement.

In addition, vessels of less than 20m in breadth were not required to have mechanical ventilation on open decks. For these smaller vessels, the facilitation of air movement through the vessel from prevailing winds or the ship's movement during its voyage was used for open decks. The master of the vessel could also alter the ship's course, using a 'zig-zag' route, to allow ventilation of open decks, particularly where there was a following wind that nearly matched the vessel speed.

However, industry experience over time has shown that in a following breeze of nearly the same speed as the vessel, there is little or no ventilation flow on open decks. It is also not always practical, and often more costly in terms of fuel consumption, for the Master to alter course to create the required relative airflow. A reduction of air flow is likely to increase the risk of heat stress and mortality for livestock.

Ten of the 33 vessels permitted to carry livestock at the time of the McCarthy Review were unlikely to comply with the minimum requirements for ventilation on open decks and the minimum air velocity across the pens.

Advice from vessel owners through AMSA consultation highlighted that retrofitting existing vessels with mechanical ventilation on open decks, and additional mechanical ventilation in twin-tiers to meet these minimum requirements would be difficult and costly for ship owners. Industry input to AMSA's regulatory costing completed at the time showed that meeting the mechanical ventilation requirements for affected vessels would result in an estimated additional average cost to all businesses of \$636,341 per annum over 10 years. In some cases, it was expected that the affected vessel would no longer be commercially viable for use in the livestock industry, requiring vessel owners to make a sizeable investment in a new or converted replacement vessel, or change their operations by finding alternative markets or uses for the existing vessel.

Given the competitive market and cost implications for vessel owners, this ventilation problem was considered unlikely to be addressed by the market alone without regulatory enforcement. At its meeting in March 2018, the LAC recommended AMSA to amend MO43 to require that all new livestock vessels have mechanical ventilation on open decks. A 'sunset provision' was also recommended to require existing livestock vessels to meet this requirement within 5 years of the date the amended Order was to come into effect.

The 5-year transition period was considered necessary to provide owners of older existing vessels with the time out of service required to make the required structural adjustments to their vessels, to source or construct new vessels, or repurpose and sell their older existing vessels. It also aligned with the timeframes required for vessel construction and conversion, as well as international practice for Convention changes. Exporters would also benefit from an uninterrupted continuation of trade with minimum loss of transport capacity during the transitional period.

Twin-tier decks on livestock vessels

Livestock vessels can be purpose-built or converted from other purposes to accommodate livestock transport. The vessels are usually arranged with several decks for carrying animals, like floors in a multi-level building. However, some vessels have, to continue the building metaphor, a mezzanine level that means they have 2 levels per deck. These are called 'twin-tier' decks and can be used for carrying sheep and goats in accordance with MO43.

Most of the vessels engaged in livestock trade in Australia have single-tier decks. Although many of these vessels needed ventilation upgrades to meet MO43 requirements after 31 December 2019, the impact on twin-tier vessels was much more significant. Among the 33 vessels AMSA permitted to carry livestock in March and April 2018, only 3 were fitted with twin-tier decks – the MV *Bader III* (a 41 year old vessel) and the MV *Maysora* (a 34 year old vessel), both operated by Livestock Shipping Services (LSS), and the MV *Al Shuwaikh*, (a 34 year old vessel) operated by Kuwait Livestock Transport and Trading (KLTT).

These 3 vessels were permitted to operate with livestock loaded in twin-tiers, in compliance with MO43, because the number of tiers permitted and ventilation requirements did not come into effect until 31 December 2019. By that date the owner of the *Bader III* had decided to move the vessel to other markets for loading livestock, with the other 2 vessels operating from Australian ports up to that date.

Twin-tier decks allowed those vessels to carry nearly double the quantity of sheep (or theoretically goats) on each deck with twin-tiers. Industry advice highlighted that this is commercially profitable for vessel operators and allows for lower transport costs per head than might otherwise be available for exporters of these types of livestock.

MO43 previously permitted livestock to be carried on twin-tier decks with prescribed conditions relating to the pens, feeding, water and drainage. In an amendment to Issue 5 of the Order, an additional condition was implemented requiring that minimum ventilation requirements were met. This requirement applied only to vessels constructed or converted for livestock transport on or after 27 May 2004. It did not apply to existing vessels already arranged with twin-tier decks, such as the already highlighted LSS and KLTT vessels, which had until 31 December 2019 to comply.

However, new research identified that twin-tier decks could compromise animal welfare and increase the risk of livestock mortality on voyages. Research, including 3D modelling, carried out by EV Ernesto Valtorta of EV Aeronautics Consulting and Haiye Lou of TurboMoni Applied Dynamics Lab in September 2013 indicated that twin-tiers can obstruct air flow and ventilation across animal pens.

The modelling indicated that it was practically impossible for twin-tier deck arrangements to meet the minimum ventilation requirement introduced in Issue 5, even with a separate ventilation system on both tiers. This research also identified that the low head height and limited clear space restricted airflow, resulting in areas of very limited airflow across animal pens. This was expected to result in higher risk of heat stress and mortality for livestock in twin-tier pens compared to single-tier pens. It also resulted in higher levels of ammonia, which poses a health risk to livestock and seafarers above 25mg/m³.

Advice from vessel owners through AMSA consultation highlighted that retrofitting improved mechanical ventilation to older existing vessels with twin-tier decks would be difficult and costly for ship owners. Initial stakeholder estimates indicated that the cost to convert vessels to single-tier decks was \$208,000 per deck, resulting in an average one-off conversion cost of \$1.9 million per vessel. This was not an insignificant cost, particularly for vessels approaching the end of their useful life. It would also effectively halve their transport capacity on those decks and increase livestock transport costs for exporters of these types of livestock.

Regulatory framework pre-2018

Companies exporting livestock from Australia must comply with [the Australian Meat and Live-stock Industry Act 1997](#), the [Export Control Act 1982](#) and the legislative instruments issued under these Acts. The operators of vessels used to export livestock by sea must comply with the [Navigation Act 2012](#) and the legislative instruments issued under that Act.

The department regulates the companies that export livestock. [The Australian Meat and Live-stock Industry \(Standards\) Order 2005](#) requires livestock export licence holders to comply with ASEL (Version 2.3, which is incorporated into the Order by reference) when exporting livestock. ASEL includes the standards for on-farm sourcing of animals, land transport, management of animals in registered premises, contingency planning, loading, equipment on board and on-board management of livestock. Compliance with ASEL is, by virtue of the

Australian Meat and Live-stock Industry (Standards) Order 2005 and subsection 17(5) of the *Australian Meat and Live-stock Industry Act 1997*, a condition of a livestock export licence.

Livestock exporters need an Approved Arrangement to export and a livestock export licence will not be granted without an Approved Arrangement (exceptions apply). Additionally, each consignment must have a Notice of Intention (NoI) to export approved by the department. Under the Export Control (Animals) Order 2004, the department cannot approve a NoI for exports or issue export permits and health certificates for livestock exporters who do not have an Approved Arrangement or an exemption.

As part of an Approved Arrangement with the department, the exporter must set out any applicable importing country requirements, standards of ASEL and other regulations their consignments are required to meet. The exporter must also provide a declaration that they have risk management plans in place in case of mechanical breakdown or delay of the vessel, shortage of food and water, disease outbreak or extreme weather during the voyage and in case the consignment is rejected by the importing country. All voyages to the Middle East must be accompanied by trained stock people and an Australian Government Accredited Veterinarian (AAV), who are required to provide daily reports to the department.

The live export trade is also regulated by AMSA, which is responsible for the regulation and safety oversight of Australia's shipping fleet and management of Australia's international maritime obligations.

AMSA administers MO43, which is made under the *Navigation Act 2012*. The Order sets out the vessel construction and material requirements for the provision of livestock services, for the safe stowage and carriage of livestock, and for the safe operation of vessels engaged in carrying livestock.

The Order requires that vessels must have effective systems for providing livestock transport services, such as water, feed and fresh air. Vessels that comply with MO43 are issued with an Australian Certificate for the Carriage of Livestock (ACCL).

AMSA established a LAC to provide advice and recommendations on the efficient and safe transport of livestock from Australia. Membership of the LAC consists of livestock exporters, livestock vessel operators, classification societies, animal welfare advocates and government agencies. Meetings of the LAC are convened annually or at other times as the need arises.

Why government action was needed

Objectives of government action

The Australian Government's objective is to support a sustainable livestock export trade, which safeguards animal welfare, consistent with fulfilling Australia's international obligations regarding animal welfare as an OIE member.

In achieving this the government aimed to:

- improve animal welfare outcomes by reducing the risk of heat stress in sheep exported to, or through, the Middle East during the Northern Hemisphere summer to a very low level (less than 5% risk of temperatures that could cause heat stress)
- maintain a sustainable live sheep export trade supported by improved animal welfare outcomes, that meets the requirements of ASEL and relevant legislation
- uphold Australia's reputation as a reliable exporter of high-quality livestock.

The objectives of the *Navigation Act 2012* are to:

- promote the safety of life at sea
- promote safe navigation
- prevent pollution of the marine environment
- ensure that AMSA has the necessary power to carry out inspections of vessels and enforce national and international standards.

The objectives of MO43 are to:

- provide for the certification of vessels that carry livestock
- specify requirements for the carriage and stowage of livestock
- ensure the safe operation of livestock vessels.

The government decided in June 2018 that the most appropriate way to achieve these objectives was to support the recommendations of the McCarthy Review to minimise the risk of heat stress and change the conditions for sheep travelling to, or through, the Middle East, not only in the Northern Hemisphere summer but all year round. The government also directed that the Observer program be implemented to provide the necessary transparency that the government required at that time. Further, the transition period for amendments to MO43 relating to the removal of twin-tier decks and improved ventilation requirements was brought forward. Finally, in the 2019 Northern Hemisphere summer, pending the outcome of the [live sheep exports to, or through, the Middle East – Northern Hemisphere summer regulation impact statement](#) (the NHS RIS) (OBPR ID:23822), the department decided, supported by legislation, that the export of sheep during June to mid-September 2019 was a significant risk and therefore should be prohibited (with opportunity to apply for an exemption).

Case for considering government action

The regulatory framework for live animal exports placed much of the responsibility of ensuring the health and welfare of animals throughout the export supply chain on exporters. Without effective government regulation, live exported sheep have been subjected to levels of heat stress risk and consequent poor welfare that were considered unacceptable (see [The problem](#)). The footage from the Awassi incident provided new information to the government that made it clear that the regulatory arrangements did not meet community expectations. This was subsequently confirmed by the Moss Review (2018), which found that some exporters ‘may have behaved in a non-compliant way that has adversely affected the reputation of the industry as a whole’. Therefore, not only were the animal welfare outcomes achieved by the industry not acceptable, a repeat of the public pressure following the Awassi incident could have reduced the trade and potentially led to its closure.

Potential impact on industry of another significant animal welfare event

The Australian government is committed to upholding the standards of animal welfare while supporting the livestock export trade. Although it is not certain another animal welfare event would lead to the closure of the live sheep export trade, if a heat stress welfare event occurred it would generate public and political pressure against the trade, with calls for levels of regulation that are considered economically unviable.

If Australia is to maintain a sustainable live sheep export trade, supported by animal welfare outcomes, it is vital to establish trust and identify mutual benefits between the live export industry, the government and the Australian community.

There continues to be ongoing public feedback against the trade. The Australian community places a priority on good animal welfare outcomes, and organised stakeholder groups can exert significant influence. Prolonged suspensions of the live animal export trade to other markets have already occurred following poor animal welfare incidents. For example, in 2011 when video footage emerged showing inappropriate treatment in Indonesian abattoirs, there was public reaction and the Australian Government suspended all live cattle exports to Indonesia for several months. In 2013, when video footage emerged showing inappropriate treatment of cattle exported live to Egypt, exports of all Australian livestock to Egypt were suspended. Additionally, ceasing live animal export was in the election platform of one of the major political parties in the most recent federal election. Resultant restrictions to the trade could render it uneconomic or end the trade.

The live export industry itself has demonstrated a recognition of the need to better promote the health and welfare of sheep. In December 2018, the Australia Livestock Exporters Council announced an industry moratorium for June, July and August 2019, stating that ‘June to August sheep exports to the Middle East are worth \$55 million per annum, so the moratorium will, without any doubt, impact farm gate returns. But this decision shows the genuine care exporters have for livestock – values we share with producers – and our commitment to the industry’s future’.

If the Australian community and/or trading partners lost trust in the department as a regulator it would have significant implications. In addition to the animal welfare concerns themselves, an incident that causes a repeat of such public outcry is likely to result in pressure that could lead to the loss of the live export industry’s ‘social licence’ to operate and closure of the trade.

Other consequences could include:

- Damage to Australia's reputation with regards to animal welfare, and as a producer of high quality livestock, reducing demand for Australian exports. The Australian Government continues to work with trading partners to avoid potential bans of imports of live animals from Australia as a result of the Awassi incident.
- Loss of income to farmers and associated businesses due to changes to business practices such as changing from sheep to crops, need for supplementary feeding of retained stock, fluctuation of demand for stock leading to decrease sales affecting farmers, saleyards and sheep buyers.
- Further disruptions to trade and international trading partners' food supply.
- Decline in domestic consumer trust for livestock production systems in general, leading to a decline in domestic demand for animal agricultural products.

Need for transparency

To address the limited oversight the department had over the conditions on livestock vessels, Observers were placed on voyages to provide additional assurance about the effectiveness of exporter arrangements in managing the welfare of the animals on-board. Observers are departmental officers deployed under a Secretary's approved export program (AEP).

Observers monitor, review and report on the implementation of activities in an exporter's approved export program. They report regularly to colleagues in the department on topics such as the daily care of animals and compliance with ASEL. They are able to document the incidence and on-board management of heat stress and other welfare issues. This may include taking digital still and video images to document on-board procedures and conditions. This provides valuable information to the department to inform and support effective regulation of the livestock export trade.

Generally speaking, reports received from AAVs and stockpersons often lacked enough detail and transparency for the department to make informed decisions about improving its regulatory approach.

The primary purpose of the Observer program is to provide assurance to government, industry and the public that the welfare of animals being transported on ships is being appropriately managed. It has been an important part of regaining the trust of the Australian community.

To provide public transparency of the industry, the department posts all the Observer report summaries on its website for the public and other interested parties.

Government capacity to intervene successfully

As regulator of the live export industry, the department had the necessary legislative authority and organisational resources to intervene. It is not legal to export livestock from Australia without Australian Government approval. The department regulates livestock exports under the *Export Control Act 1982*, the *Australian Meat and Live-stock Industry Act 1997* and associated regulations, orders and standards. These Acts include compliance and enforcement tools for non-compliance, including fines and imprisonment.

In Australia, AMSA regulates all maritime vessels in Australian waters and a livestock vessel cannot load livestock here without an ACCL issued by AMSA.

AMSA can intervene under the *Navigation Act 2012* and MO43 to prescribe minimum standards for all vessels to carry livestock from Australia and the systems on those vessels providing livestock services. It can review and amend these requirements to ensure they continue to provide a vessel and livestock services that ensures the live animal export industry continues to meet contemporary standards of animal welfare. AMSA can also amend requirements based on evidence of undesirable or unacceptable outcomes from voyages on ships holding an ACCL.

MO43 prescribes requirements to ensure the safe loading, stowage and carriage of livestock as a cargo in much the same way as other cargoes are regulated in other marine orders. The Order includes that a vessel's master must notify AMSA of the intention to load livestock and that, once notified, AMSA must inspect a vessel before loading of livestock can commence. Where the results of an inspection warrant it, AMSA is able to issue a deficiency notice that must be rectified before livestock can be loaded.

Compliance and enforcement action for MO43, as for other cargo orders, can be taken under the provisions of the Order itself, or under the *Navigation Act 2012*. The Act includes a suite of compliance and enforcement tools for non-compliance, including improvement or prohibition notices, detention of the vessel and financial penalties.

Options considered

Three groups of options to respond to the problems identified in [The problem](#) chapter were assessed. In different ways and to different degrees, the options addressed the objectives stated in [The problem](#) chapter, to minimise the risk of heat stress and in turn improve animal welfare for sheep exported to, or through, the Middle East during the Northern Hemisphere summer and support a sustainable, viable live sheep export industry.

The options considered were:

- 1) The regulatory status quo, characterised by no action taken on the McCarthy Review.
- 2) Implementation of the government response to the McCarthy Review recommendations and a 2019 Northern Hemisphere summer prohibition June to mid-September; implementation of an Independent Observer Program; and an 18-month industry transition period for amendments to Marine Order 43.
- 3) Implementation of a prohibition on live sheep exports from 1 May to 31 October (Northern Hemisphere summer); implementation of an Independent Observer Program; and an 18-month industry transition period for amendments to Marine Order 43.

Through evaluation of the science, opinions of experts and consultation with the primary stakeholders, Option 2 was selected as the most acceptable option.

A non-regulatory option was not considered feasible because it would not meet the fundamental expectations of the Australian community for Australian Government regulatory oversight of livestock exports. In addition to seeking to protect animal welfare, regulation of the trade sought to avoid a major incident that could adversely impact on the industry, Australia's trading relationships and economy. Removing or diminishing the role of the Australian Government in the regulation of livestock exports would pose a significant risk to animal welfare, live sheep export industry participants, Australia's trading relationships and Australia's regional economies.

Option 1: Regulatory status quo

The status quo option assumes the recommendations of the McCarthy Review were not implemented. The regulation of the export of livestock would reflect the regulatory environment prior to mid-2018.

This comprised the following:

- *Australian Meat and Live-stock Industry Act 1997*
- [Australian Meat and Live-stock Industry \(Export Licensing\) Regulations 1998](#)
- [Australian Meat and Live-stock Industry Regulations 1998](#)
- [Australian Meat and Live-stock Industry \(Conditions on live-stock export licences\) Order 2012](#)
- Australian Meat and Live-stock (Standards) Order 2005
- *Export Control Act 1982*

- Export Control (Animals) Order 2004
- *Australian Standards for the Export of Livestock v2.3* (ASEL)
- *Navigation Act 2012*
- Marine Order 43 (Cargo and cargo handling–livestock) 2018.

In 2018, the export of livestock from Australia was regulated by the Australian Government under the *Australian Meat and Live-stock Industry Act 1997* (AMLI Act), the Australian Meat and Live-stock Industry (Export Licensing) Regulations 1998 (Export Licensing Regulations) and the Australian Meat and Live-stock Industry Regulations 1998 (AMLI Regulations) which allows issuing of a livestock export licences. The Export Licensing Regulations expressly required export licence holders to comply with ASEL as a condition of the licence. The Australian Meat and Live-stock Industry (Standards) Order 2005 also provided that a licence holder must not export livestock except in accordance with ASEL.

The *Export Control Act 1982* and the Export Control (Animals) Order 2004 (Animals Order) regulates the preparation of livestock for export, and includes Australian Government Accredited Veterinarians. The Animals Order stipulated that the export of livestock is prohibited unless certain conditions are met by the exporter.

In addition, under the status quo, AMSA would have proceeded with the changes to MO43 as decided by the government at that point. MO43 would still require vessel owners to remove twin-tiers and improve animal pen ventilation (as set-out in [Option 2](#)) if they wished to continue to use their vessels to carry livestock from an Australian port to any overseas destination. This Order would not have allowed livestock to be loaded onto ships that didn't meet the minimum criteria as of 1 July 2023.

That is, MO43 would have provided a 5-year industry transition period for this change, as recommended by the LAC, rather than the 18-month period provided for under the government's decision. Supporting industry documentation provided by AMSA, such as application forms and guidance material for livestock vessels, would also be much the same as they are now.

The status quo option was not agreed to as it would not meet the fundamental expectations of the Australian community for Government regulatory oversight of livestock exports following the Awassi incident. Maintaining the role of the Australian Government in the regulation of livestock exports following the incident, without further regulatory intervention, would pose a significant risk to animal welfare, confidence in the government's regulation of the industry, live sheep export industry participants, Australia's trading relationships and Australia's regional economies.

The status quo option was also decided against in relation to MO43 as it would mean that the existing requirements would not be amended to reflect the available research evidence and requirements for the ACCL would not be clarified, creating confusion for industry. Potential risks to safety, livestock and the environment would also remain.

Option 2: Implementation of government decision

Option 2, the chosen option, includes the implementation of:

- all relevant McCarthy Review recommendations via the development of legislative orders
- a temporary prohibition on the export of sheep to the Middle East in the Northern Hemisphere summer to ensure animal welfare prior to the finalisation of the NHS RIS
- the implementation of an Observer program to provide transparency about compliance on-board vessels
- the reduction of the industry transition period for amendments to MO43 from 5 years to 18 months.

The McCarthy Review proposed a significant shift in the regulation of live sheep exports and the department acknowledged in its response to the review that changes would have significant implications for all parties associated with the trade. The recommendations and how they were implemented can be found in detail at [Appendix A](#).

Two key legislative instruments were used to implement the majority of the McCarthy Review recommendations. These were:

- [Australian Meat and Live-stock Industry \(Export of Sheep by Sea to Middle East\) Order 2018](#)
- [Australian Meat and Live-stock Industry \(Export of Sheep by Sea to Middle East – Northern Winter\) Order 2018](#)

In addition, pending the finalisation of the NHS RIS (recommended by the McCarthy Review) and acting of the initial findings of that review, the department implemented a 3.5 month prohibition for 2019 via the [Australian Meat and Live-stock Industry \(Prohibition of Export of Sheep by Sea to Middle East–Northern Summer\) Order 2019](#), to ensure animal welfare outcomes continued to be met.

Northern Summer Order 2018

Changes implemented by the Australian Meat and Live-stock Industry (Export of Sheep by Sea to Middle East) Order 2018 (Northern Summer Order) aimed to address the risk of heat stress in the Northern Hemisphere summer more adequately and included requirements for:

- exporters to have a heat stress management plan for every voyage
- stocking densities calculated using allometric principles
- independent verification of pen air turnover (PAT)
- 10% extra space for horned rams
- Kuwait to be the first port of unloading for the vessel if it was one of the destination ports
- all vessels to be installed with automated watering systems
- provision of additional bedding
- a reduction in the reportable mortality level from 2% to 1%, achieved by an amendment to the Australian Meat and Live-stock Industry (Standards) Order 2005.

The Northern Summer Order also contains conditions requiring display of approved whistle-blower hotline posters at registered premises, ports and on vessels.

The Northern Summer Order only applies to voyages with sheep which would travel through waters in the Arabian Sea north of latitude 11°N at any time during the voyage, departing Australia in the Northern Hemisphere summer (from May to October).

Northern Winter Order 2018

The Australian Meat and Live-stock Industry (Export of Sheep by Sea to Middle East – Northern Winter) Order 2018 (Northern Winter Order) applies to voyages of sheep to, or through, the Middle East departing Australia between the months of November to April. Among other conditions, the Northern Winter Order provides sheep with 17.5% additional space compared with ASEL (2.3).

Northern Hemisphere summer prohibition 2019

The Australian Meat and Live-stock Industry (Prohibition of Export of Sheep by Sea to Middle East–Northern Summer) Order 2019 prohibited the export of sheep by sea from 1 June 2019 to 14 September 2019, where the vessel would travel through waters in the Arabian Sea north of latitude 11°N at any time during the voyage.

For any exports of sheep departing between May and October 2019 (outside the prohibition period) and travelling through the same waters at any time during the voyage, exporters were also required to comply with the conditions under the Northern Summer Order.

In addition to the Order, for any relevant exports of sheep during May 2019, the department required exporters to equip vessels with environmental data recording devices to record wet bulb temperatures (WBTs). The data was collected and reported back to the department.

Independent Observer Program

The livestock exports Independent Observer Program commenced in April 2018. The primary purpose of the program is to provide assurance to government, industry and the public that the health and welfare of all livestock, including sheep, cattle and buffalo, being exported on ships is being appropriately managed. The program requires an Observer, employed by the department, to monitor and report on activities with regard to the requirements of the *Export Control Act 1982*.

The program commenced, as part of the government's immediate response to footage of live sheep on board the *Awassi Express*. The first Observer deployment was on a sheep and cattle voyage to Turkey on the MV *Maysora* in April 2018. The department continued to build the program, deploying Observers on a range of voyages over the following months.

The then Minister for Agriculture and Water Resources, the Hon David Littleproud MP, announced a further expansion of the program, for an Observer on every export voyage by sea by the end of October 2018. In response to the Minister's announcement, the department published an export advisory notice (EAN) confirming that the department was working towards providing Observers on all vessels exporting livestock departing Australia from 1 November 2018.

The program was implemented in 3 tranches, commencing with long-haul voyages to the Middle East and North African region; then voyages to China and multi-port voyages in South East Asia; and finally, all remaining voyages. In practice, it was not possible to put an Observer on every

voyage, for a range of reasons, including accommodation space on vessels, availability of suitable staff and ability to obtain the necessary visas for the Observers at short notice.

Observers are authorised officers under section 20 of the *Export Control Act 1982*. A Secretary's AEP, described under section 9A of the Act, is a written program of activities approved under section 1A.45 of the Export Control (Animals) Order 2004, to be undertaken by an Observer for the purpose of ensuring the health and welfare of livestock in the course of export activities by sea.

Under sections 9D and/or 9E of the Act, the department issues directions to Observers, requiring them to accompany consignments of livestock exported by sea. The power of the Secretary (or delegate) to require an Observer to accompany a particular livestock voyage is discretionary. The Secretary (or delegate) is required to exercise that discretion in a manner consistent with the scope and purpose of the Act. This means that each decision to direct an Observer to accompany a particular voyage must be considered on a case by case basis. Finally, the Secretary (or delegate) is guided by the department's deployment policy when making these decisions.

In October 2019, following consideration of the information gathered by Observers to that time, the department implemented a more risk-based approach to its deployment of Observers. Risk-based regulation is consistent with best regulatory practice. By this time, the department had a deeper understanding of when the deployment of an Observer would be most beneficial, compared to when the program began in April 2018.

The deployment policy sought to have Observers on the following:

- voyages departing from ports south of latitude 26°S and crossing the equator
- the first voyage undertaken by an exporter and/or vessel following a reportable mortality
- the first voyage(s) by any new exporter or vessel
- other long-haul voyages (10 or more days) with complex arrangements such as those with multiple ports of discharge, carrying buffalo or enacting management plans (for example, heavy cattle).

Livestock on these voyages have a higher risk of experiencing less than optimal health and welfare outcomes than other voyages. Reasons for this include the longer duration of the voyage, the movement of cold acclimatised livestock through or to hot and humid environments, movement of heat acclimatised livestock to very cold environments, and a lack of proven experience of new exporters or new livestock vessels.

Voyages discharging in multiple ports have higher risks for animal health and welfare because there is less ventilation during the time a vessel is stationary in a port. Vessels can also experience delays at ports and these delays can add up to a significant period of time when there are multiple ports of discharge. In these instances, the exporter may need to enact contingency plans for feed or bedding to maintain the health and welfare of the remaining livestock. Therefore, the benefits derived by the department, through having an Observer monitoring exporters' activities on-board, is greatest in these situations.

Most voyages from northern Australia to South-East Asia present a lower risk due to their shorter duration and because they carry *Bos indicus* cattle that are well acclimatised to the environment to which they are being exported. The department still retains the option to deploy an Observer on short-haul voyages from time to time.

Marine Order 43

Under this option, AMSA amended MO43 in line with the government's decision to reduce the agreed 5-year industry transition period for this change to an 18-month period. Vessel owners wishing to use their vessels for transport of livestock from Australia would need to:

- only allow livestock to be loaded into single-tier decks. They may consider converting twin-tier decks to single-tier decks for Australian livestock transport
- provide mechanical ventilation with at least 0.5m/s air flow over the majority of the surface area of all animal pens on these vessels.

Both requirements were to be met by 1 January 2020, or sooner if it was possible for vessel owners. This provided an 18-month period for industry compliance, rather than the 5-year industry transition period ('sunsetting' provision) recommended by the LAC.

Supporting industry documentation provided by AMSA, such as application forms and guidance material for livestock vessels, were revised to reflect the changes required by the government's decision.

Industry transition options

The time allowed for industry compliance was an important consideration and 2 options were canvassed. At its meeting in March 2018, the LAC considered this risk against the risk of increased animal mortality from delayed action and recommended a 5-year industry transition period. However, the subsequent community reaction to the Awassi incident and urgent action required to avoid larger risks to the viability of the industry meant that the minimum 18-month timeframe for industry transition was ultimately adopted under the government's decision. Affected stakeholders advised that 18 months was the minimum timeframe necessary to complete the required structural changes to their vessels. However, affected vessels would be unavailable during this time and it was expected that some may be uneconomical to convert, so there was a risk of reduced livestock transport capacity.

AMSA data indicated that 7 of the 33 vessels holding a valid ACCL and therefore permitted to load or carry livestock in March and April 2018 would be non-compliant with the new requirements. Most of those non-compliant vessels had relatively large animal transport capacity (based on pen areas). Stakeholders argued that the exit of these vessels from the Australian livestock export industry could have a significant impact on the carrying capacity of available livestock from Australia. This could increase the freight cost of Australian livestock to foreign markets, resulting in less competitive Australian livestock exports and lost market share for Australian farmers.

Prior to the Awassi incident, a 5-year transition period was considered necessary to provide owners of older existing vessels with the time out of service needed to make the required structural adjustments to their vessels if they wished to continue using these for livestock trade loading in Australia. Alternatively, it would allow time for affected vessel owners to source or

construct new vessels, or repurpose and sell their older existing vessels, where it was not considered commercially viable to retrofit them.

A 5-year transition period that was being considered prior to the Awassi incident, is usually provided in international conventions when material changes are required. This recognises that a ship has a 5-year survey 'cycle' where it needs to be out of service for dry-dock, painting, survey and inspection to maintain its statutory certification. As each ship has a different build date, which marks when the survey cycle commences, a period of 5 years allows a reasonable time for all vessel owners to complete the work required to comply. Exporters would also benefit from an uninterrupted continuation of trade with minimum loss of transport capacity during the transitional period.

Option 3: Partial prohibition

Under option 3, the risk of heat stress in sheep would be managed by prohibiting live sheep exports during the entire Northern Hemisphere summer from 1 May to 31 October.

This 6 month prohibition period excludes from trade the hottest times of the year in the Middle East, which also includes when sheep are acclimatised to cooler Australian temperatures. Therefore, such a ban would provide greater confidence that heat stress is managed leading to acceptable animal welfare outcomes.

Although there were calls at that time from some parts of the community for a total ban on live sheep exports, this option was not considered viable because it did not align with the government's policy to continue the live sheep trade to the Middle East if acceptable animal welfare outcomes could be assured.

It is assumed that an Observer program and amendments to the industry transition period for amendments to MO43 would still be implemented under this option. A partial ban on live exports, such as prohibiting live sheep exports for an extended period during the year, would not affect MO43.

Non-regulatory approaches

A non-regulatory option was not considered feasible in response to the Awassi incident because it would not meet the fundamental expectations of the Australian community for Australian Government regulatory oversight of livestock exports. In addition to seeking to protect animal welfare, regulation of the trade seeks to avoid a major incident that could adversely impact on the industry, Australia's trading relationships and economy. Removing or diminishing the role of the Australian Government in the regulation of livestock exports would pose a significant risk to animal welfare, live sheep export industry participants, Australia's trading relationships and Australia's regional economies.

Marine Order 43

In addition to the regulatory amendments to MO43 ultimately supported and recommended by the LAC, a non-regulatory approach was also considered. This could have potentially included using industry guidance or education campaigns to set out new criteria for livestock transport. However, this option was not considered appropriate as it would not ensure compliance, which may pose a risk to the safety of vessels and livestock, as well as to Australia's marine environment.

Further, the problem could not be left to the market, either through self-regulation or co-regulation. It was expected that market competition would focus companies on reducing transport costs in ways that would likely lead to poorer safety and animal health and welfare outcomes. Better enforcement of existing regulations was not considered appropriate either as current requirements had proven to be outdated given the research evidence available on the risks to animal safety.

Ultimately, other options would not meet AMSA's obligations or achieve its objectives as a national regulator and were therefore not considered feasible. The regulatory option to amend MO43 was preferred as it directly addressed the problem in existing regulations without adding additional complexity of regulation. It also ensured industry compliance could be enforced.

Impacts of the regulation

The analysis of the impact of the decision identifies the key stakeholders and considers the broader impacts, including those on:

- [Businesses](#)
 - [Strategic benefits for industry](#)
 - [Direct impacts](#)
 - [Indirect impacts](#)
- [Individuals](#)
- [Community organisations](#)
- [Society and the environment.](#)

The live animal exports industry is part of the broader agriculture sector and contributes to a network of both financial and social outcomes. If the industry is unable to maintain a social licence to trade, it may be restricted totally or in part. For example, in New Zealand exports of livestock are limited to breeder animals. Australian live exports of sheep have been steadily decreasing over the past 2 decades with significant decreases for some Middle East destinations from 2018 when the decision was implemented. Numbers exported increased in 2019 with forecasting predicting a slight decrease in export numbers in 2020.

Businesses

Strategic business benefits

The balance between animal welfare and a sustainable live export trade is the key issue that both industry and government must effectively deal with. An inability to resolve the issue could possibly result in the government phasing out live exports, a trade worth \$1.7 billion and employing 10,000 people within the industry and communities that rely on it.

Potential impact of no regulatory change (baseline)

If regulations had not changed and another heat stress welfare event occurred in the future, it would likely generate public and political pressure against the trade, with calls for levels of regulation that are considered economically unviable. During June to mid-September in the Middle East, climatological data indicates that even a single sheep on a vessel deck has a 5% or higher risk of experiencing conditions that could result in heat stress and poor welfare. This is further supported by data analysed by the department showing the highest risk months for elevated mortality rates in sheep transported to, or through, the Middle East are June to mid-September.

A range of estimates have been put forward concerning the impact of a cessation of the live sheep trade. Modelling studies funded by animal welfare groups tend to conclude that the economic impacts of ending live sheep exports would be relatively small. Alternatively, studies funded by industry tend to suggest costs will be relatively large. Both groups of studies present unlikely degrees of adjustment to alternative markets – either too high or too low. Data analysis of implemented regulatory measures conducted by the department suggests the actual impact lies somewhere between these published studies.

Based on the current value of the trade, the department estimates that export restrictions resulting from cessation of the trade would impact the income of sheep producers in WA by approximately \$68 million in the first year after a ban, reducing to around \$12 million in the third and subsequent years. If live exports were to cease, sheep and lamb prices in WA are estimated by the department to fall by around 20% in the first year of adjustment and would reduce the average income of sheep specialist producers by over 40%.

Although it is not certain another heat stress welfare event would lead to the government deciding to cease the live sheep export trade, this outcome is a realistic scenario worth exploring. The department acknowledges that it is difficult to accurately determine the outcomes of extreme regulation, or an end, to the live sheep export trade to the Middle East. While some redirecting of sheep from live export to the domestic market would occur, the department notes that there is not normally a domestic market for this volume of young wethers (castrated male sheep, the class of sheep most often exported) in Australia because domestic consumers prefer different meat characteristics. Bringing these wethers to prime lamb standards would require supplementary feeding, adding 4–13% to the average annual operating costs of WA sheep producers. Longer term, alterations to genetics on farms to produce lamb more fitting for Australian domestic and international boxed meat markets would be required for the viability of the industry.

Additionally, redirecting this volume of sheep to domestic markets is likely to cause a short-term adjustment in the meat processing sector. A long-term decline in the Australian sheep industry has meant a gradual decommissioning of processing facilities, particularly in WA. While the department believes these facilities could be recommissioned within a few months, doing so is likely to involve some costs that will be passed back onto farmers as lower saleyard prices. The department estimates this short-term fall in saleyard prices is limited by the cost to farmers of trucking sheep to eastern state markets, which is around \$20 per head. Sheep meat prices set by world markets also impacts the price of meat in Australia. Therefore, the precise overall cost to industry remains unknown.

Industry feedback has stated that ending the trade would have significant financial impact for industry stakeholders, including producers, exporters, importers in receiving countries, ship owners, feed producers, road transport operators, shipboard AAVs, shearing services, livestock agents and other supply chain participants, including sheep buyers, stock handlers, quality assurance technicians and quality control specialists. While detail of the quantitative impact of ending the live export trade of sheep to the Middle East was not provided in submissions to the various consultation processes undertaken by the department, some of the consequences to industry stakeholders were described. For example, almost all feed for the live sheep export trade is supplied by 2 feed mills in WA. Both of these mills are heavily invested in the trade with 1 major manufacturer allocating 77.5% of total feed production in 2019 and 87.4% of total feed production in 2018 to live sheep exports. This gives an estimate of the anticipated reduction in business for these supply chain participants if the trade were to be ceased, however alternative markets have not been considered. Feedback indicated the shearing industry would also be impacted as a consequence of cessation or extreme reduction in trade, with numbers of skilled shearers already low and workers leaving the industry in periods of limited work during the off season.

Regulatory impact on animal welfare outcomes and strategic business benefit

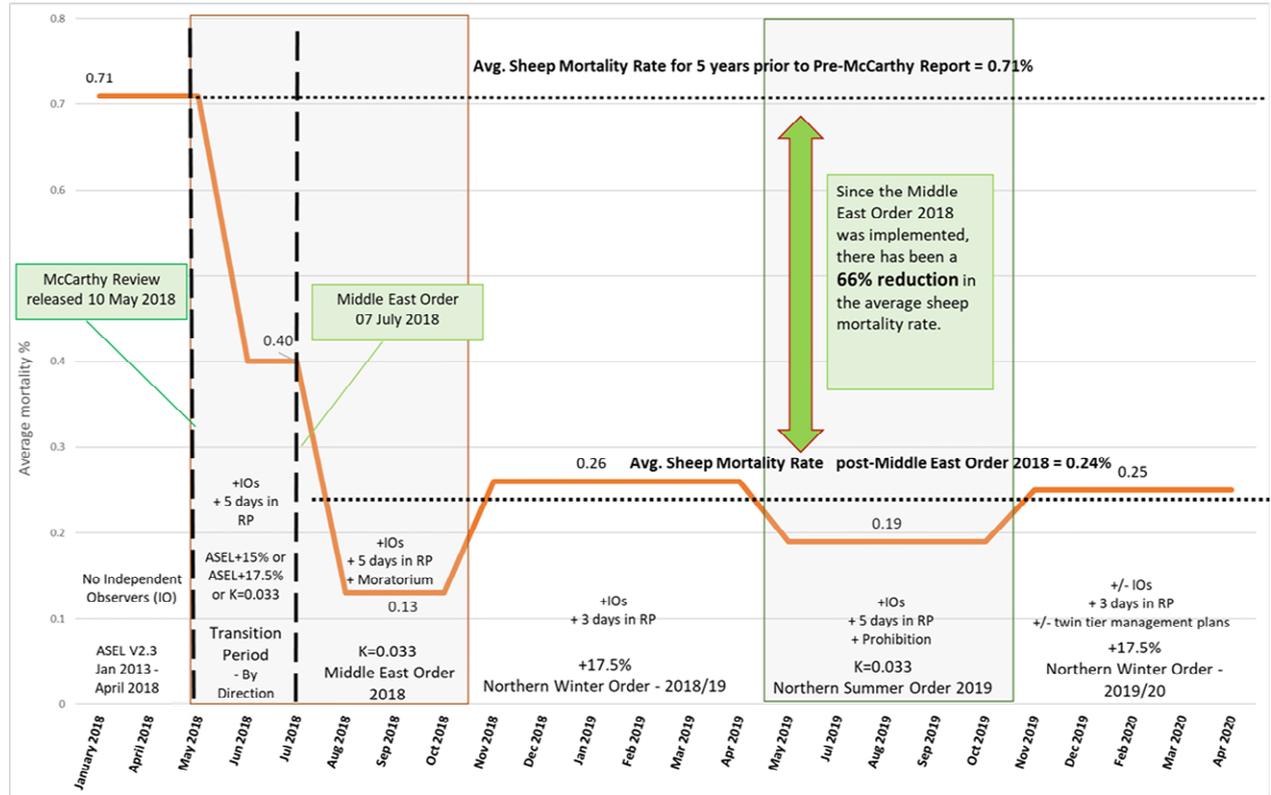
There are difficulties in measuring animal welfare gains quantitatively. McNerney (2016) suggested that the key question is not 'what does welfare improvement cost' but 'what is animal welfare worth?' This point was supported by Royal Society for the Prevention of the Cruelty to Animals Australia (RSPCA Australia) in their submission to the NHS RIS process and is relevant to the live sheep export industry.

Some studies show that consumers are willing to pay more (but not much more) to purchase ethically-produced meat from high welfare systems (Bennett et al. 2012; Vanhonacker & Verbeke 2014). Evidence of welfare-based marketing claims on animal products can be seen in Australian and international retail outlets: free-range pork, chicken and eggs.

Improving animal welfare can have financial benefits. The most obvious example of this is through the reduction in mortality in transport. The August 2017 MV *Awassi Express* voyage recorded approximately 2400 deaths, a mortality rate of 3.76%, nearly a 4% reduction in the value of the consignment as a direct result of mortalities. If on-board conditions promoted good animal welfare, there may also be reduced morbidity, resulting in sheep arriving at the destination port in improved body condition. Not only does this promote the exporter as a provider of quality livestock, healthy animals cost less in medications and effort needed to treat them.

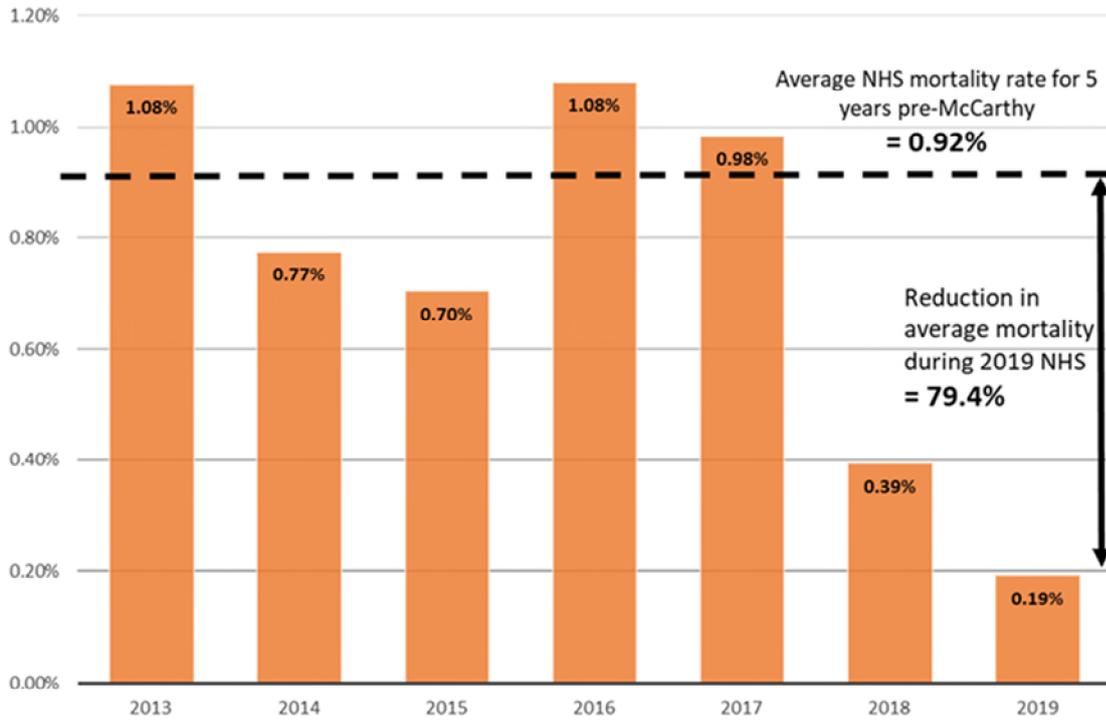
The mortality rate for sheep exported to the Middle East has fallen from 0.71% for the 5 years prior to the implementation of the regulation (2013–17) to an average of 0.24% for the period July 2018 to April 2020 (Figure 1). This represents a reduction in annual sheep mortalities of 66.2%.

Figure 1 Sheep mortality rate changes against changes in livestock export regulations, Northern Hemisphere summer and winter, 2013 to 2020



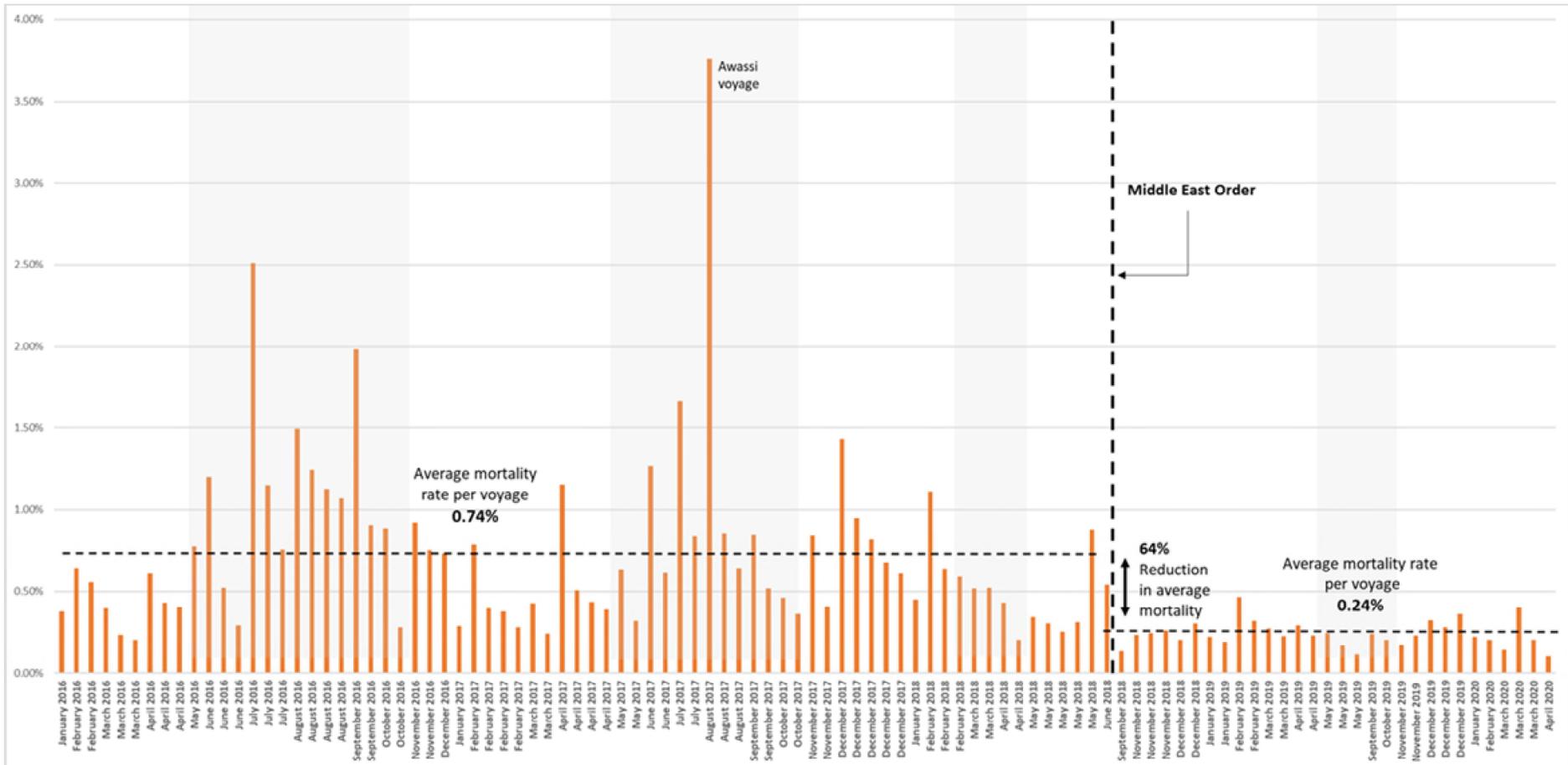
The average mortality rate from 2013 to 2017 (pre-McCarthy), was 0.92%. Regulatory changes as a result of the McCarthy Review are associated with a nearly 80% (79.4%) reduction in sheep mortality during the Northern Hemisphere summer period in 2019 (Figure 2). This reduction indicates how significant the 2018 and 2019 prohibition during June, July and August, have been in lowering the mortality rate of sheep to the Middle East during the Northern Hemisphere summer.

Figure 2 Reductions in sheep mortality rate during the Northern Hemisphere summer (May to October), 2013 to 2019



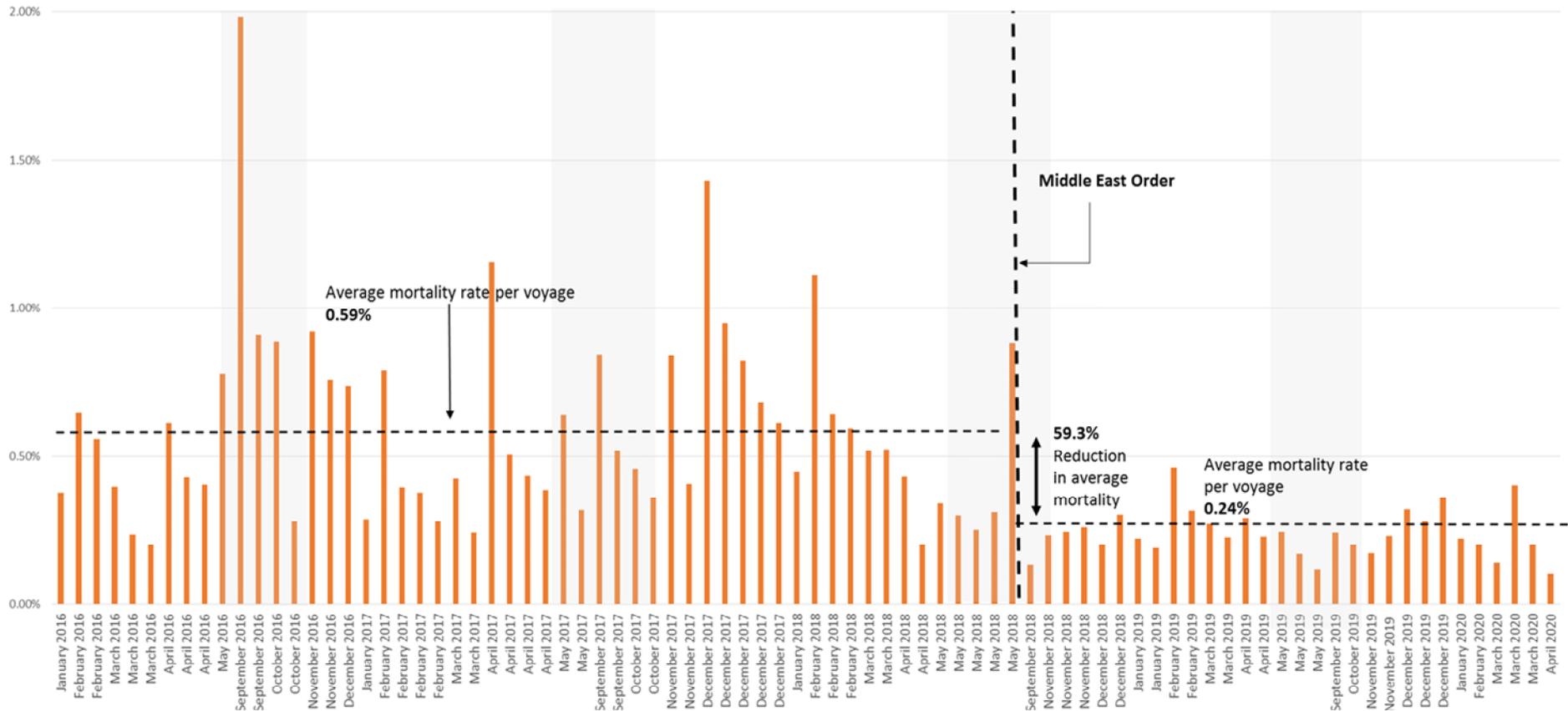
For all export voyages of 10,000 sheep or more, the average mortality rate per voyage has dropped from 0.74% for the 5 years prior to the Middle East Order to 0.24% for the period from 7 July 2018 up until the end of April 2020, representing a 64% reduction in the mortality rate per voyage (Figure 3). The voyage labelled August 2017 represents the Awassi incident (mortality rate of 3.76%) and illustrates how rare an incident of this magnitude is.

Figure 3 Changes in mortality rates per voyage of 10,000 sheep or more, since the Middle East Order 2018 was implemented, January 2016 to April 2020



If the voyages departing during the now prohibited months of June, July and August are removed from the calculations, the average mortality rate per voyage of 10,000 sheep or more has dropped from 0.59% for the 5 years prior to the Middle East Order 2018 to 0.24% for the period from 7 July 2018 up until the end of April 2020, representing a 59.3% reduction in mortality rate per voyage (Figure 4).

Figure 4 Reductions in mortality rates per voyage with a Northern Hemisphere summer prohibition taken into consideration, January 2016 to April 2020



Pen space allocation

The McCarthy Review recommended increased pen space allocation primarily as a measure to reduce the effects of heat stress on exported sheep. However, the major reduction in mortalities during the cooler Northern Hemisphere winter months strongly supports the conclusion that the extra space provides general benefits for the health and welfare of sheep exported by sea regardless of the weather conditions. The nature and reasons for these health and welfare benefits are subject to ongoing investigation and research. The factors that appear to be of importance include:

- much better access to available food and water for all sheep in a pen, including the less dominant individuals
- less social stress
- more room to rest
- clearer observation of unwell, ill and injured sheep by ship's personnel.

The estimated reduction in total sheep mortalities due to new regulations implemented since the enactment of the Northern Summer Order is approximately 8,500 (for the period starting July 2018 until end of April 2020, based on the actual numbers of sheep exported during that time). If a June, July and August prohibition was not in place, as implemented in 2019, it is projected that there would be an additional 5,500 sheep mortalities every year.

The mortality rates for sheep during Northern Hemisphere summer months have been lower than those during the Northern Hemisphere winter months. The major factor appears to be the extra space allocation for sheep during the Northern Hemisphere summer months. The prohibition in 2019 removed the risk of heat stress mortalities during June, July and August. The reduction in sheep stocking densities during May, September and October has been very effective at reducing the risk of heat-related mortalities during these 'shoulder months'.

The net result is that the health and welfare benefits (and related lower mortality figures) associated with the extra space provided by allometric stocking at $k=0.033$ (Northern Hemisphere summer) over and above $ASEL=+17.5\%$ (Northern Hemisphere winter) far outweigh any welfare or mortality impacts of warmer environmental conditions encountered during voyages in the months of May, September and October.

The strategic industry benefits of the reduction in animal mortality achieved by industry through better regulation are twofold. As discussed, there are financial benefits from delivering more animals in better condition. As pressure continues to be placed on the live animal export industry to close, the ability to point to the reduction in animal mortalities as evidence of the industry's commitment and success in meeting the heat stress and animal welfare challenges are significant. As stated by the CEO of the Australian Livestock Exporter's Council, 'The results since the reforms speak for themselves. On the ship Al Kuwait's recently concluded maiden voyage (April 2020), of the 60,183 sheep exported there were only 62 mortalities. This follows the excellent animal welfare outcomes achieved during shipments made in 2019, evidenced by the very low mortalities on these voyages'.

Industry has further committed to minimise animal welfare risks through research and development. The Livestock Export Program (LEP) is jointly funded by LiveCorp and Meat and Livestock Australia. It leverages both exporter and producer levies, as well as government

matching of expenditure for eligible research, development & engagement (RD&E) projects. The key principle guiding LEP activities is to support the Australian livestock export industry adopt and apply best practice in animal health and welfare. Currently the RD&E program aims for the following funding allocations:

- animal health and welfare 75%
- supply chain efficiency 15%
- market access 10%.

Direct business impacts

Producers, domestic and international markets for sheep meat

Producers were impacted by the implementation of the regulation, which reduced the number of animals able to be exported on a vessel and also prohibited the export of sheep to, or through, the Middle East from 1 June to 22 September 2019. During consultation on the NHS RIS, producers advised that April to June is a particularly critical decision-making period in the sheep production calendar, especially in WA. According to the WA Live Export Reference Group (LERG) submission to the RIS discussion paper, Victoria and southern NSW have a much longer growing season and hence a greater suitability for specialist prime lamb production.

Given the Mediterranean climate in WA, hot, dry summers result in a shorter growing season. Typically, pasture will decline in October or November and autumn rains will provide a 'break in season' around April or May. This is a critical decision making period for producers when they decide whether to sell or retain non-breeding stock over winter depending on the market and availability of quality feed in the paddock. The ability to sell sheep to the live export trade provides an important risk management tool for producers at this critical time of year.

However, during the 2019 Northern Hemisphere summer prohibition, producers were unable to sell sheep for live export essentially reducing their flexibility to manage feed and stocking levels. This disruption in the supply chain left producers with the following options:

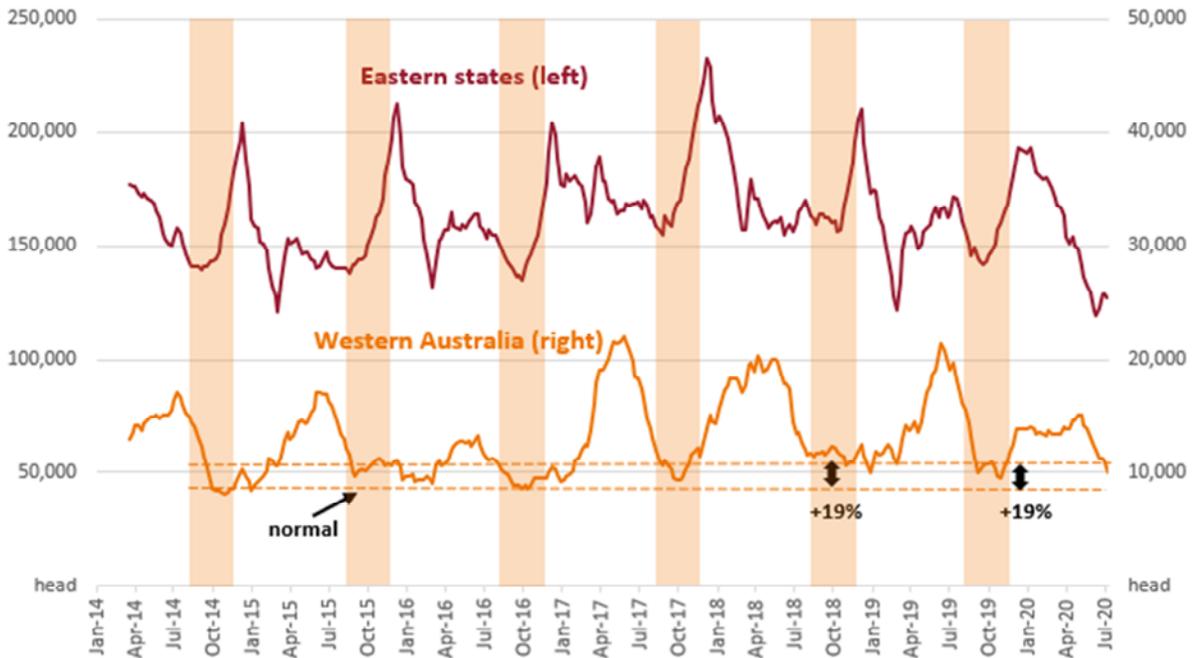
- 1) Hold sheep over until the end of the prohibition for live export, or
- 2) Sell sheep in the domestic market, either for domestic consumption or chilled meat export.

Supplementary feeding, especially for young stock, may be required to allow for sheep to be kept by producers over the Australian winter. Producers need to be able to rely on demand and prices to sell enough stock while holding others over until prices improve. Producers who hold onto stock destined for live exports must manage them more carefully ensuring they do not become ineligible for export during the period. Based on analysis and industry submissions, it appears the majority of producers choose to sell sheep domestically.

In Australia domestic consumers prefer different meat characteristics than those preferred in the Middle East. Bringing wethers to Australian prime lamb standards requires supplementary feeding, adding 4–13% to the average annual operating costs for WA sheep producers. In 2018 and 2019 the number of sheep and lambs delivered to WA saleyards (known as yardings) increased after the reductions in the trading periods for live sheep exports (Figure 5). Increases were most significant in late winter and early spring, the months when slaughter is usually lowest. During the spring months, from 2013 to 2017, lamb yardings averaged just under 9,500

per week in WA. In 2018 and 2019 the number of lambs delivered to saleyards increased by 19% on average in the same months.

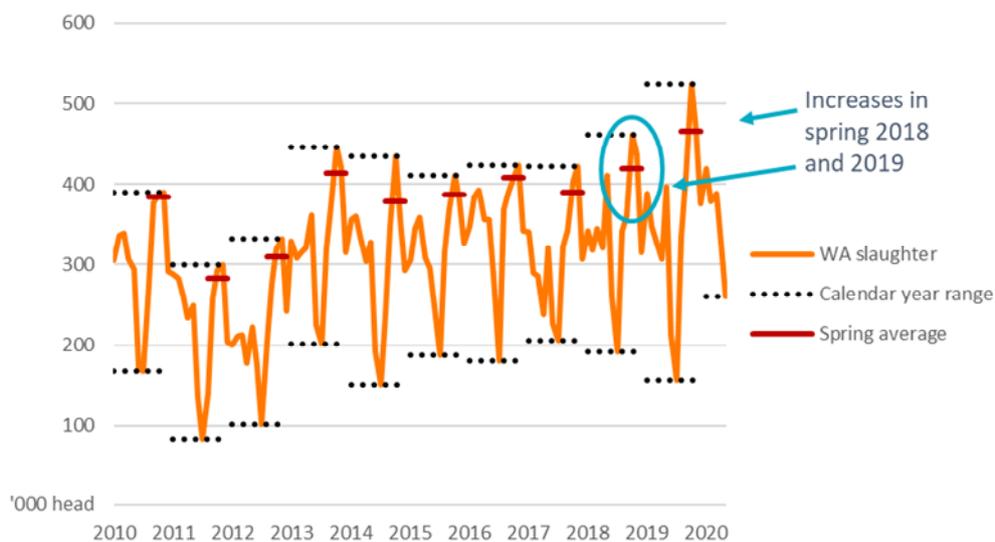
Figure 5 Twelve-week moving average of lambs sold through saleyards, January 2014 to July 2020



Source: ABARES analysis of data from Meat and Livestock Australia

In 2018, WA lamb and sheep slaughter increased slightly after the introduction of new regulations for sheep export, although these increases are small relative to the seasonal variability in slaughter rates (Figure 6).

Figure 6 WA lamb and sheep slaughter, January 2010 to May 2020



Source: ABARES analysis of data from the Australian Bureau of Statistics (ABS) Livestock and Meat, Australia, cat. no. 7218.0, Canberra

In 2019, total sheep slaughter in WA was within 0.5% of the average for 2013 to 2017 for May through to August. Lamb slaughter was 8% lower than the 2013 to 2017 average for these months due mainly to restocking intentions earlier in the season. For the peak processing months between September and November 2019, slaughter was 18% higher than the average between 2013 and 2017. Lamb slaughter was 7% higher than the average from 2013 to 2017 during October and November 2019.

Monthly combined lamb and sheep slaughter in WA between May and August 2018 was 12% higher than the average over the same months between 2013 and 2017. For the peak processing months between September and November 2018, slaughter was 6% higher than the average between 2013 and 2017. Lamb slaughter was 11% higher between May and August 2018, and 13% higher between September and November 2018.

Dalglish et al. (2020) also state that the extension of the prohibition of live sheep to the Middle East in August 2019 saw prices for lambs and sheep in WA saleyards fall by 15 to 30%. However, when viewed over a longer period the decrease in WA sheep prices is a regular occurrence around November of each year with the decrease occurring earlier in 2019. It is important to note that although price did fall significantly, prices for sheep in the preceding months were at a 3 year high and did not fall as low as in the preceding years.

Additionally, redirecting sheep to domestic markets hasn't caused the expected short-term adjustment in the meat processing sector with abattoirs struggling to get enough sheep to slaughter. High sheep prices, especially in WA, have reduced the viability of meat processing in Australia. If sheep numbers were to increase, producers would readily find buyers in the current market.

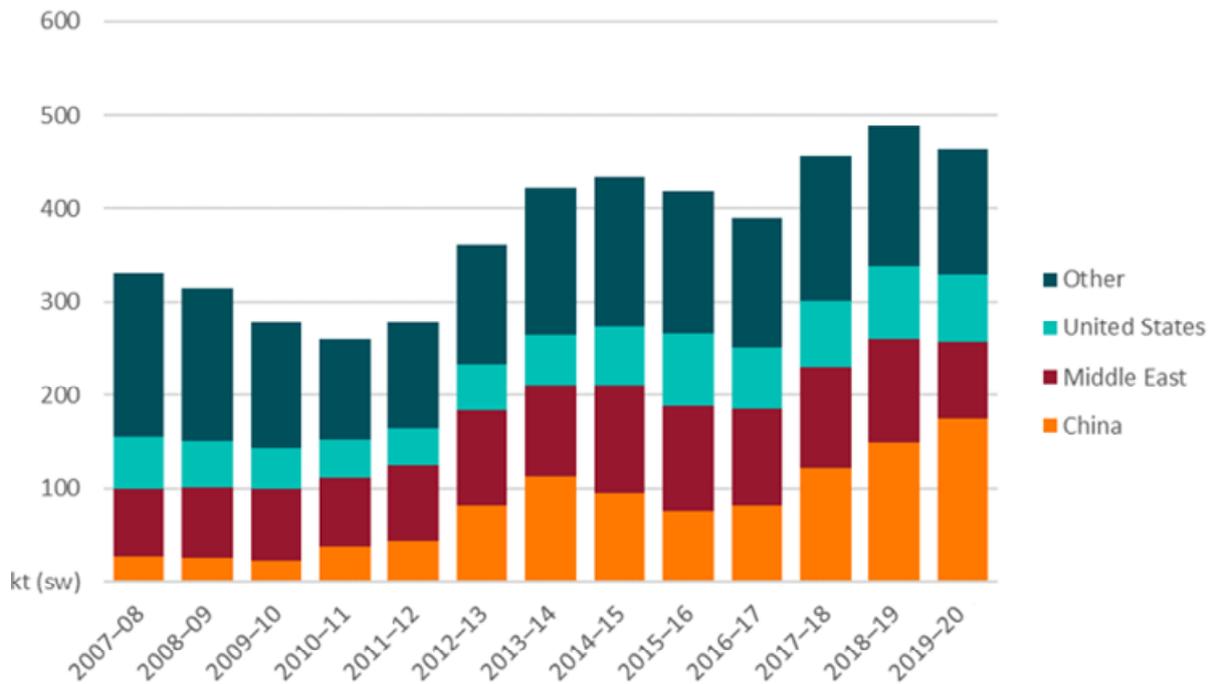
Australia's sheep meat prices are set in world markets. Australia contributed to just over one third of world exports in sheep meat from 2012 to 2016 (UN Comtrade 2019). This large share of world trade means that world prices are likely to fall if supply increases. The potential increase in supply, however, is estimated to be small, with the department's analysis showing that if 50% of the sheep exported live in 2017 were slaughtered in Australia and exported as meat, world supply of sheep meat would increase by only 1.5%.

Restricting live exports was expected to have 2 distinct market impacts:

- 1) A decline in world sheep meat prices due to an increase in sheep meat supply out of Australia.
- 2) A decline in domestic saleyard or direct sale prices due to an initial increase in the supply of sheep for slaughter into the domestic processing market until the market adjusts.

According to ABARES (2020), the economic impact of restrictions on live sheep exports has been more than offset by strong global demand for Australian sheep meat. Australia's lamb exports surged in 2018 and 2019 mainly due to strong demand in China as a result of rising incomes, changes in consumer preferences and substitution away from pig meat as a result of African swine fever (Figure 7). This increase in demand has more than offset any downward pressure in world lamb prices that may have resulted from a small increase in Australia's supply of sheep meat to world markets. A small decline in exports forecast for 2019–20 is mainly due to the negative demand effects of the COVID-19 pandemic through falling incomes and shutdowns in the food services sector.

Figure 7 Australian sheep meat exports, 2007–08 to 2019–20



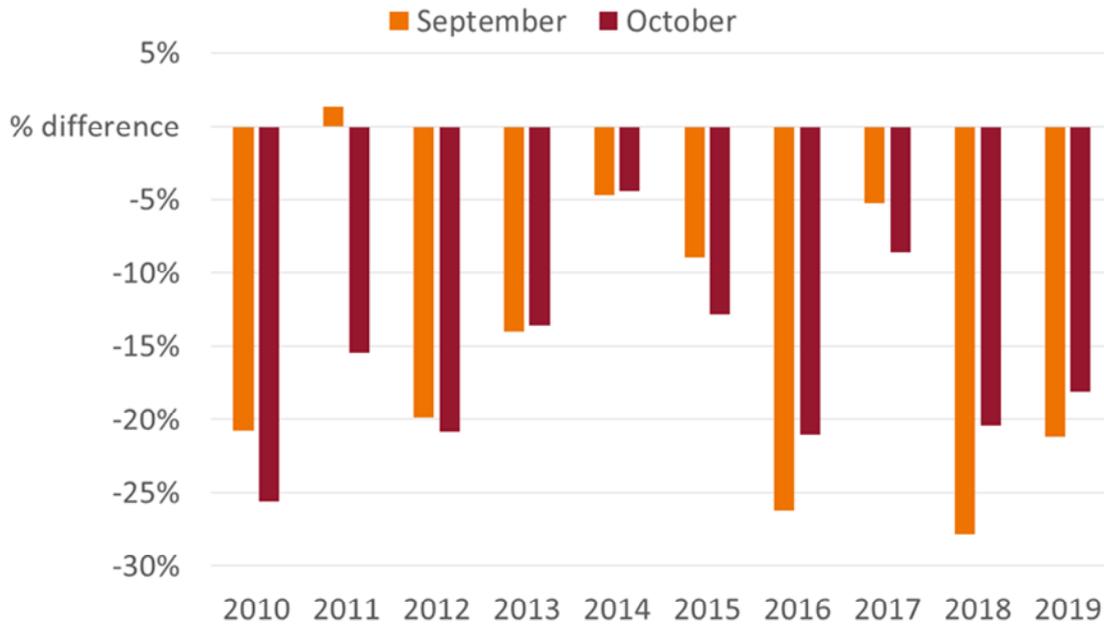
kt: kilotonne. sw: slaughter weight.

Note: The Australian Bureau of Statistics defines Middle East as: Bahrain, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syria, United Arab Emirates and Yemen.

Source: Australian Bureau of Statistics

The impact of the regulation of live exports on price is most apparent when relative prices are reviewed between eastern states and WA. Saleyard lamb prices for WA are usually lower than prices in Australia’s eastern states. Over the 5 years from 2013 to 2017, WA trade lamb prices averaged 12% lower than eastern state prices in both September and October. In 2018, the discount for trade lamb prices in WA widened to an average of 28% lower in September and 20% lower in October (Figure 8). In 2019, WA trade lamb prices were 21% and 18% lower in September and October when compared with the eastern states.

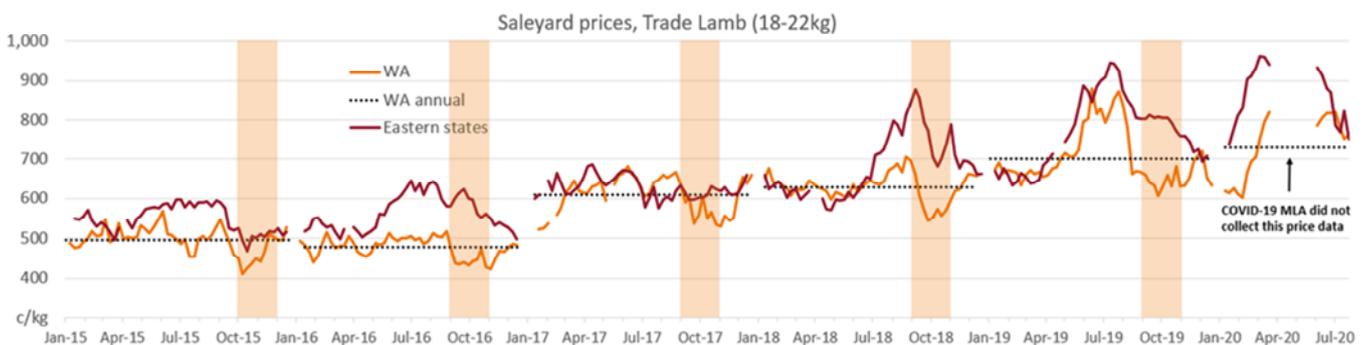
Figure 8 Average monthly price difference between trade lamb (weighing 18–22kg) prices in the eastern states and Western Australia, 2010 to 2019



Note: A negative percentage difference here indicates that WA trade lamb prices were lower than in the eastern states.
Source: Australian Bureau of Statistics

Despite the relative price impacts, in 2018 and 2019, absolute WA saleyard prices for trade lamb were historically high relative to prior years. As noted with world prices, this was due to strong global demand for sheep meat, particularly from China (Figure 9). So, while the temporary cessation of live exports during the 2019 Northern Hemisphere summer depressed prices by 10–20%, this was only noticeable relative to prices in eastern states. The impact to the supply chain was buffered by strong global demand.

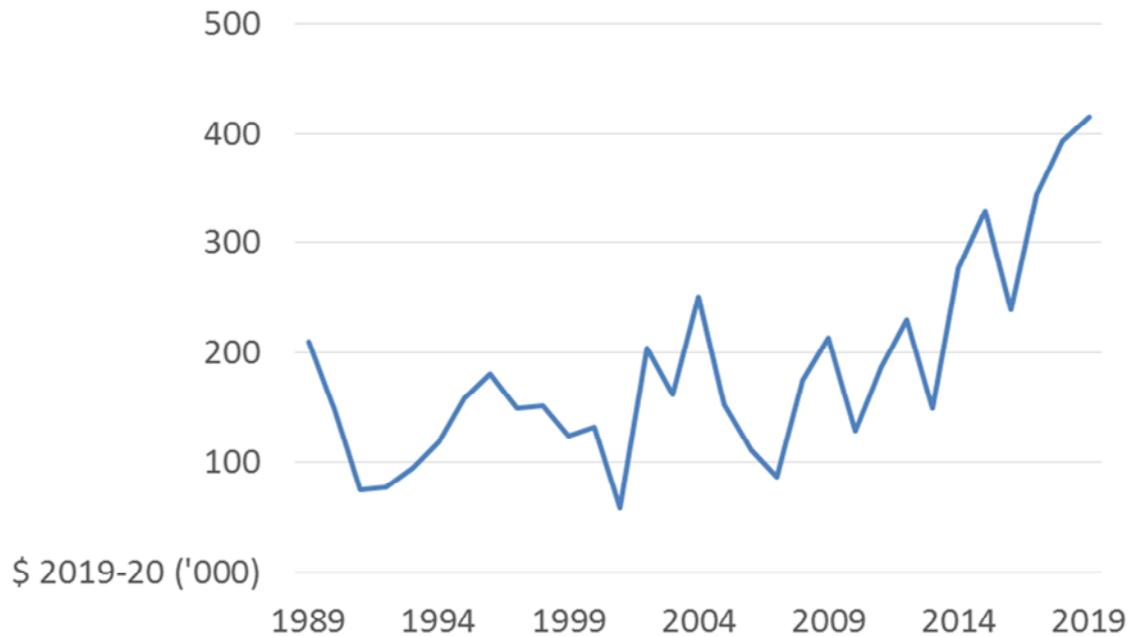
Figure 9 Weekly saleyard prices, trade lamb (weighing 18–22kg), January 2015 to July 2020



Source: Meat & Livestock Australia

However, strong export demand and high prices significantly increased the incomes of sheep farmers in WA during 2018 and 2019 when live exports were restricted. Average farm cash incomes for the 4,000 farms in WA with more than 100 sheep increased by 14% in 2018 and by 5% in 2019, following a 44% increase in 2017 (Figure 10).

Figure 10 Farm cash incomes for farms in Western Australia with more than 100 sheep, 1989 to 2019



Source: ABARES

The most recent study by Dalgleish et al. (2020), commissioned by LiveCorp, estimated the cost of disrupting the live sheep trade to be \$83.6 million in 2018 and \$65.8 million in 2019. The value chain analysis in the report suggests these impacts are likely to be permanent. This estimate of industry impact was derived by estimating the value of foregone exports and subtracting the revenue foregone by selling these sheep at lower saleyard prices.

An earlier report from Mecardo (2018) estimated that if sheep currently exported live were slaughtered in WA, sheep and lamb prices in WA could fall by between 18 and 35%. This was projected to reduce farmers’ revenues by between \$80 million and \$150 million. They appear to have reached these results by assuming that sheep slaughter in WA determines the state’s export prices of mutton and lamb, rather than prices being determined in world markets.

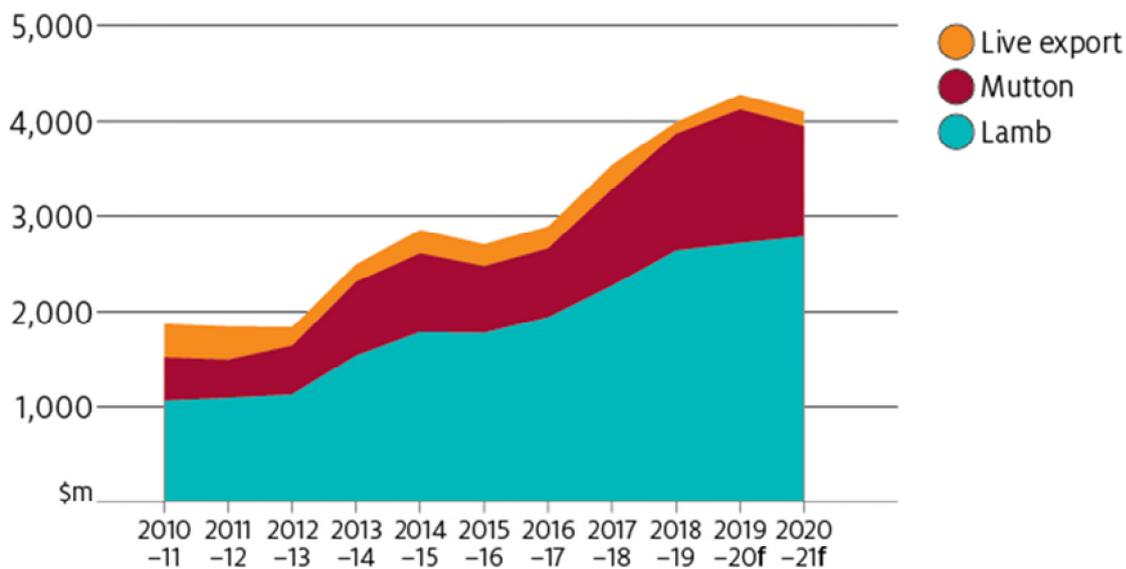
In contrast to findings by Dalgleish et al. (2020), Davey and Fisher (Pegasus Economics report, 2020) states that ‘the analysis conducted in *Live sheep exports to, or through, the Middle East – Northern Hemisphere summer regulation impact statement* is supportive of the proposition that there is likely to be a relative decline in WA saleyard or direct sale prices compared with the eastern states in the event of the withdrawal of live sheep exporters from purchasing sheep’. Their modelling suggests any price decline will be ‘between \$4.68 and \$7.37 per head’. Davey and Fisher (2020) estimate live sheep exporters pay ‘a price premium of almost 18.7 cents per kg cwt, which roughly translates to \$4 per head. At current export levels of around 1 million live sheep exported per annum, the cessation of the live sheep export trade would thus translate into a loss of around \$4 million for WA sheep farmers from the loss of the price premium paid by live sheep exporters. This works out at around \$936 per WA sheep farmer on average’.

The department considers both the Dagleish et al. (2020) and Davey and Fisher (2020) stakeholder analyses have strengths and weaknesses, but it is difficult to draw accurate conclusions when predicted industry impacts vary so widely.

Despite the estimated cost to the trade, because of strong competition between meat processors and producers restocking properties following the drought in eastern Australia, saleyard prices have been high and are forecast to remain that way into 2021 (Figure 11).

Live exports are forecast to remain at around 1.1 million head in 2020–21. As of 1 May 2020, Australian live sheep exports will not take place to, or through, the Middle East from 1 June to 14 September. The ban will apply for additional periods for live exports to Qatar and Oman. The announcement of the permanent ban provides certainty to exporters and producers and will have limited additional impacts because of the temporary ban between June and mid-September 2019.

Figure 11 ABARES forecast: Value of Australian sheep exports, 2010–11 to 2020–21



Source: ABARES; Australian Bureau of Statistics

Exporters

As the key regulated entity, exporters were most directly impacted by the implementation of the regulation.

Stocking density

The McCarthy Review identified stocking densities as a key issue that should be addressed by regulatory reforms. The review recommended the adoption of an allometric model for determining space on-board with a k-value of 0.033 for sheep exported to the Middle East during the Northern Hemisphere summer. The government accepted this recommendation and has required the use of the 0.033 k-value on all consignments of sheep exported to the Middle East between the months of May and October since 2018. Between November and April exporters are required to provide an additional 17.5% pen space above ASEL. In 2019, pending the findings of the NHS RIS, the export of sheep to the Middle East was prohibited between June and mid-September.

In its review of the *Australian Standards for the Export of Livestock: Sea Transport Report*, the ASEL TAC stated ‘it is universally accepted that the amount of space provided to animals during periods of confinement is critically important for their health and welfare. Stocking density governs important elements of body posture and behaviour, including social interaction. It also affects access to fodder and water, influences susceptibility to disease and has a strong influence on heat load experienced by confined animals’. The reduced mortalities associated with sea voyages since the introduction of the changes appear to support this.

The reduction in numbers of sheep that can be exported at one time, and the complete cessation of exports to the Middle East during the prohibition period did have a negative financial impact on the relevant exporters. However, for the purposes of this analysis this is considered an opportunity cost caused by the regulation and is excluded from the regulatory costings.

Finding alternative export markets for sheep outside of the Middle East is recognised as a challenge given specific type of sheep that Middle Eastern markets take compared to Australia’s other market sheep preferences.

Pen air turnover

Livestock vessels rely on mechanical ventilation and pen air turnover. This ventilation has 3 tasks:

- remove the heat and water vapour produced by the animal
- lift moisture from the sheep manure pad
- remove any possible build-up of noxious gases.

PAT is a measure of airflow and is a central factor of the HSRA model. To ensure the accuracy of the model, the regulation requires that exporters audit the PAT value for each vessel using appropriately qualified engineers.

This audit program is administered by industry and auditing is undertaken by a third party. The implementation of the requirement to include PAT audits resulted in exporters having to ensure that the vessel they were using met the regulatory requirements and entered the correct PAT value into their HSRA.

Within the program it was identified there were approximately 20 vessels that required auditing as they transport sheep to the Middle East. Upon completion of the project a total of 16 vessels were audited. According to costing information provided by LiveCorp, the total cost of the PAT audit project was \$580,000. The cost to exporters varied depending on the complexity of the audit and the nature of the vessel. LiveCorp estimates each audit cost between \$25,000 and \$30,000. Exporters and vessel owners will be required to fund future audits in order to meet the regulations. It is likely there will be few or no audits in the next year as the key vessels transporting sheep to the Middle East have had their ventilation system audited and those audits are valid for 5 years. Additionally, there is only a select few vessels (4 or 5) that will ship to the Middle East in May and end-September that may require audits.

Automatic watering systems

The McCarthy Review identified that ‘automatic watering removes one level of risk when transporting sheep to the Middle East during the Northern Hemisphere summer. This issue has

been somewhat resolved since all the vessels travelling to the Middle East with sheep are now equipped with automatic watering systems’.

As all vessels carrying sheep to the Middle East are now equipped with automatic watering systems, the ongoing operation of those systems, as required by the regulation, is considered a business as usual cost. Any new vessels entering the market will also be required to meet this regulation.

Bedding

The McCarthy Review discussed the strategic use of bedding and recommended that exporter’s heat stress management plans for sheep should include strategic use of sawdust before and/or during the voyage, if required, for targeted areas on the vessel. The department implemented that recommendation through the Australian Meat and Live-stock Industry (Export of Sheep by Sea to Middle East) Order 2018 to provide for at least 1 tonne of bedding per 10,000 sheep loaded on vessels destined to the Middle East between May and October.

As previously there was no requirement for bedding to be loaded for sheep, the requirement of 1 tonne of bedding per 10,000 sheep is an additional cost to the exporter. The cost of bedding will vary on market prices, the type of bedding and how exporters source it. Between 2015 and 2019, an average of 24 vessels carrying 10,000 (or more) sheep, departed Australia to the Middle East between May and October. Based on the number of sheep on those voyages, the exporter would be required to purchase 2.73 tonnes of bedding. The cost to exporters would be \$26,208 based on a cost of \$400 per tonne of bedding.

Environmental monitoring equipment

The McCarthy Review recommended that 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. This was implemented through a direction to relevant livestock export licence holders under section 17 of the *Australian Meat and Live-stock Industry Act 1997*.

The installation of these devices has allowed the department to better understand the temperatures on decks. This information is essential for determining whether there is a likelihood of the welfare of the animals being compromised, validating processes such as the HSRA model and industry welfare indicators.

Compliance costs are incurred by exporters to fulfil the requirement to equip vessels with environmental data loggers. The product used primarily for capturing environmental data cost \$320 to do the functions required. During the 2019 Northern Hemisphere summer there were 6 sheep voyages to the Middle East on 3 vessels. Each of these vessels has on average approximately 30 data loggers, making the cost of purchase \$9,600 per vessel. It is anticipated that the number of vessels will remain constant as more vessels are outfitted or as devices are replaced on existing vessels. Therefore, the total cost to industry is \$28,800 per annum. The product has a warranty that covers 5 years, so maintenance costs are not required.

The time taken to read the data logger is not added as the stockpersons, AAVs and Observers who would check the data loggers are paid per day rate for all actions they perform.

Kuwait as first port

The McCarthy Review stated that ‘the notion of first port and unloading sequence has been discussed, off and on, for some time (at least 15 years). It first became an issue when vessels would regularly call into Muscat on their way to the Gulf ports and unload a small number (usually around 5,000) of heavy shipping wethers. Since Muscat is notorious for its fickle (and very hot and humid) weather, going alongside in Muscat could push an entire shipment of sheep beyond their heat tolerance levels, and this would occur regularly. The alternative strategy is to sail direct to Kuwait and partly unload the vessel there (where conditions are usually hot but dry) and then negotiate the vessel back through other Gulf ports and finally unload the Muscat wethers last. While this would involve taking a full shipment through the Straits of Hormuz, it is a marginally less risky strategy and was, it seemed, mandatory at various points of time’.

The requirement for Kuwait to be the first port of unloading has been implemented through the Australian Meat and Live-stock Industry (Export of Sheep by Sea to Middle East) Order 2018 and Australian Meat and Live-stock Industry (Export of Sheep by Sea to Middle East – Northern Winter) Order 2018. This is considered a business as usual cost as departmental records show that Kuwait is usually the first port of call in the Middle East regardless of the regulatory requirements.

Independent Observer Program

Observers are placed on sheep and cattle voyages to provide additional assurance about the effectiveness of exporter arrangements in managing the welfare of animals on board the vessel. As the department implemented multiple conditions at the same time for voyages going to, or through, the Middle East, it is hard to quantify the affect the presence of Observers had on board the vessel. For example, stocking density effects mortality in sheep, but having Observers on-board is also likely to mean greater care for animals improving their welfare.

For this reason, the department analysed cattle mortality data from livestock voyages departing Australia between 1 July 2018 and 30 June 2019 to assess the effects of the presence of an Observer. The analysis excluded voyages to, or through, the Middle East, Pakistan and Russia to eliminate the effects of other regulatory changes that were implemented for those voyages, such as increased pen space allowance. Data was obtained using ship masters’ reports as published in the reports to Parliament available from the department’s website.

There were 302 voyages that fit the criteria, with Observers present on 100 of these voyages. Observer voyages exported 443,298 head of cattle with 416 mortalities for a total mortality rate of 0.094%. Voyages without an Observer exported 635,284 head of cattle with 630 mortalities for a total mortality rate of 0.099%. Though voyages without an Observer had a slightly higher average mortality rate, this was found to be not statistically significant.

Further analysis of voyages to single overseas markets found similar results. Though the analysis of voyages to single overseas markets removed or lessened the effects of some variables such as voyage length, there remained several variables in addition to the presence of an Observer that may have affected the mortality rate. Variables such as the time of year, vessel type, load port and exporter all likely had an effect on the mortality rate. To date, there have not been enough voyages with Observers present to analyse their effect on mortality rates where all other significant variables are held constant.

There is real value in the information the Observer program has gathered and that is being used to improve animal welfare outcomes. Once objective animal welfare indicators have been developed, the department intends to do a similar quantitative analysis of the effect of the Observer program on animal welfare outcomes.

Table 1 Voyages departing to Asia, 1 July 2018 to 30 June 2019

Category	Total (no.)	Percentage (%)
Voyages	302	-
Buffalo exported	8,160	-
Buffalo mortalities	37	0.453
Cattle exported	1,078,582	-
Cattle mortalities	1,046	0.097

Note: Excludes voyages to and through the Middle East, Pakistan and Russia.

Table 2 Cattle mortality data for voyages with and without an Independent Observer, 1 July 2018 to 30 June 2019

Observer presence	Unit	Category	Data
Yes	no.	Voyages with cattle	100
	days	Average duration	11.32
	no.	Number of cattle exported	443,298
	no.	Total mortality	416
	%	Total mortality	0.094
	%	Average voyage mortality	0.119
No	no.	Voyages with cattle	202
	days	Average duration	10.66
	no.	Number of cattle exported	635,284
	no.	Total mortality	630
	%	Total mortality	0.099 (0.005 higher without Observer)
	%	Average voyage mortality	0.113 (0.006 lower without Observer)

Note: Data was obtained using ship masters' reports with [published Observer reports](#) used to verify the presence of an Observer.

The primary benefit of the Observer program has been its ability to increase transparency and provide information about conditions on livestock voyages that can then be used to inform more effective regulation.

The information that Observers provide is generally of greater detail and has identified issues that historically have not been raised in reports from the stockperson and AAV.

Two examples of issues where Observers have provided a greater level of insight relate to fodder and pad management.

Observers have reported a number of instances where fodder has run low and needed to be rationed because exporters have underestimated the voyage length. These issues have not previously been identified in stockperson or AAV reports in any great frequency. The

consequence of rationing fodder may not necessarily lead to higher mortality, but it can have a detrimental effect on the health and welfare of the livestock.

Another issue where Observers have provided valuable information is about the condition and management of the faecal pad that forms in the pens of livestock vessels. Pad conditions have generally been reported as being in good condition by AAVs and stockpersons. Observer reports have provided insight into the actual condition of the faecal pad; in particular instances where deficiencies in pad management have resulted in very poor pad conditions impacting on livestock health and welfare. Voyage reports from stockpersons and AAVs would often report that some livestock had become lame without providing any context as to the possible cause. Observer reports have identified that poor pad management is a contributing factor to the reported lameness.

In response to Observer reports where pad conditions caused problems, the department has required those exporters to review and improve their processes for managing faecal pads. The department has seen an improvement in the management of faecal pads since the Observer program began, particularly on voyages to China.

There is some evidence that the level of detail and breadth of information provided in voyage reports by stockpersons and AAVs has increased since the Observer program began. This may be because stockpersons and AAVs now have a better understanding of the type of information that the department is seeking.

Some discrepancies between stockperson and AAV and Observer reports remain. Discrepancies are raised with exporters to address and inform the ongoing reporting process. Examples include:

- The Observer reported a vessel breakdown during 1 voyage but there was no mention of it in end of voyage report from stockperson.
- Occasions where the Observer had identified a number of recorded treatments administered to livestock that were not reported in daily voyage reports.

Observer reports have generally confirmed that exporters are complying with ASEL requirements, and that most voyages occur without any significant animal health and welfare incidents. There has been a general trend in the reduction of the severity of observed adverse animal health and welfare outcomes, with exporters updating and amending their operational processes and procedures in response to issues reported by Observers.

The provision of Observer reports and associated video footage has supplied the department with evidence to support and inform regulatory decision making. Where specific issues are identified by Observers, these are referred to exporters which are required to undertake corrective actions as necessary. The majority of exporters have addressed issues in the required time frame, with follow up performed as necessary on subsequent voyages.

As the number of Observer reports increases, the department has been able to gain greater insight as to whether particular issues are common to specific markets, vessels or exporters. Currently, a review of the issues identified in Observer reports is in progress with the view to targeting regulatory activities on the risk profiles of voyage variables such as exporter, species, market, and vessel.

The Observer program has direct cost recovery impacts on exporters. The cost recovery charged to exporters for the 2018–19 financial year was \$4 million. Additional costs of administrating the program were born by the department at \$700,000 for the same period.

On average there have been 72.4 voyages a year with an Observer on-board. Over 5 years, this equates to a direct cost to exporters of \$32,766 per voyage with an Observer on-board.

Compliance costs

As implemented through the Australian Meat and Live-stock Industry (Export of Sheep by Sea to Middle East) Order 2018 and EAN [2018-06](#), exporters are required to have a heat stress management plan for the export of sheep to the Middle East during May to October. Under ASEL 2.3, there was a requirement for exporters to have a contingency plan for extreme weather that includes heat stress management. When the new regulation was implemented, exporters were required to amend their Approved Arrangement to comply with the new regulations.

In the 2019–2020 financial year, there were a total of 20 exporters licenced to export sheep from Australia. Since the implementation of McCarthy, only 3 exporters have exported sheep to the Middle East during May to October. Based on the number of exporters who amended their Approved Arrangements, the department considers the total administrative costs per exporter to be minimal.

All voyages to the Middle East must be accompanied by trained stock people and an AAV, who are required to provide daily reports to the department. In addition to these daily reports, if the mortality level of the sheep in the consignment reaches 1% or 3 sheep (whichever is greater) the exporter must notify the department in writing. This is referred to as a reportable mortality. Since the implementation of the McCarthy recommendations there have been no reportable mortality events for sheep voyages. However, using the average mortality percentage over 5 years (2015–2019), the department estimates the reduction in reportable mortality rate would have resulted in 3.4 reports per year. Again, the compliance cost associated with the implementation of this measure are minimal.

2019 prohibition

In April 2019, the department prohibited the export of sheep to, or through, the Middle East during the hot months of June to mid-September in the Northern Hemisphere summer. The aim of the measure was to protect the health, condition and welfare of the sheep. It was implemented pending the release of the final report and recommendations by the HSRA technical reference panel (McCarthy recommendation 3).

This action had a direct impact on exporters. Departmental records from 2013 to 2017 show the average number of sheep exported between 1 June and 15 September was 533,964, making up a range of 24.8% to 31.6% of total sheep exports in each year.

In simple terms, the 3.5 month suspension on live sheep exports in 2019 could have reduced exporter revenues derived directly from the export of sheep by approximately 30%. This does not consider alternative means of revenues that could be prioritised or alternative markets that could have been accessed during the prohibition period, so the extent of the impact is difficult to accurately determine.

Stakeholder feedback has indicated some supply chain opportunities were available during the 2019 prohibition, these included:

- preparing and selling suitable animals for export prior to the prohibition, or selling to alternative markets after the prohibition
- retaining and selling sheep to the live export market following the prohibition

Additionally, the restriction on trade provided sheep for domestic sheep meat processing as previously discussed.

Livestock agents

The primary role of a livestock agent is to find their client the best marketing option for their livestock that will provide the biggest financial return. The impact of the regulation on livestock agents varied depending on what region they were in. According to Dalglish et al. (2020), some agents noted that as a result of the prohibition their revenue from live sheep export dropped from 30–40% to just 5%. However, they noted that agents in other regions, where they supply processing markets, experienced minimal impact. Nevertheless, agents are likely to have readily transferable skills that can be applied to other marketing opportunities.

LiveCorp's submission to the NHS RIS states 'the agent's salary is a commission from the farmer based on the prices received for the stock sold. Thus, a reduction in the number of buyers, diminished saleyard competition and fewer marketing options all contribute to lower prices received for stock and in turn, lower returns to the agent'.

Due to the drought and COVID-19 it is difficult to identify the change for livestock agents. Numbers of animals being presented and sold at saleyards has remained fairly static, however, prices have increased. Losses due to the prohibition were likely more than compensated for by the general market conditions.

Shearers

According to numbers from the National Skills Commission (2020) the number of shearers has increased from 3,400 in 2018 to 6,500 in 2019. While the commission notes that the projections should be interpreted with caution due to COVID-19, the number of shearers is projected to increase to 7,100 in 2024. Some industry bodies have noted the 2019 prohibition regulation may distort the distribution of shearer's workload, resulting in an imbalance between intense work periods and limited work.

Dalglish et al. (2020) indicated that 'retention of staff, an already challenging feat for managers, has been made more difficult due to this gap in available work' and that 'in some cases, managers continued to pay contractors through the off-season (without them working), provided them with accommodation or attempted to find them casual on-farm work in efforts to retain staff'.

Due to the redirection of shearers into other work it is difficult to identify the impact on them.

International trade partners

Persian Gulf trading partners have expressed concern about Australian Government regulation of the live sheep trade and the impact it has on their businesses and food supply. The regulation, including the 2019 prohibition may have led to those countries establishing relationships with other trading partners, thereby reducing trade with Australia.

During the prohibition of 2019, Middle Eastern importers sourced sheep from other countries, including South Africa, Romania, India, Somalia, Spain and Jordan. The extent to which the 2019 prohibition impacted Australia's relationship with trading partners and lost sheep meat market share is unknown. It is possible that due to Australia's inability to service demand for part of the year, Middle Eastern importers may source sheep from other countries on a permanent basis to ensure sustained food supply and commercial relationships. Industry groups voiced their concern that the loss of market share caused by the prohibition could result in complete loss of the Middle East market. However, there is no evidence the prohibition has resulted in importers losing interest in Australia as a source of sheep outside the prohibition period. There was also no evidence of importers stockpiling Australian sheep ahead of the prohibition period.

If sheep that would otherwise have been exported live during the Northern Hemisphere summer were processed domestically, the department estimates the increase in sheep meat supply out of Australia could have <1% impact on world prices. However, domestic WA prices would also be expected to decline by a maximum of 20% due to the option to deliver stock to the eastern states for approximately this amount.

Ship operators

Ship operators are directly affected by specific provisions in MO43 that place responsibilities and obligations on them. These mirror responsibilities and obligations under international conventions but are specifically applied to the unique nature of a livestock ship.

Maintenance of the vessel is part of a ship operator's responsibility under SOLAS and the ISM Code. MO43 specifies that the specialised cargo systems required by MO43, such as ventilation, feeding and watering, lighting and drainage from the pens, are to be included in the vessel's Safety Management System (SMS) to ensure they are installed and maintained to internationally accepted standards.

The changes to MO43 directly impacted 13 ship operators engaged in the live export trade. Although their response to the new requirements was dictated largely by the decisions of the ship owner, there were some cost impacts to their business. These included minor additional administrative costs of communications and arrangements with the ship owner, some record keeping and changes to documentation and procedures, as well as business planning for downtime while vessel changes were made.

Given their nature, these costs could not reasonably be quantified or estimated accurately but were considered to be small compared to the overall operating costs of a vessel. They were also largely time-based costs and therefore absorbed in the normal ongoing labour costs associated with these operations or otherwise viewed as an opportunity cost.

These costs would have been incurred under each of the 3 options examined in this review. The government's decision simply brought these costs forward from 5 years to 18 months. However, this timing change may have increased costs to businesses where vessel works could not be timed to align with normal scheduled maintenance or planned downtime for the vessel. It also impacted the ability of these businesses to absorb the costs, particularly as they are price-takers in the livestock market and had limited scope to pass-on costs to exporters. Overall, this was unlikely to have resulted in significant impacts on these businesses because the costs were small, especially when compared to the alternative costs of acquiring another fully compliant vessel.

Ship owners

Ship owners establish contractual arrangements for the operation of the vessel with ship operators. While the ship operator will deal with matters arising from the operation of the ship, including compliance with regulatory requirements, they are indirectly affected by the ship owner's decisions on where and how they want their ship to operate.

Ship owners decide whether to invest time and money to change a ship to comply with MO43, or if the vessel will be redeployed to another market, sold or used for another purpose. These are commercial decisions based largely on the profitability and viability of alternative ongoing uses for the vessel. Such decisions can be affected by the age of the vessel, its current size and configuration, the costs of changing the vessel, the regulatory requirements applicable to the vessel in different jurisdictions, and the market opportunities available at the time.

Mechanical ventilation

The changes to MO43 directly impacted the owners of 16 vessels. Five stakeholders reported additional substantive compliance costs for 7 vessels that required one-off modification works to meet the new ventilation requirements at an estimated average cost of \$1.57 million per vessel. This included the cost of equipment and materials, dry-dock and labour costs, administration and approvals, including for inspections by classification societies to ensure the works met the required standard.

In addition to the cost of works, there were also opportunity costs relating to the time required to take the vessel to the dry-dock facility and vessel downtime while the works were undertaken. This downtime also indirectly impacted ship operators who could not use the vessels during that time.

The initial feedback from vessel owners highlighted that retrofitting improved mechanical ventilation to older existing vessels with twin-tier decks would effectively halve the vessel's carrying capacity and increase livestock transport costs for exporters of these types of livestock. This was exacerbated by the timing of the changes, which would likely mean vessels may not be able to comply in time.

Since compliance with the changes came into force on 1 January 2020, one ship owner has withdrawn 1 vessel from the Australian trade without undertaking work to comply. Two other ship owners were granted exemptions for 2 vessels to allow them to continue operating. No stakeholders have reported significant impacts in terms of carrying capacity or transport costs.

Given the absence of data on the trade in terms of ship capacities available for exporters when seeking an export licence, it is not known if there has been a significant reduction or loss of live export transport capacity, or a resultant rise in transport costs, in Australia.

Twin-tier decks

One stakeholder reported that their vessel could not use 1 of its single-tier decks as it did not meet ventilation requirements. The vessel continued to operate using the other compliant decks but experienced a loss of transport capacity that ultimately affected its revenue and profitability. They estimated an average revenue loss of \$725,000 per voyage. With a reported average of 6.74 voyages per year, this would amount to an estimated average of \$4.89 million in lost revenue per annum over 10 years.

Another stakeholder advised that a vessel was removed from the Australian export market very shortly after MO43 came into effect. Their ship's ventilation was affected by the changes, but modification works were impossible due to the deck height of the vessel. The ship owner has a fleet of livestock vessels that operate worldwide, so the vessel was redeployed to other markets. While their business was not impacted significantly, there were some opportunity costs from vessel downtime and potential income losses. This could not be verified as no data was reported by the company.

No stakeholders reported additional compliance costs to meet the new twin-tier deck requirements in MO43. Only 3 of the 33 vessels permitted to carry livestock in March and April 2018 were fitted with twin-tier decks. By the time the changes came into effect, the ship owner of 1 of those vessels had decided to move the vessel to other markets for loading livestock. This left only 2 vessels with twin-tier decks operating from Australian ports at that date.

Ship owners had initially indicated that the cost to convert these vessels to single-tier decks was \$208,000 per deck. The 3 affected vessels each had between 6 and 13 twin-tier decks to convert, resulting in an average one-off conversion cost of \$1.9 million per vessel. This was not an insignificant cost, particularly as the remaining 2 vessels were around 30 years old and approaching the end of their useful life.

Other options available to the ship owners, such as selling the vessels and purchasing or constructing new compliant vessels, also entailed significant costs – building a new vessel will take on average 18–24 months and cost between \$60 million and \$100 million. These options, as well as removing the vessel from the domestic livestock export market, would also have opportunity cost impacts in the form of income losses.

In this context, given the government's decision shortened the timeframe these businesses had to implement major changes on their vessels, the ship owners for these 2 remaining vessels instead decided to apply for an exemption from the new twin-tier deck requirements. An exemption was granted for these vessels under the *Navigation Act 2012* by the Deputy Prime Minister and Minister for Infrastructure, Transport and Regional Development.

The conditions imposed on these exemptions maintained other relevant requirements, including for mechanical ventilation, but also required operators to implement an approved twin-tier animal welfare management plan. This supported improved animal welfare outcomes over the status quo. Applying for the exemption will have entailed some one-off minor administrative costs. Compliance with the conditions is expected to impose additional minor ongoing administrative costs on these businesses. These costs have not been disclosed by the companies.

Compliance costs

AMSA completed an initial regulatory costing for MO43 at the time the regulatory changes were implemented, in accordance with the Australian Government Regulatory Burden Measurement Framework. This outlined the estimated regulatory compliance costs from all changes to the Order, based on input provided by stakeholders, including those for elements that were not subject to this PIR.

The owners of affected existing twin-tier deck vessels indicated at the time that they faced a cost for changes to mechanical ventilation and conversion to single-tier decks. The initial regulatory costing showed an estimated net additional cost to businesses of \$754,951 per annum over

10 years. Excluding the elements that were not subject to this PIR, the cost was \$636,341 per annum over 10 years. This costing was reviewed and approved by the OBPR on 26 April 2018 (OBPR ID 23774). The net additional cost was also reported on the OBPR's website.

The regulatory costing prepared for this post-implementation review includes those costs resulting from the regulatory changes to MO43. These account for an estimated net additional cost to businesses of \$1.69 million per annum over 10 years. This included actual costs to businesses for changes to mechanical ventilation, as well as an 'implied cost' (i.e. the cost they would have faced had they complied with the requirements, rather than leaving the market or seeking an exemption) for the conversion of twin-tier decks to single-tier. It is noted that these costs exceed the initial estimated costs, mostly because stakeholders did not have accurate quotes for the works required at that time.

As outlined in this chapter, the additional compliance costs would have been incurred under each of the 3 options examined in this review and only the timing of their impact changed as a result of the government's decision. For affected ship owners that are generally price takers in the live export market, additional costs cannot be easily passed on and are largely absorbed by the company. The reduced timeframe for compliance also impacted the ability of these businesses to reduce or otherwise absorb the costs.

In a competitive local livestock export industry, stakeholders have indicated that the reduced timeframe for compliance has led to additional pressures on transport profitability and increased risks of reduced transport capacity as some operators leave the market to find more profitable opportunities elsewhere. Further details of compliance costs for businesses are shown in the regulatory costing completed for this review and summarised in Table 3.

Indirect business impacts

Transporters

According to the LiveCorp submission to the NHS RIS, the 2019 prohibition period reduced turnover and profitability of transporters and had flow-on effects for managing employee numbers, although no numbers were provided. Transporters were identified as being 'most at risk and do not believe that they will have a financially sustainable business should the 3 month moratorium continue into the future'. Again, the extent of this specific impact is difficult to determine.

Feed producers

There are 6 feed mills supplying feed to the live export sheep trade, 3 in WA, 2 in SA and 1 in Victoria. The proportion of product sold to domestic markets versus live exports varies from business to business, with some manufacturers focusing their business on supplying live exports. In discussion with industry, it is estimated that for these 6 feed mills, between 50% and 90% of production is for the live sheep export trade, producing fodder specifically for consumption at registered premises and during voyages. It is estimated that these feed mills combined would employ around 100 staff directly, as well as contract balers, bale stackers, engineers, mechanics and straw and hay suppliers (Dagleish et al. 2020). Feed mills may also provide fodder for domestic prime lamb production.

Information provided by industry indicates that almost all of the feed for the live sheep export trade is supplied by 2 feed mills in WA. Both of these mills are heavily invested in the trade with 1 major manufacturer allocating 77.5% of total feed production in 2019 and 87.4% of total feed

production in 2018 to live sheep exports. For these mills, other sources of income would likely include production of feed for domestic use, sale and servicing of milling equipment.

Other services

Some AAVs subcontract quality assurance technicians to prepare and inspect sheep prior to loading the voyage (Dalglish et al., 2020). During the 2019 prohibition, these subcontractors had to look for alternative job opportunities. Additionally, the reduction in contract work for AAVs had a flow on implication of proportionally reducing expenditure for veterinary supplies retailers.

Marine Order 43

Businesses indirectly affected by the changes to MO43 include classification societies and dry-dock operators. These service providers operate worldwide in every marine market. A ship owner choosing to make changes to an existing vessel or build a new vessel as a result of the changes to MO43, would need to engage their services.

Classification societies are non-government organisations that establish and maintain technical standards for the construction and operation of ships and offshore structures. They certify that the construction of a vessel complies with relevant standards and carry out regular surveys of the vessel while it is in service to ensure it continues to comply with the standards. There are more than 50 classification societies operating around the world. Among these, 11 are full members of the International Association of Classification Societies (IACS). Each employs between 2,500 and 13,000 people and operates in up to 200 countries.

Classification societies act on behalf of the Flag State Administration (the responsible government agency of the vessel's home country or state) to carry out the surveys and inspections to ensure the vessel complies with international and national requirements. They also issue the resultant statutory certificates (required by international conventions) on behalf of the Flag State Administration.

These survey and inspection requirements apply to both foreign and Regulated Australian Vessels that use our ports, as defined under the *Navigation Act 2012*. There are currently no Australian flagged livestock vessels operating in the domestic livestock trade.

Dry-dock operators offer their services to vessel owners to design, plan and construct, change or maintain vessels. Major ship building and repair facilities that choose to work with livestock vessels are situated in countries such as China and Turkey. As vessel works are a labour intensive service, the lower labour costs in these geographical locations makes them more affordable to ship owners than domestic alternatives, even when transport costs are included.

Both these indirectly affected businesses would have benefited through increased demand for their services, and hence revenues, as a result of the changes to MO43. However, the government's decision only changed the timing of this impact, rather than the scale of the impact. In addition, given the relatively small number of affected vessels and natural fluctuations in market demand, any income impacts are practically insignificant compared to the annual revenues of these businesses.

Individual impacts

Australian Government Accredited Veterinarians

AAVs have a varied role within the export supply chain. Their role can be on board the vessel or in pre-voyage preparation of livestock; many also operate as on board stock handlers when required. On board AAVs are more commonly multispecies, servicing both cattle and sheep voyages, while there is less flexibility for pre-voyage AAVs even though they may hold the same qualifications.

The 2019 prohibition on live sheep export trade impacted on board AAVs by reducing the amount of work available. Additionally, this created greater competition to service cattle voyages during this time, even though handling practices for cattle can be more physically demanding than sheep. The option to shift to cattle voyages was taken up by some AAVs during 2019. According to Dalglish et al. (2020) there is no financial forfeiture associated with contracting services to cattle voyages compared to sheep voyages for AAVs. Therefore, on board AAVs were able to source sufficient contract work on cattle voyages or worked in other sectors to avoid significant loss of their income.

For a number of pre-voyage AAVs that invested in solely preparing sheep for live export, the 2019 prohibition had greater impact. Dalglish et al. (2020) stated that many were left without work for the entire 2018 and 2019 period. Industry submission noted that this created not only a financial burden but due to the negative perception of the live sheep export industry and the stress of unemployment, was mentally tolling for many.

Industry groups stated that supplementing income by preparing cattle export voyages was not an appropriate option for many pre-voyage AAVs as it involves demanding travel commitments, sometimes interstate.

Marine Order 43

The only individual directly impacted by the changes to MO43 is the master of a livestock vessel that is to load livestock at an Australian port. The Order imposes obligations directly on the master to provide a safe vessel that complies with the Order and with the ACCL issued to the vessel. It also includes obligations for notification of an intention to load, and to report animal mortality to AMSA if specified criteria are met or exceeded.

The master will have familiarised themselves with the specific requirements or procedures that have changed. As a representative of the ship owner, they will also have relayed to the ship owner the other impacts of changes to MO43 for the vessel and its operation. The changes did not require any additional training or certification for the master or crew.

The master and vessel's crew may also be indirectly impacted by an owner's decisions. For example, where the ship owner decides to engage the vessel on a trade between other ports without loading in Australia. The quantum of such commercial decisions and the resulting indirect impacts on the master and crew are practically impossible to determine or estimate.

Overall, the changes to MO43 have resulted in some minor opportunity costs where the master's time may have previously been spent on other activities, but the conditions on-board and the employment of the master and crew have generally remained unaffected. Again, the government's decision only changed the timing of these impacts.

Community organisation impacts

McCarthy Review recommendations

The Livestock Export Animal Welfare Advisory Group (LEAWAG) was formed as a recommendation of the [Review of the Regulatory Capability and Culture of the Department of Agriculture and Water Resources in the Regulation of Live Animal Exports](#) conducted by Mr Philip Moss AM.

This group provides a forum where community organisations like Animals Australia, the RSPCA and the Australian Veterinary Association are able to participate in the discussions, including regarding the implementation of the McCarthy Review recommendations. This provides a voice for the wider community directly to the department. Additionally, it allows for a balanced discussion of varying opinions and views about current issues.

Other members of this group include industry groups such as the Australian Livestock Exporter's Council (ALEC) and research and development groups like LiveCorp, Meat and Livestock Australia and the Animal Welfare Science Centre from the University of Melbourne.

Marine Order 43

Community organisations with an interest in the changes to MO43 included animal welfare advocacy groups. The majority of such groups are represented on the LAC by 1 national organisation – the RSPCA.

The RSPCA is an independent, community-based charity providing animal care and protection services across the country. As a federated organisation, the RSPCA's member societies in each state and territory run animal rehoming shelters, investigate and prosecute animal cruelty complaints, and educate the community on animal welfare and responsible pet ownership. RSPCA Australia, as the federation's national body, is a leading source of animal welfare science, and works with governments and industries to progress animal welfare across a range of issues.

Their participation on the LAC helps to provide a more balanced group and allows all stakeholder views to be taken into account. Although they are not a regulated entity or directly affected by the changes to MO43, they are nonetheless recognised as an important stakeholder that has an interest in the impacts of MO43 on animal safety and welfare. Their feedback through the LAC and other stakeholder consultation indicated general support for the changes to MO43. Stakeholder consultation is further discussed [later in the next chapter](#).

Social and environmental impacts

Research and analysis undertaken for the department by the Futureye consultancy (2018) identifies that the Australian public is demanding better treatment of animals. Futureye also identified that improving animal welfare outcomes can mitigate the risk to the viability of the live export industry due to bad publicity, the potential loss of social licence, and in extreme cases complete market collapse. Futureye states that widespread media attention of poor animal welfare can draw large audiences into the debate, with reactive calls for extreme regulation. The Australian community has shown that they place a priority on good welfare outcomes and, as a stakeholder, the Australian community can exert influence. For example, in 2011 when video footage emerged showing animal cruelty in Indonesian abattoirs, there was public reaction and the Australian Government suspended all live cattle exports to Indonesia. In 2013, when video

footage emerged showing cruelty to cattle exported live to Egypt, exports of all Australian livestock to Egypt were suspended.

Marine Order 43

There were no measurable social or environmental impacts (costs or benefits) directly related to the MO43 changes. However, the changes to pen configuration and ventilation requirements were expected to result in improved animal welfare outcomes based on expert modelling and reports. Any improvement in animal welfare outcomes is likely to lead to a reduction in animal mortality, resulting in fewer animal carcasses needing to be disposed of. This would be expected to reduce the burden of carcass disposal, both at sea and in port, indirectly reducing the impact on the environment.

Community concerns in general about the live animal export trade are focussed on animal welfare. Although the primary purpose of MO43 is the safe carriage of animals as a cargo, any expected improvements in animal welfare outcomes are appreciated by the community and help to maintain community support for the live export trade.

No regulatory action taken

A number of McCarthy Review recommendations were either implemented without the need for regulatory action, or are yet to be implemented in full. These include:

- Recommendation 10: Register of vessels – as part of its PAT program LiveCorp has built a register of vessels PAT audit values into the HSRA Model.
- Recommendation 12: Curfew adjustments for stocking density – this recommendation has been implemented through the pen space allocation formula found in the Australian Meat and Live-stock Industry (Export of Sheep by Sea to Middle East) Order 2018.
- Recommendation 13: Compliant loading of animals – the Observer and departmental veterinary officers undertake checks to ensure loading has been undertaken in compliance with requirements.
- Recommendation 15: Purchase lines – this is a matter for industry and at this stage is yet to be implemented.
- Recommendation 16: Roles and responsibilities – the review of ASEL considered the roles of AAVs and stockpersons, and their findings have been implemented as part of the new ASEL 3.0.
- Recommendation 17: Animal Carcasses – the department will continue to pursue with industry measures that address this recommendation.
- Recommendation 19: Daily reporting – the use of both pant scoring and heat stress scores was implemented immediately without the need for further regulation.

Regulatory costing summary

A regulatory costing has been prepared for [Option 2](#) and provided together with this PIR, in accordance with the Australian Government [Regulatory Burden Measurement Framework](#). The regulatory costing has also been reviewed by the OBPR.

The following Table 3 shows a summary of the outcomes of this regulatory costing for each of the 3 main stakeholder groups being exporters, ship owners and ship operators.

Table 3 Average annual compliance costs (from business as usual) by sector

Business (\$)	Individuals (\$)	Community organisations (\$)	Total cost (\$)
4,189,375	0	0	4,189,375

Stakeholder consultation

Since early 2018, the department has undertaken a number of public consultation processes for reviews relating to the export of live sheep to the Middle East during the Northern Hemisphere summer. Submissions to these consultation processes have contributed to the development of the PIR. Consultation includes, but is not limited to:

- McCarthy Review (May 2018)
- Moss Review (September 2018)
- Independent Observer policy (2018–ongoing)
- Heat Stress Risk Assessment Review (December 2018)
- proposed interim measures for the Northern Hemisphere summer 2019
- proposed options for the 2020 Northern Hemisphere summer outlined in the NHS RIS
- the *Australian Standards for the Export of Livestock (ASEL)* (2019–ongoing)
- Livestock Export Animal Welfare Advisory Group meetings (last held 31 May 2020–ongoing)
- Live Animal Export Animal Welfare Regulators Group meetings (last held 1 June 2020–ongoing)
- other stakeholder meetings.

The department has a policy of continuing consultation for decisions that have the ability to impact industry. This means that even when time frames are short, the department seeks to consult with key stakeholders, including those that are affected directly and indirectly.

While public consultation processes are ideal, situations have arisen where brief consultation is considered sufficient to make immediate, short term decisions. In these circumstances, only those stakeholders that are specifically affected by these changes, or those that are representative of a wide selection of stakeholders, may be offered the opportunity to consult. The department considers this sufficient in circumstances where the policy decision is temporary and a fuller consultation process will occur in the future.

This was the case for many of the urgent decisions in response to the McCarthy Review. However, in implementing the recommendations from the McCarthy Review, a complete public consultation process has been performed wherever possible. For this reason, a public consultation process was not conducted specifically for this PIR process. The submissions received during the following consultation processes for the changes have provided sufficient continuing evidence to determine the impacts of implementing the McCarthy Review recommendations.

McCarthy Review

Given the pressing need for action, the government relied on Dr McCarthy's industry expertise and his broad consultation with other experts and a wide range of key stakeholder groups as he

developed his report. During McCarthy's investigation, 52 submissions from industry groups, animal welfare groups, and other groups and individuals were reviewed.

Responses to publication of the review indicate divergent views among stakeholders at the time. Whereas industry responses were generally positive of the review's recommendations, with ALEC stating they 'welcome McCarthy findings and embrace need for industry reform', animal welfare groups, such as RSPCA Australia, labelled the recommendations 'weak' and 'not based on science or evidence'.

Dr McCarthy provided his report to the then Minister for Agriculture and Water Resources in May 2018 making 23 recommendations. Based on these recommendations of the McCarthy Review, the department implemented a range of measures aimed at reducing heat stress in sheep during the Northern Hemisphere Summer.

Northern Hemisphere summer 2019

In March 2019, the department consulted on interim measures for the export of sheep to the Middle East during the 2019 Northern Hemisphere summer period, receiving 11 submissions (3 from industry groups, 3 from animal welfare groups, 4 from other groups and individuals, and 1 from a government agriculture department) which were all generally supportive of a prohibition period. Consequently, the department came to the decision to suspend the live sheep trade for the months of June, July and August, with the view that further consideration and consultation would be conducted regarding the conditions of export in September and October.

On 12 July 2019, the department released a policy options discussion paper, outlining 3 options for the regulation of sheep exports to the Middle East during September and October 2019. The department received 220 submissions (16 from industry groups, 10 from animal welfare groups, 193 from other groups and individuals, and 1 from a government agriculture department), with submissions arguing that live sheep exports should be allowed from early September, while other submissions argued for the export of sheep to remain suspended until 1 November. Following the consultation period, the department implemented the Australian Meat and Live-stock Industry (Prohibition of Export of Sheep by Sea to Middle East-Northern Summer) Order 2019 to prohibit live sheep exports to the Middle East to 22 September 2019.

Live sheep exports to, or through, the Middle East – Northern Hemisphere summer: Regulation impact statement

As part of the NHS RIS process to determine the ongoing conditions for live sheep exports to, or through, the Middle East during the Northern Hemisphere summer, the department engaged in a number of stages of consultation.

On 27 September 2019, the department released the Middle East sheep exports policy options discussion paper (discussion paper) on the department's Have Your Say webpage. The discussion paper outlined 4 different policy options and sought feedback from key stakeholders and the general public. The consultation process for the discussion paper was concluded on 4 November 2019 with the department receiving 66 submissions (11 from industry groups, 7 from animal welfare groups, 47 from other groups and individuals, and 1 from a government agriculture department).

The majority of these submissions were supportive of the regulatory measures that were implemented following the McCarthy Review and a prohibition period, with support coming from industry and welfare groups alike.

On 20 December 2019, the department released a draft NHS RIS, proposing 3 policy options and inviting submissions considering a number of key questions. The consultation process for the draft RIS concluded on 3 February 2020 with the department receiving 21 submissions (10 from industry groups, 4 from animal welfare groups, 6 from other groups and individuals, and 1 from a government agriculture department) and over 1,400 RSPCA Australia templated responses. The majority of the submissions again supported an ongoing prohibition period, with most industry groups opting for a 3.5 month prohibition and, again, some animal welfare groups maintaining that only a permanent cessation of the trade could guarantee positive animal welfare outcomes.

In addition to these formal consultation processes, the department also conducted a number of consultative meeting sessions. These included a number of industry roundtables with peak bodies and stakeholder groups such as the WA Live Export Reference Group and meetings with exporter representatives in Perth in October 2019 and January 2020, in Townsville in October 2019, and in Adelaide in January 2020. The department also engaged in a number of targeted face-to-face or teleconference meetings with stakeholders such as Animals Australia, the Australian Livestock Exporters' Council, the Australian Veterinary Association, LiveCorp, RSPCA Australia, the Western Australian Livestock Exporters' Association, the department's LEAWAG, and state and territory governments.

Independent Observer policy

In October 2019, the department changed its deployment policy from one where an Observer was to be placed on all voyages where practical, to one where it primarily deployed Observers on higher-risk voyages. At the time of the change in deployment policy, Observers had provided the department with useful insights into exporter practices on more than 150 voyages. Those insights meant the department had a better understanding about when the deployment of an Observer was most beneficial.

In November 2019, the department circulated a consultation paper to key stakeholders regarding the future of Observer deployment. The consultation paper was emailed to members of LEAWAG, livestock exporters and AAVs. The consultation paper asked questions about how the department could address a number of issues related to the Observer program.

The department received 8 submissions (6 from industry groups, 1 from an animal welfare group and 1 from a state government primary industry department). The submissions from industry were supportive of a risk-based approach to Observer deployment and were generally critical of the cost and reach of the program. Industry submissions did concede, however, that the program had served some benefit in providing transparency about conditions on livestock vessels. The submission from the animal welfare group disagreed with the October 2019 change in deployment policy and suggested Observers be deployed on a random basis on short-haul voyages as well.

Stakeholder meetings

Livestock Export Animal Welfare Advisory Group

In implementing recommendations from the McCarthy Review the department has consulted with stakeholders within LEAWAG. This group was formed in 2018 in response to recommendations from the *Review of the Regulatory Capability and Culture of the Department of Agriculture and Water Resources in the Regulation of Live Animal Exports* conducted by Mr Philip Moss AM.

LEAWAG meeting invitees include:

- Animals Australia
- Animal Health Australia
- The Animal Welfare Collaborative – University of Queensland
- Animal Welfare Science Centre – University of Melbourne
- Australian Dairy Farmers
- Australian Livestock and Rural Transporters Association
- Australian Livestock Exporters’ Council
- Australian Lot Feeders’ Association
- Australian Maritime Safety Authority–AMSA
- Australian Veterinary Association
- Cattle Council of Australia
- Goat Industry Council of Australia
- LiveCorp
- Meat and Livestock Australia
- National Farmers’ Federation
- RSPCA Australia
- Sheep Producers Australia

Other meetings

The department also regularly conducts meetings with other governmental and departmental agencies. As a member of the LAC, the department regularly engages with AMSA and other industry and animal welfare organisations on matter relating to livestock vessels. The department actively engaged with AMSA on proposed changes to MO43, for example, regarding the gradual phasing out of older livestock carrier vessels.

The department also meets regularly with the Commonwealth, State and Territory Live Animal Export Animal Welfare Regulators Group to consult on current issues, discuss information sharing, clarify roles and responsibilities, and better understand jurisdictional responsibilities along the supply chain.

Through consultation and engagement to date, the department has observed significant concern from the wider community regarding animal welfare, as well as widely divergent views between animal welfare and industry organisations. In this environment, consultation regarding live exports rarely involves consensus between stakeholders. As a result, the department is seldom able to implement a solution which satisfies the expectations of all its stakeholders.

Marine Order 43

Early stakeholder consultation on the problems identified with MO43 and various options to address these was undertaken with the LAC in early 2018. LAC members included the department, livestock ship operators and owners, Australian Livestock Ship Owners & Operators Association (LiveShip), Classification Societies, animal welfare organisations, including the RSPCA Australia, Australian Livestock Exporters Council, Cattle Council of Australia, Sheepmeat Council of Australia and Sheep Producers Australia.

Final consultation with members of the LAC occurred on 28 March 2018, 4 weeks before public consultation was scheduled to commence. Members were provided with relevant background material for further discussion. The meeting sought to canvass key stakeholder views, identify viable policy options and finalise the LAC's recommendation to AMSA.

The LAC discussed phase-out periods for older vessels of between 3 and 5 years (sunset dates) for a number of proposed measures. It was agreed that comments on appropriate times for phasing-in these measures would be sought during formal public consultation. AMSA considered that the recommended changes would make a number of improvements with the objectives of promoting the safety of life at sea, the safe carriage and stowage of livestock, safe navigation and preventing pollution of the maritime environment. Consultation with the LAC ultimately culminated in their recommendation to adopt the proposed changes to MO43.

Public consultation on the proposed changes to the Order was undertaken from 25 May 2018 until 8 June 2018 taking into consideration previous industry engagement with the LAC. Key stakeholder groups were consulted on the timing of the planned consultation and contacted by email alerting them to the consultation process. Consultation documentation was placed on the consultation page of AMSA's website and included the draft of the revised Order with the proposed changes, a summary comparing the existing Order to the proposed Order and supporting material.

The consultation covered the following changes to MO43 relevant to this PIR:

- phasing out and prohibiting twin-tier arrangements for the carriage of sheep and goats
- improved ventilation on older existing ships.

Additional changes to MO43 that are not subject to this PIR were also included in the consultation:

- changes to drainage requirements
- improved structural fire protection standards
- sewage holding tank requirements
- bridge ventilation alarms

- rail height and rail spacing
- reportable livestock mortality rates
- fodder carriage requirements
- camel carriage requirements.

The OBPR assessed these additional changes and advised on 26 April 2018 that a RIS was not required (OBPR ID 23774).

The objective of the public consultation was to obtain stakeholder feedback on the proposed changes agreed by the LAC, including stakeholder views and comments on proposed new and revised policies for the carriage of livestock to be incorporated into the Order.

Key stakeholders for the consultation on the changes to MO43 included:

- businesses – ship owners, ship operators, classification societies and dry-dock operators
- individuals – masters and crew on livestock vessels
- community organisations – the RSPCA and animal welfare groups.

During public consultation, AMSA received 7,152 submissions from 8 industry stakeholders, 6 animal welfare organisations and 65 other stakeholders from the general community.

Among the submissions received, some 7,073 were received from animal welfare groups and members of the general public (using an RSPCA standard template letter) that sought an earlier implementation date for the proposed MO43 measures, rather than the implementation date set out in the government's decision. When considering these suggestions, AMSA considered livestock ship owners' advice that the major structural changes required to comply would take at least 18 months and that during this time, vessels that were being altered to comply would be unavailable for use. It was therefore decided not to bring the compliance date forward any further.

These animal welfare groups and general public submissions also included comments relating to animal welfare. This included an over-arching desire to see the live animal export trade banned in Australia. They did acknowledge that the proposed changes to prohibit carriage using twin-tier decks and improve airflows for animal pens would likely improve conditions for the animals. All animal welfare related stakeholder feedback was forwarded to the department, which has jurisdiction for these matters, for their consideration and response.

There were also stakeholder comments on matters relating to additional equipment and new technologies for livestock spaces, such as dehumidification and air conditioning. Such technical aspects required further consideration, including consultation with equipment manufacturers and suppliers, to confirm whether the equipment and technologies were available and suitable for fitting to ships. Given the short timeframe for implementing the necessary changes to MO43 in line with the government's decision, it was decided that this feedback would be considered during the next review of the Order.

Responses from stakeholders representing affected businesses indicated general support for the measures but some unease about the timing being brought forward. The 2 operators of the largest sheep carriers expressed specific concerns about the change in timing, noting the

bringing forward of the impacts discussed in this report would likely mean they wouldn't be able to have a compliant ship in service on 1 January 2020.

Other than the 7,073 comments relating to the timing of the changes, there was general stakeholder support for the proposed policy settings and draft changes to MO43.

A stakeholder feedback report outlining the comments received and AMSA's response to these was prepared and published on the AMSA website on 11 July 2018. AMSA consultation processes are subject to regular internal review and any lessons learned from completed processes are incorporated via changes to internal procedures.

Net benefit

Owing to the inability to measure some of the costs and benefits outlined, it is not possible to say with certainty whether the implementation of the regulation has delivered a net benefit. However, the changes are considered to have had a positive impact overall.

The balance between animal welfare and a sustainable live export trade is the key issue that both industry and government must effectively deal with. The strategic industry benefits of the reduction in animal mortality achieved by industry through better regulation are twofold. First, there are financial benefits from delivering more animals in better condition. Secondly, as pressure continues to be placed on the live animal export industry, the reduction in animal mortalities is evidence of the industry's commitment and success in responding to the heat stress and animal welfare challenge.

The mortality rates for sheep during the Northern Hemisphere summer months have been lower than those during the Northern Hemisphere winter months. Regulatory changes as a result of the McCarthy Review are associated with a 79.4% reduction in sheep mortality during the Northern Hemisphere summer period in 2019. Analysis of mortalities during the cooler Northern Hemisphere winter months indicates that the increase in pen space allocation recommended by McCarthy reduces the effects of heat stress and in turn reduces mortality. The net result is, that it can be argued that the health and welfare benefits (and related lower mortality figures) associated with the extra space provided by the regulation outweigh the costs on industry and have helped secure the long-term future of the trade.

Independent Observers

The primary benefit of the Observer program has been its ability to increase transparency and provide information about conditions on livestock voyages that can then be used to inform effective regulation and inform the public. Additionally, since the inception of the program, there has been a reduction of the severity of observed adverse animal health and welfare outcomes. This is due to exporters updating and amending exporter operational processes and procedures in response to issues reported by Observers.

The information provided from Observer reports has allowed the department to have further insight into conditions on board vessels and as a result, provide clearer directions to exporters on the management of livestock on ships. The costs on exporters has been high, averaging \$32,766 per voyage with an Observer aboard. It could be argued that the benefits obtained have come at too high a price, however the long term strategic benefits to industry are also significant.

2019 prohibition period

Industry groups have suggested that the impacts on producers and the Western Australian sheep industry during the 2019 prohibition would be significant. It is clear that disruptions to live sheep exports did have some impact on Western Australian live sheep and sheep meat markets. However, analysis conducted by the department indicates that producers adapted to the live export restrictions and in fact have seen improvements to the Western Australian agriculture industry. During the 2019 prohibition period, farmers producing sheep for live

export switched to alternative markets. There is some evidence that sheep were diverted from live exports to domestic markets both for meat processing and restocking which more than offset a proportion of this impact.

This action had a direct impact on exporters. Departmental records from 2013 to 2017 show the average number of sheep exported between 1 June and 15 September was 533,964 with a range of 24.8% to 31.6% of total annual sheep exports. In simplistic terms, the 3.5 month suspension on live sheep exports in 2019 could have reduced revenues derived directly from the export of sheep by approximately 30%. This does not consider alternative means of revenues that could be prioritised or alternative markets that could have been accessed during the prohibition period, so the extent of the impact is difficult to determine.

Marine Order 43

While there were significant compliance cost impacts for a small number of affected ship owners and operators, there have been indirect benefits through additional revenues for relevant classification societies and some dry-dock businesses. There have also been positive impacts for the industry overall where improved animal welfare outcomes have bolstered public support for the industry's continuation and the indirect economic benefits it provides to Australia.

Since compliance with the changes came into force on 1 January 2020, one ship owner had withdrawn 1 vessel from the Australian trade without undertaking work to comply. Two other owners with 1 vessel each applied for an exemption to allow them to continue using twin-tier decks without meeting ventilation requirements. These 2 vessels remain in the Australian market. Given the absence of data on the trade in terms of ship capacities available for exporters when seeking an export licence, it is difficult to conclude if there has been a significant reduction or loss of live export transport capacity in Australia.

Among other stakeholders, vessel masters and crew have experienced only minor impacts, largely through opportunity costs on their time. Environmental impacts, while unable to be measured, have also been considered minor but positive given an expected reduction in animal mortality and the disposal of animal carcasses at port or in the marine environment.

The changes are also considered to have positive impacts for animal welfare. The removal of twin-tiers has improved conditions in the pens for sheep (and goats if carried), including through more headroom, greater access to the pens and improved visibility of the animals for care purposes. The increased airflow across the pens improves conditions for the animals in the pens, as demonstrated in the modelling. This has also had positive impacts for animal welfare groups and on the community, including for public perceptions of live exports and continued support for the live export industry.

The regulatory changes made to MO43 were appropriate as they directly addressed the problem, which lay in the need to update the previous regulatory framework to align with more recent research findings. It also achieved the objectives of the Order, by supporting improved animal safety and animal welfare outcomes, as well as AMSA's objectives as a modern best practice regulator responsible for maritime safety and responsive to the needs of stakeholders.

The changes to MO43 were also effective and efficient. The regulatory changes were the minimum required to effectively address the problem and achieve the objectives with the least cost impacts possible in the timeframe provided by the government's decision. The exemption

approach taken by some businesses also achieved the policy intent and improved regulatory outcomes.

How the regulation was implemented and evaluated

Several of the McCarthy Review recommendations were implemented immediately, while others were subject to further research and consultation with industry and animal welfare experts. The subsequent *Review of the Australian Standards for the Export of Livestock: Sea Transport* (ASEL review), undertaken by an independent Technical Advisory Committee (TAC), also considered many of the recommendations when developing their own regarding the standards.

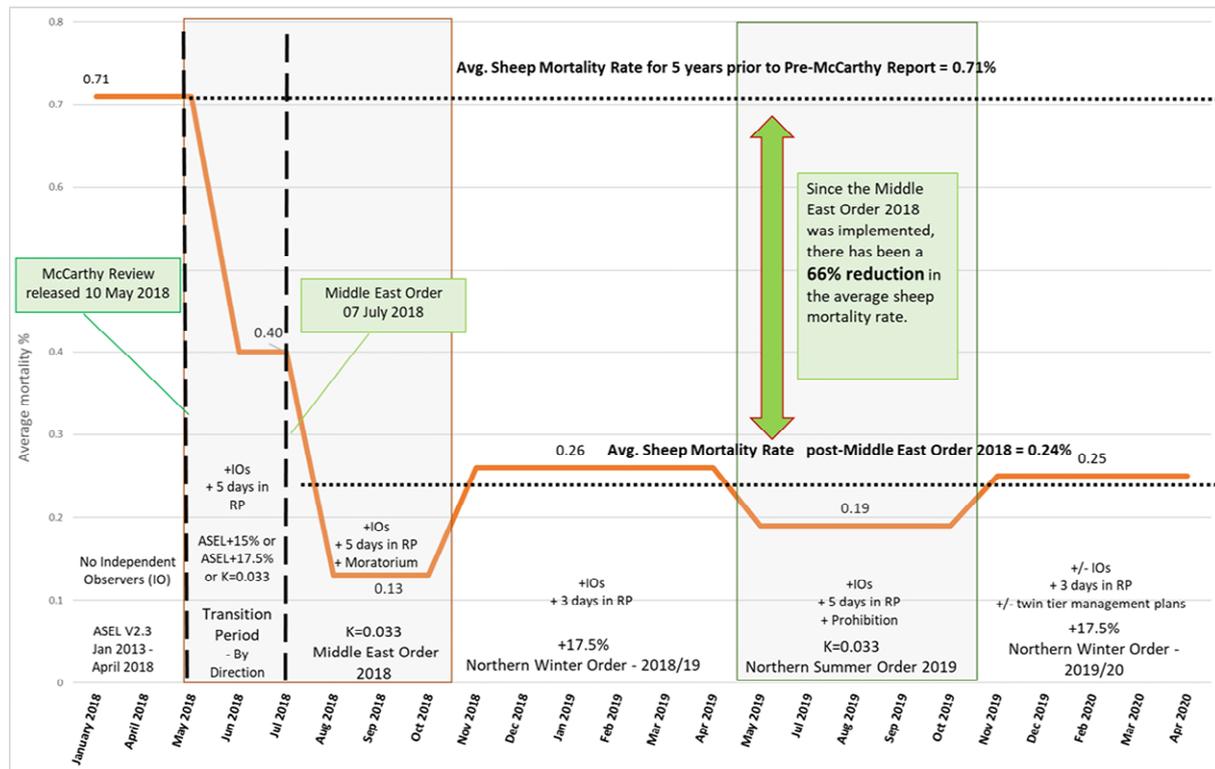
McCarthy Review recommendations implemented immediately

The following recommendations were addressed immediately following the McCarthy Review.

Recommendation 18: The reportable mortality level for sheep exported by sea to the Middle East should be reduced from 2% to 1%.

The reduction in reportable mortality level for sheep exported by sea was implemented via the [Australian Meat and Live-stock Industry \(Standards\) Amendment \(Reportable Sheep Mortality Level\) Order 2018](#), dated 6 July 2018. Industry was notified via EAN 2018-06 on 20 July 2018 (All published Live Export Advisory notices can be found online at <https://www.agriculture.gov.au/export/controlled-goods/live-animals/advisory-notices>). The reduction not only applied to sheep exported to the Middle East but to all destinations. The requirement has also been applied in the revised ASEL 3.0, standard 5.6.5. Voyage analysis since that time found there have been no voyages that have reached a mortality level equal to or greater than the reduced reportable level. In fact, the average voyage mortality rate has reduced from 0.71% (January 2013 to April 2018) to 0.19% (May 2019 to October 2019). A number of other reform measures, outlined in Figure 12, are likely to have contributed to this reduction and this data suggests that a further reduction in the reportable mortality level for sheep exported by sea could be considered.

Figure 12 Sheep export mortality rates pre- and post-McCarthy Review, January 2013 to April 2020



Note: mortality rate calculated on load on/load off for each period.

Recommendation 19: 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.

A mandatory requirement for recording of pant score and heat stress score in daily reports for sheep exported by sea was implemented via EAN [2018-11](#), sent to industry on 21 September 2018. The scoring framework was based on a table included in the McCarthy Review. Analysis of subsequent daily reports shows that of the 6 exporters that exported sheep by sea, none implemented the recording as per the EAN. There continue to be a number of different scoring systems in use, further witnessed by Observers, demonstrating that a different approach is required in order for the department to receive useful, comparable data. Requiring a record of the percentage of sheep open mouth panting at the hottest period of the day is to be incorporated into ASEL 3.0 reporting. Analysis of data obtained on WBTs and footage of sheep at these temperatures (discussed later in this chapter), versus the pant scores recorded in daily reports has found inconsistencies and has further reinforced this proposal. Additionally, having the requirement sit within ASEL and not an EAN will provide more appropriate compliance tools. If pant scores continue to be required, further work is needed to ensure that score allocation is consistent across industry. A working group on improving consistency in reporting has been formed and may be used to facilitate this in future.

The following recommendations for allometric space allocation and curfew adjustment, automated livestock watering systems, a heat stress management plan, unloading at Kuwait

prior to other destination ports, PAT and use of sawdust were implemented via the Australian Meat and Live-stock Industry (Export of Sheep by Sea to Middle East) Order 2018. These changes were also advised in EAN 2018-06 sent to industry 20 July 2018.

Recommendation 2: 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.

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

These recommendations were implemented through the pen space allocation formula found in the Australian Meat and Live-stock Industry (Export of Sheep by Sea to Middle East) Order 2018 and were included in EAN 2018-06. The allometric formula calculator that allows exporters to automatically calculate the allometric spacing required taking into account curfew factor (12%) where applicable and weight gain during the journey. Inclusion of a weight gain allowance in the calculation was considered preferable by the department to more accurately account for arrival weight in the Middle East region, the point at which the sheep experience high heat and humidity. The allometric space allocation was later reviewed by the ASEL TAC as per the McCarthy Review recommendation. The TAC determined that a weight gain factor should not be a requirement when determining stocking densities, but that where a curfew has been applied to livestock for more than 12 hours without access to fodder and water, a curfew factor of 5% should be applied in calculating stocking densities. This has been implemented in ASEL 3.0 and will apply from 1 November 2020 onwards.

Recommendation 20: All vessels carrying sheep to the Middle East during the Northern Hemisphere summer should have automated livestock watering systems.

The Australian Meat and Live-stock Industry (Export of Sheep by Sea to Middle East) Order 2018 mandated that all livestock vessels carrying sheep to the Middle East during May to October must have automatic watering systems in place. AMSA subsequently confirmed that all livestock vessels that currently transport sheep to the Middle East have automated livestock watering systems, as do the majority of other livestock carrying vessels. Observers have raised several issues with automated systems, with approximately 10% of reports noting concerns. Common issues include difficulties in livestock learning how to operate the water bowls, inadequate flow rates, poor water quality and leaks that impact pen conditions. Human error by crew not turning water supply back on following shut down (for deck washing or repairs) was also identified as a problem with these systems. Exporters are informed of these observations for consideration and action, and compliance action is undertaken as necessary.

Recommendation 21: 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.

It is a requirement of the Australian Meat and Live-stock Industry (Export of Sheep by Sea to Middle East) Order 2018 that exporters have a heat stress management plan for shipments of sheep travelling to the Middle East between May and October. An exporter's Approved Arrangement should state that a heat stress management plan will be developed for each applicable consignment, in line with the requirements outlined in EAN 2018-06.

When applying for an Export Permit and Health Certificate, the exporter must note which management plans they have invoked for the consignment. When a heat stress management plan is listed, the regional veterinary officer (RVO) will review the plan to check if there are any aspects that require confirmation prior to export.

Recommendation 22: Where Kuwait is one of the vessel's destination ports, this should be the vessel's first port of unloading.

It is a requirement under the Australian Meat and Live-stock Industry (Export of Sheep by Sea to Middle East) Order 2018 for exporters to ensure that Kuwait must be the first port of unloading if it is one of the destination ports. For unloading at Kuwait as a first port, this is confirmed by the department at the time an NoI is assessed as part of a Northern Hemisphere summer conditions validation process.

Recommendation 9: 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.

Recommendation 10: A relevant government agency should maintain a register of vessels whose pen air turnover (PAT) information has been certified following auditing and verification.

Recommendation 11: 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.

The Australian Meat and Live-stock Industry (Export of Sheep by Sea to Middle East) Order 2018 requires exporters to ensure that the PAT for the vessel on which the sheep are to be transported has been verified by an independent qualified mechanical engineer within the 5-year period ending on the day before the sheep are to be exported. The exporter must provide evidence of this to the department. The department maintains a record of the audits, and their validity is checked at the time the NoI is assessed. An exporter's Approved Arrangement should state how the exporter will ensure the vessel's PAT has been independently verified, in line with the requirements outlined in EAN 2018-06.

Reports provided by Observers identified that for some voyages, ventilation was insufficient and hot, humid areas remained on the vessel. This improved with lower stocking density and the use of fans. Additionally, some exporters chose to limit the stocking density in particular 'hot' zones of the vessel. The analysis behind these findings was conducted at a high level and cover all voyages, not just those carrying sheep to, or through, the Middle East.

Recommendation 14: 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.

The department implemented the recommendation on use of sawdust in 2 ways. Paragraph 8(c) of the Australian Meat and Live-stock Industry (Export of Sheep by Sea to Middle East) Order 2018 requires at least 1 tonne of bedding for every 10,000 sheep to be provided on the vessel. Additionally, conditions were applied on a consignment-by-consignment basis for the exporter to:

- ensure that any pens where the condition of the pad had softened to the extent that sheep are visibly sinking are immediately treated to restore the pad's integrity, so that the sheep are able to move freely and are not hindered or trapped in the pad due to its condition
- require a heat stress management plan that details on-board management of animals prior to, during and following a heat event, amongst other things.

A high level analysis of all Observer reports (not just those carrying sheep to, or through, the Middle East) identified 52 of 215 voyages reported issues with pen conditions. Generally, problems were managed by personnel with limited adverse welfare outcomes, however there were some instances of operators not proactively managing pads by applying sawdust or using other measures when necessary, and stock suffered as a result (for example, lameness, leg injuries). Depending on the severity and occurrence on multiple voyages, the department has required those exporters to ensure procedures are implemented to minimise adverse welfare outcomes caused by poor pad conditions, and to ensure sufficient sawdust or bedding is used pre-emptively during the voyage and not just before discharge.

The ASEL TAC made the recommendation to require that a sufficient quantity of bedding is carried, applied and managed in a manner that ensures good animal welfare outcomes for livestock on all voyages. This recommendation was implemented in ASEL 3.0 standard 5.1.18.

McCarthy Review recommendations implemented since its release

Most other recommendations have been addressed since release of the McCarthy Review.

Recommendation 1: The department must ensure that exporters, through their Approved Arrangements, comply with any legislative requirements, ASEL and any other conditions of their Approved Arrangements.

Recommendation 13: 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.

Recommendation 1 was implemented in a number of ways, including utilising the Observer program. The Observer program commenced in April 2018 with the primary purpose of providing assurance to government, industry and the public of the appropriate and humane management of livestock welfare on vessels. The program utilised existing legislation being the *Export Control Act 1982* and the *Export Control (Animals) Order 2004 (Animals Order)*.

Observers are appointed as authorised officers under section 20 of the Act and conduct activities in accordance with an AEP – a written program of monitoring and reporting activities approved under section 1A.45 of the Animals Order established by the Secretary of the department. The department issues directions to Observers under sections 9D and/or 9E of the Act requiring them to accompany consignments of livestock exported by sea. Decisions to deploy Observers are made consistent with the scope and purpose of the Act and guided by the department’s deployment policy.

The program was implemented in 3 tranches, commencing with long-haul voyages to the Middle East and North African region; voyages to China and multi-port regions in South East Asia; and finally voyages to remaining destinations. Despite the intent, Observer placement on every voyage was not achieved for a number of reasons. This included limited accommodation on some vessels and limited numbers of Observers available for deployment. In October 2019 the department revised the program, implementing a risk-based approach to deployment noting that risk-based regulation is consistent with best regulatory practice. Information received since the program commenced provided for a better understanding of risk and when deployment of an Observer would be most beneficial. As part of the revised deployment policy, Observers were no longer required on low-risk short-haul voyages. The current policy seeks to have Observers on the following voyages:

- voyages departing from ports south of latitude 26 degrees south and crossing the equator
- the first voyage undertaken by an exporter or vessel following a reportable mortality
- the first voyage(s) by any new exporter or vessel
- other long-haul voyages with complex arrangements such as those with multiple ports of discharge or enacting management plans (for example heavy cattle); and other voyages carrying buffalo.

Assessment of historical data and Observer observations demonstrated that livestock on these voyages have a higher risk of experiencing less than optimal health and welfare outcomes than other voyages. Reasons leading to the increased risk include the longer duration of the voyage, the movement of cold-acclimatised livestock and/or heavier *Bos taurus* cattle to, or through, hot and humid environments, and a lack of proven experience of new exporters or new livestock vessels. For voyages discharging in multiple ports, reduced ventilation occurs during the time the vessel is stationary in a port, and significant delays can be encountered such as when there is limited capacity to receive discharging livestock (for example transport truck limitations). In these instances, the exporter may need to enact contingency plans for feed or bedding to maintain the health and welfare of the remaining livestock, and observation and reporting of exporter processes in these situations is valuable. Voyages carrying buffalo are also consider higher-risk as they have, on average, higher rates of mortality than similar voyages carrying cattle (Table 4).

Table 4 Overall voyage mortality rates for cattle and buffalo (from Northern Australian ports to South-East Asian destinations) 2016 to 2018

Species	2016	2017	2018
Cattle	0.13%	0.10%	0.12%
Buffalo	0.52%	0.55%	0.46%

In contrast, most short-haul voyages from northern Australia to South-East Asia carrying *Bos indicus* cattle present a lower risk due to their shorter duration and because the cattle are well acclimatised to the environment to which they are being exported. Though the revised policy no longer requires an Observer on these voyages, the department still retains the option to deploy one where deemed necessary.

Of the 215 voyages completed by Observers, issues have been identified for 182 voyages and these have been referred on to the exporter or other relevant party. The departmental response to identified issues varies depending on severity of issue, whether it is a first or repeat offence, and the evidence collected by the Observer. The department may:

- provide feedback for information and action if required
- require review of export arrangements to ensure the specific issue is addressed
- require amendment of the Approved Arrangement or management plans
- apply additional conditions to the Approved Arrangement.

Observers monitor specific exporter related issues on subsequent voyages to assess the effectiveness of corrective actions or measures. Issues may also be referred within the division, such as to the Animal Welfare Branch for development of guidance material, further investigation or consideration in future ASEL reviews.

Implementation of the Observer program also assisted in addressing Recommendation 13. Checks conducted by Observers on-board vessels supplement the work already performed by RVOs, who undertake a sample inspection of livestock weights at registered premises before loading. In many circumstances livestock are weighed on route to the port of embarkation and the load plan is not finalised until the vessel is loaded. Observers may assess the load plan against the actual stocking density of the vessel, using weights provided in load plan, HSRA and weighbridge information at loading, when these documents are provided to the Observer. This enables improved verification of the live weights of the animals on board and whether appropriate pen space is provided, as well as further verification of the condition score, class of animal and coat length specified in the exporter's HSRA. When an issue with how livestock have been loaded on board is raised by an Observer, the department may request the final load plan and live weight information for further investigation.

Further, implementation of Recommendation 1 was achieved by requiring exporters to provide additional information on consignments via a Notice of Direction issued under the *Australian Meat and Live-stock Industry Act 1997*. Additionally, legislative amendments to strengthen available penalties for non-compliant exporters and to improve powers available to address non-compliance are underway.

A new legislative framework, comprising of the [Export Control Act 2020](#) and the Export Control Rules 2020, will commence on 28 March 2021. The Export Control (Animals) Rules 2020 will be legislative instruments made under the *Export Control Act 2020*. The rules will outline the operational requirements exporters must meet to export livestock from Australia and will replace the current orders and regulations under the Export Control and the Australian Meat and Live-stock Industry Acts. ASEL will be reviewed annually to incorporate minor updates and undergo a complete independent review every 3 years.

Recommendation 16: With the advent of Observers, a taskforce should be established to determine the roles and responsibilities of AAVs, Observers and accredited stockmen. This responsibility may fall to the ASEL Review Technical Advisory Committee.

As part of the revision of ASEL, language was improved to provide clarity of these roles and responsibilities. For example, where ASEL 2.3 stated:

‘4.8 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’.

ASEL 3.0, which applies from 1 November 2020, states:

‘5.1.6 To ensure that only fit and healthy livestock are loaded onto the vessel:

a) the exporter must arrange **for an accredited stockperson, an AAV and/or a competent stock handler** to inspect the livestock for health and welfare and fitness to travel, immediately before they are loaded onto the vessel...’

ASEL 3.0 also requires exporters to prepare a written communication plan for the voyage, in consultation with all responsible parties before the loading of livestock for export begins. The plan must address roles and responsibilities of the exporter or nominated representative(s), the accredited stockperson(s), the AAV (if required), the master of the vessel, nominated officers and crew members, and government and port authorities, amongst other things. The role of the Observer on-board the vessels is outlined in the department’s direction notice.

McCarthy Review recommendations not implemented by the department

Recommendations 15 and 17 were supported in part by the department and recommendation 23 was supported in principle.

Recommendation 15: Both the AAV and the Observer should be given information regarding the purchase lines of all sheep included in the consignment (that is, the denominator) to identify ‘line effects’ within the mortality pattern on board. This can be encoded if confidentiality is an issue. Line effects identified over the course of the voyage should be investigated once the voyage has been completed.

The department determined that this is a matter for industry to progress. There may be benefit in industry investigating line effects, and AAVs or stockpersons could potentially collect information for exporters to feed into industry research.

Recommendation 17: All livestock vessels traveling 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.

MO43 does not require vessels to be equipped with hoggers. However, if such equipment is on board, it must be listed on AMSA's record of vessel equipment and checked as part of their inspection or survey regime. Refrigerated containers, if used, need to be stowed and secured. AMSA has advised that most livestock vessels are not designed for the carriage of containers. Addressing this recommendation is complex as it is primarily to protect human health and the environment and requires further consultation with AMSA. Therefore, the department has not yet referred this matter to industry. It should also be noted that the [Protection of the Sea \(Prevention of Pollution from Ships\) Act 1983](#) and [Marine Order 95 \(Marine pollution prevention – garbage\) 2013](#) impose requirements on the disposal of dead livestock at sea. This includes the requirement that animal carcasses may only be discharged into the sea when the carcass has been slit or cut so that its thoracic and abdominal cavities are opened or passed through a comminutor, grinder, hogger, mincer or similar equipment. This is consistent with Australia's obligations under Annex V of MARPOL (The International Convention for the Prevention of Pollution from Ships).

Recommendation 23: 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.

The installation of permanent monitoring systems requiring structural changes to vessels is a major and longer term project. Permanent equipment installed in the livestock spaces will need to be fit for purpose and safe for the livestock. AMSA would need to include such equipment in MO43. Further work is also required to investigate the feasibility and practicality of currently available or new and upcoming technology to monitor and report on environmental conditions.

This was implemented through a direction to the relevant livestock export licence holders under section 17 of the *Australian Meat and Live-stock Industry Act 1997* directing exporters to ensure vessels were equipped with environmental monitoring equipment. EANs [2019-04](#) and [2019-08](#) provided advice to industry on the requirement for vessels to collect environmental monitoring data. Direction letters were provided to Observer and variations to exporters EAPs, to fully implement the requirement for exporters to equip vessels carrying sheep during May, September and October 2019 and travelling through waters in the Arabian Sea north of latitude 11° North, with environmental data recording devices (loggers). From May 2020, it was a requirement in the AEP. The loggers must be able to record WBTs at least every 20 minutes, auto-store all data points for the full duration of the voyage and have the ability to download data to an external device in an Excel-compatible format.

Set requirements for number and placement of the loggers on each deck have been developed. The data being delivered by the loggers, in conjunction with video footage taken of the sheep at various times during the voyage is enabling the department to accumulate a valuable resource library of industry-relevant information for ongoing regulation and research purposes. Analysis of this data has allowed the department to assess the effectiveness of providing sheep with increased pen space to manage high environmental WBTs. It has also added to the department's knowledge of how to better assess the WBT that sheep begin to exhibit signs of heat stress, and better understand heat stress tolerance in sheep of different breeds, wool or hair length and on particular vessels and decks. The analysis has also helped to refine how heat stress in sheep is recorded by Observers and AAVs, as it has demonstrated that the percentage of sheep open

mouth panting is a more reliable criteria to have reported than relying on the more subjective heat stress scores as the metric to record heat stress in sheep.

This requirement is now implemented through the Australian Meat and Live-stock Industry (Prohibition of Export of Sheep by Sea to Middle East – Northern Summer) Order 2020.

Marine Order 43

Implementation

Following the conclusion of the public consultation process for MO43, the draft Order was updated to incorporate minor changes and stakeholder feedback where required. An explanatory statement was also prepared in accordance with the [Legislation Act 2003](#).

An initial regulatory costing was prepared at the time the changes to MO43 were implemented, in accordance with the Australian Government Regulatory Burden Measurement Framework. This outlined the estimated regulatory compliance costs from all changes to the Order, based on input provided by stakeholders, including those for elements that were not subject to this post-implementation review. It showed an estimated net additional cost to businesses of \$754,951 per annum over 10 years. This regulatory costing was reviewed and approved by the OBPR on 26 April 2018 (OBPR ID 23774). The net additional cost was also reported on the OBPR's website.

The final draft Order, explanatory statement, regulatory costing, and background briefing were provided to the AMSA CEO for decision. The amended Order was signed by the AMSA CEO on 22 June 2018. The approved instrument was registered on the Federal Register of Legislation on 25 June 2018. The amended Order and the changes it included came into effect on 1 July 2018, as required by the government's decision.

The amended Order was published on the Marine Orders section of the AMSA website. Key stakeholders were notified of the changes via email and explanatory information about the changes was provided on the AMSA website.

Review

Since the changes came into effect, MO43 was consequentially amended by the Marine Orders Amendment (Marine Order 31 – consequential changes) Order 2019 for changes relating to the issuance of certification. These amendments came into effect on 1 November 2019. No further reviews or amendments to MO43 are planned at this time.

The experience of amending MO43 has provided some important considerations for AMSA. Firstly, initial estimates of the cost impacts to affected stakeholders from the changes proved to be understated. These estimates were based on early input from key stakeholders, many of whom had not received accurate quotes at that time for the works required for vessel compliance with the changed requirements. While the greater than anticipated cost impacts to affected businesses lends further support to their initial concerns about the industry impacts and requests for a longer compliance timeframe, they are unlikely to have outweighed community concerns or altered the government's decision in this case. Even so, the likelihood of variations in cost estimates should be considered in future decision-making.

Secondly, the decision of some affected operators to seek an exemption from compliance with the changed requirements was not an intended outcome of the changes. The exemption

approach was used because the government decision shortened the timeframe these businesses had to implement major changes on their vessels. They were unable to meet the timeframe in the government's decision, so seeking an exemption became a viable option for them. This actually helped to reduce the immediate compliance cost burden of the changes for these businesses and support improved animal welfare outcomes through the conditions imposed on these exemptions. The ability of affected stakeholders to utilise exemptions as an alternative to compliance is important when considering the potential industry compliance response and regulatory impacts as a result of proposed regulatory changes.

Ongoing review

MO43 is subject to legislative sunseting 10 years after it comes into effect, in accordance with the *Legislation Act 2003*. In that time, the Order may be subject to review and/or amendment as necessary to address issues as they arise. This ensures it remains efficient, effective and fit for purpose, in accordance with best practice regulation approaches and the government's deregulation framework. Where the instrument is reissued before the 10 year sunset date, the sunset date is reset.

All proposed reviews or amendments to marine orders, and other regulatory instruments administered by AMSA, are outlined each year in an Annual Regulatory Program published on the AMSA website. The program is prepared at the beginning of each financial year and contains details of planned and completed changes to AMSA's regulatory instruments.

Publishing a regulatory program makes it easier for business and the community to take part in the development of AMSA's regulatory instruments, such as marine orders and the National Standard for Commercial Vessels. While there may be some regulatory activities that are unable to be forecast, these activities will involve consultation with affected parties and will be recorded in future regulatory programs.

Appendix A: McCarthy Review recommendations

McCarthy Review recommendations 3 to 8 relating to the Heat Stress Risk Assessment model are not included as they were addressed in the [Live sheep exports to, or through, the Middle East – Northern Hemisphere summer: Regulation Impact Statement](#).

Recommendations	Department’s formal response at the time of the review	Regulation and policy implemented
<p>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.</p>	<p>Support. Additional information received from Independent Observers (including footage from these Observers), and improved Australian Government Accredited Veterinarian (AAV) reporting requirements will support verification and compliance activities. <i>Conditions</i> will be applied to require exporters to take account of the <i>additional reporting</i> information when preparing future voyages to ensure the health and welfare of animals during voyages. <i>Legislative amendments</i> proposed by the Government will strengthen available penalties for non-compliant exporters and improve powers available to address non-compliance.</p>	<p>Conditions were applied immediately to future voyages, directing exporters and their AAV to provide additional reporting among other things. The Export Control Act 2020, which commences in March 2021, will provide for additional compliance and enforcement mechanisms. Independent Observers Program established.</p>
<p>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.</p>	<p>Support. Allocating space on vessels allometrically and a review of the impact of the model by the Australian Standards for the Export of Livestock (ASEL) Review Technical Advisory Committee at the end of this year’s Northern Hemisphere summer. The department’s position on allocating further space through a revised industry heat stress risk assessment model will be determined once further public and expert consultation and analysis is undertaken, see Recommendations 4 and 12.</p>	<p>Implemented through the Australian Meat and Live-stock Industry (Export of Sheep by Sea to Middle East) Order 2018. Section 10 – Conditions relating to pen space for each sheep. Export Advisory Notice (EAN) 2018–06 sent to industry on 20 July 2018. The review of ASEL has been completed by a Technical Advisory Committee (TAC). The use of an allometric stocking density was reviewed by the ASEL Review Technical Advisory Committee and they determined that ASEL should adopt an allometric approach to calculating space allowance using a k value of 0.03 or ASEL 2.3 whichever is greater. For sheep voyages between 1 May to 31 October, the calculation uses k=0.033 until a new HRSA model based on animal welfare indicators is in place, then k=0.03 may be used.</p>
<p>Recommendation 9: Pen Air Turnover</p>	<p>Support. The Australian Maritime Safety Authority (AMSA) will</p>	<p>Implemented through the Australian Meat and Live-stock</p>

Recommendations	Department's formal response at the time of the review	Regulation and policy implemented
<p>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.</p>	<p>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.</p>	<p>Industry (Export of Sheep by Sea to Middle East) Order 2018 Section 9 – Conditions relating to pen air turnover. EAN 2018–06 sent to industry on 20 July 2018. The PAT audit program is being administered by LiveCorp.</p>
<p>Recommendation 10: Register of vessels A relevant government agency should maintain a register of vessels whose PAT information has been certified following auditing and verification.</p>	<p>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.</p>	<p>The department is currently creating a process with LiveCorp to receive the information. All information has been retained by LiveCorp and has been built into the HSRA model.</p>
<p>Recommendation 11: Verification of PAT information It would be a condition of an Approved Arrangement that all livestock vessels' PAT information has been independently verified where the vessel is destined for the Middle East during the Northern Hemisphere summer.</p>	<p>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.</p>	<p>Conditions were applied immediately to future voyages. Implemented through the Australian Meat and Live-stock Industry (Export of Sheep by Sea to Middle East) Order 2018 Section 9 – conditions relating to pen air turnover. EAN 2018–06 sent to industry on 20 July 2018. The PAT audit program is being administered by LiveCorp.</p>
<p>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).</p>	<p>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).</p>	<p>This has been implemented through the Australian Meat and Live-stock Industry (Export of Sheep by Sea to Middle East) Order 2018 Section 10 – conditions relating to pen space area for each sheep. EAN 2018–06 sent to industry on 20 July 2018. TAC revised curfew factor and weight gain and their recommendations have been incorporated into ASEL 3.0.</p>
<p>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</p>	<p>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</p>	<p>Independent Observer Program has been implemented under the Export Control Act 1982. Initially Observers were deployed on all vessels, particularly sheep voyages to the Middle East. In 2019 the Independent Observer policy was</p>

Recommendations	Department's formal response at the time of the review	Regulation and policy implemented
compliant heat stress risk assessment and ASEL. This may be conducted at any point in the supply chain.	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.	reviewed, and the deployment of Observers moved to a more risk based approach.
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.	Conditions were applied immediately to future voyages. Implemented through the Australian Meat and Live-stock Industry (Export of Sheep by Sea to Middle East) Order 2018. Paragraph 8(c) provides that the holder of a sheep export licence must, before the sheep are exported, ensure that at least 1 tonne of bedding for every 10,000 sheep will be provided on the vessel. Bedding may include, but is not limited to, materials such as straw, shavings or sawdust. EAN 2018-06 sent to industry on 20 July 2018.
Recommendation 15: Purchase lines Both the AAV and the Independent Observer (Observer) 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. AAVs 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.	This is a matter for industry and at this stage it has not been implemented.
Recommendation 16: Roles and responsibilities With the advent of Observers, a taskforce should be established to determine the roles and responsibilities of AAVs, Observers 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.	The Independent Observer Program has been implemented and subsequently moved to a risk based model. The department provided information via the Observer program, including clarifying the role of Observers as well as AAVs and stockpersons. The ASEL review is complete and clarifies the roles of AAVs and stockpersons.
Recommendation 17: Animal carcasses	Support in part. The department will pursue with industry those measures that address this outcome	This issue is complex and is still under consideration, the recommendation is primarily to

Recommendations	Department's formal response at the time of the review	Regulation and policy implemented
<p>All livestock vessels traveling 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.</p>	<p>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.</p>	<p>protect human health and requires consultation with AMSA and industry.</p> <p>Note: The Protection of the Sea (Prevention of Pollution from Ships) Act 1983 and Marine Order 95 (Marine pollution prevention – garbage) 2013 impose requirements on the disposal of dead livestock at sea. Those requirements implement Australia's obligations under Annex V of MARPOL (The International Convention for the Prevention of Pollution from Ships).</p>
<p>Recommendation 18: Reportable mortality level</p> <p>The reportable mortality level for sheep exported by sea to the Middle East should be reduced from 2% to 1%.</p>	<p>Support. This will be implemented immediately for all future voyages.</p>	<p>Conditions were applied immediately to future voyages. Implemented through the Australian Meat and Live-stock Industry (Standards) Amendment (Reportable Sheep Mortality Level) Order 2018, Schedule 1 – Amendments – the holder of the licence must, if exporting a consignment of sheep by sea, notify the Department if the shipboard mortality level of the sheep in the consignment reaches 1% or 3 sheep (whichever is the greater of these). EAN 2018–06 sent to industry on 20 July 2018.</p>
<p>Recommendation 19: Daily reporting</p> <p>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.</p>	<p>Support. This will be implemented immediately for all future voyages. The department will test with AAV's the need for further training.</p>	<p>Requirement was implemented through EAN 2018–11 sent to industry on 21 September 2018. Consideration is being given to amending exporters' Approved Arrangements to give ongoing effect to requirement (legislative amendment should not be required).</p>
<p>Recommendation 20: Automated watering systems</p> <p>All vessels carrying sheep to the Middle East during the Northern Hemisphere summer should have automated livestock watering systems.</p>	<p>Support. This will be implemented immediately for all future voyages.</p>	<p>Conditions were applied immediately to future voyages. Implemented through the Australian Meat and Live-stock Industry (Export of Sheep by Sea to Middle East) Order 2018.</p> <ul style="list-style-type: none"> • Paragraph 8(a) provides that the holder of a sheep export licence must, before the sheep are exported, ensure that the pens in which the sheep will be transported are equipped with automatic live-stock watering systems. • Subparagraphs 8(a)(i) and 8(a)(ii) provide, respectively, that the automatic live-stock watering systems must have water receptacles at a height

Recommendations	Department's formal response at the time of the review	Regulation and policy implemented
		<p>suitable for sheep and that details of those watering systems are set out in the record of equipment and arrangements attached to the Australian certificate for the carriage of livestock for the vessel issued by the AMSA under Marine Order 43 (Cargo and cargo handling – livestock) 2018.</p> <p>EAN 2018–06 sent to industry on 20 July 2018.</p>
<p>Recommendation 21: Heat Stress Management Plan</p> <p>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.</p>	<p>Support. This will be implemented immediately for all future voyages.</p>	<p>Implemented through the Australian Meat and Live-stock Industry (Export of Sheep by Sea to Middle East) Order 2018. Paragraph 8(b) provides that the holder of a sheep export licence must, before the sheep are exported, ensure that there is a heat stress management plan in place for the voyage.</p> <p>EAN 2018–06 sent to industry on 20 July 2018.</p>
<p>Recommendation 22: First port of unloading</p> <p>Where Kuwait is one of the vessel's destination ports, this should be the vessel's first port of unloading.</p>	<p>Support. This has already been implemented for voyages travelling to, or through, the Middle East.</p>	<p>Implemented through the Australian Meat and Live-stock Industry (Export of Sheep by Sea to Middle East) Order 2018. Subsection 11(2) provides that the holder of the sheep export licence must ensure that if Kuwait is one of the destination places of the vessel (whether this was known before or after the vessel left Australia) – Kuwait is the first port of unloading for the vessel.</p> <p>EAN 2018–06 sent to industry on 20 July 2018.</p>
<p>Recommendation 23: Monitoring equipment</p> <p>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.</p>	<p>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.</p>	<p>EAN 2019–04 sent to industry on 11 April 2019 and EAN 2019-08 sent to industry on 13 August 2019. This requirement is now implemented through the Australian Meat and Live-stock Industry (Prohibition of Export of Sheep by Sea to Middle East – Northern Summer) Order 2020.</p>

References

- ABARES 2020, Agricultural commodities: March quarter 2020, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra, March.
- 2019, Agricultural commodities: March quarter 2019, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra, December.
- 2018, Agricultural commodities: December quarter 2018, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra, December.
- ABS 2019, Agricultural Commodities, Australian Bureau of Statistics, Australia, 2017–18, cat. no. 7121.0, accessed May 2019.
- Bennett, R, Kehlbacher, A & Balcombe, K 2012, A method for the economic valuation of animal welfare benefits using a single welfare score. *Animal Welfare*, vol. 2 no. 1, pp. 125–130, doi:[10.7120/096272812X13345905674006](https://doi.org/10.7120/096272812X13345905674006).
- Caulfield, MP, Cambridge, H, Foster, SF & McGreevy, PD 2014, Heat stress: A major contributor to poor animal welfare associated with long-haul live export voyages, *The Veterinary Journal*, vol. 199, no. 2, pp 223–228, doi: [10.1016/j.tvjl.2013.09.018](https://doi.org/10.1016/j.tvjl.2013.09.018).
- Clarke, M, Morison, J & Yates, W 2007, *The live export industry – assessing the value of the livestock export industry to regional Australia*, AgEconPlus and Warwick Yates and Associates for Meat & Livestock Australia, Sydney
- Dalglish, M, Agar & O, Herrmann, R 2020, *Impact of the live sheep export trade's self-imposed moratorium and regulatory changes*, Mecardo report to LiveCorp and Meat & Livestock Australia, Ballarat.
- Davey, A & Fisher, R 2020, *Live sheep export trade: Review of the draft regulation impact statement*, Pegasus report to Animals Australia, Animals Australia, Melbourne.
- Futureye 2018, *Australia's Shifting Mindset on Farm Animal Welfare*, Futureye, Melbourne
- LiveCorp, MLA 2019 Research and Development and Extension 2019 Sheep Update, pp 19, accessed 29 July 2020.
- Mecardo 2018, *Live sheep export – brief report*, Mecardo report commissioned by WA Farmers Federation with support of Sheep Producers Australia, 20th April 2018.
- McCarthy, M 2018 *Independent review of conditions for the export of sheep to the Middle East during the northern summer*, Dr Michael McCarthy's report to the Department of Agriculture, Canberra.
- McInerney, J 2016, In what sense does animal welfare have an economic value? *Veterinary Ireland Journal* vol. 6, no. 4, pp 218–220.

Moss, P 2018 *Review of the Regulatory Capability and Culture of the Department of Agriculture and Water Resources in the Regulation of Live Animal Exports*, Mr Phillip Moss' report to the Department of Agriculture, Canberra.

National Skill Commission, 2020, *Job Outlook - Shearers*, accessed 29 July 2020 at: <https://joboutlook.gov.au/Occupation?search=&code=3612>

OIE 2019, Introduction to the recommendations for animal welfare, *Terrestrial Animal Health Code*, Chapter 7.1.

Sinclair, M, Derkley, T, Fryer, C, Phillips, C 2018, Australian public opinions regarding the live export trade before and after an animal welfare media expose, *Animals*, vol. 8, no. 7, doi: [10.3390/ani8070106](https://doi.org/10.3390/ani8070106).

UN Comtrade 2019 UN Comtrade database, United Nations, New York, accessed 17 December 2019.

Vanhonacker, F & Verbeke, W 2014, Public and Consumer Policies for Higher Welfare Food Products: Challenges and Opportunities, *Journal of Agricultural and Environmental Ethics*, vol. 27, no. 1, pp 153–171, doi: [10.1007/s10806-013-9479-2](https://doi.org/10.1007/s10806-013-9479-2).