Draft report

Review of the Australian Standards for the Export of Livestock: Air Transport

Technical Advisory Committee

June 2019
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Acknowledgements

The committee thanks the individuals and organisations that provided submissions and members of the reference group for their input.
Foreword

Thank you for your interest in the review of the Australian Standards for the Export of Livestock (ASEL): Air Transport.

This draft report outlines a number of proposals for improving the standards. As required by the Technical Advisory Committee’s terms of reference, the recommendations are focussed on the export of livestock by air.

In forming its views, the committee has drawn extensively on submissions provided during consultation on the Issues Paper that was released in April 2019. It has also used an independent literature review that was commissioned as part of the review.

The submissions and the literature review revealed a body of science. However, for some parts of the standards there were no contemporary or directly relevant studies available. In those cases, the committee has formed its views based on the available information, historical data and its own assessments.

The committee is now keen to test its recommendations with stakeholders. It is particularly interested in advice on factual misunderstandings or new information that may influence the committee’s views. The committee is also interested to hear about implementation concerns and costs. Comments are due by close of business 18 July 2019.

We look forward to hearing your views.

Steve McCutcheon
Chair
Technical Advisory Committee
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1 Introduction

1.1 Australian Standards for the Export of Livestock

The first Australian Livestock Export Standards were developed in 1996–97 by industry. These were in place from 1998 until 2004, when the first version of the Australian Standards for the Export of Livestock (ASEL) were released, following a recommendation made by Dr John Keniry in his 2003 review of the live export trade. Since that time, the ASEL has set the animal welfare standards for the export of livestock from Australia by sea and by air.

The ASEL is given effect under the Australian Meat and Livestock Industry (Standards) Order 2005, and is referenced in instruments including the Export Control (Animals) Order 2004. Exporters must comply with the ASEL to be permitted to export livestock by the Department of Agriculture (the department).

Four versions of the ASEL have followed since 2004, with the current version, ASEL v2.3, in place since 2011. It covers the major steps along the livestock export supply chain, including:

- sourcing and on-farm preparation of livestock
- land transport of livestock for export
- management of livestock at registered premises
- vessel preparation and loading
- on-board management of livestock
- air transport of livestock.

The standard applies to exports of cattle, sheep, goats, buffalo, deer and camelids.

1.2 Review of the ASEL

The last significant review of the ASEL was undertaken in 2012–13, following the Independent Review of Australia’s Live Export Trade conducted by Mr Bill Farmer AO (the Farmer Review). The review was undertaken by a steering committee made up of representatives from state and territory governments and animal welfare, veterinary, livestock producer and industry representative organisations. The steering committee provided its final report in May 2013, recommending improvements to both the content and format of the standards and providing an incomplete draft version of the standards. There were 13 unresolved issues and the draft standards were not implemented.

In 2017, the government announced the current review process to ensure the standards remained fit for purpose and continue to be supported by the latest scientific research. A Technical Advisory Committee (the committee) was appointed to undertake the review process. The committee’s handbook (describing its role and operation) is available on the department’s website, but in summary, the committee is to:
• make recommendations to the department aimed at ensuring all livestock that enter the supply chain are fit for export and maintain their health and welfare status throughout the export journey
• carry out the review to facilitate the continuous improvement of the standards, considering new animal welfare research and innovations in industry practices in a timely manner
• facilitate contemporary outcomes–based regulation which will allow flexibility in achieving the required animal health and welfare outcomes, encourage innovation in industry practices and adoption of relevant technological improvements
• ensure the recommendations align with the guiding principles of the committee.

To achieve these objectives, the committee is to:

• conduct public submissions processes to ensure all interested stakeholders have the opportunity to provide input to the standards
• ensure all technical issues, new research and scientific knowledge submitted by stakeholders relating to ASEL are properly considered and independent expert advice sought as necessary
• examine a range of viable, genuine, policy options
• clearly analyse the benefits and costs of the proposed options for affected stakeholders in a balanced and objective manner, with particular regard to the practicalities of livestock management and implications for animal welfare in Australia.

1.3 Conduct of the review
The current review process commenced in 2017 (Table 1). On 6 February 2018, the committee released the Stage 1 issues paper and a proposed reformatted version of the standards for consultation. The committee received 19 submissions, and based on those views, identified a set of key issues that needed to be resolved in later parts of the review. The committee's Stage 1 report is available on the department's website at agriculture.gov.au/animal/welfare/export-trade/review-asel.

In May 2018, the then Minister for Agriculture and Water Resources, the Hon. David Littleproud MP, announced that the timeline for the ASEL review would be accelerated, to conclude at the end of 2018. This was in part, due to the outcomes of the McCarthy Review into sheep exported to the Middle East. In response to this, the scope of the review in 2018 was adjusted to exclude matters relating to exports by air. The committee finalised its review of the standards relating to livestock exported by sea in December 2018.

The committee’s final report on livestock exported by sea was released on 19 March 2019. The committee made 49 recommendations that addressed different parts of the standards; from sourcing and preparation, through to the management of livestock on-board vessels. The department accepted all the recommendations in full or in principle. The committee’s recommendations will be implemented in two stages, with recommendations relating to on-board space allowances implemented as a priority, and the remaining recommendations to be implemented by early 2020.
The review of the ASEL for livestock exported by air formally commenced in April 2019, with the release of an Issues Paper on the review of the ASEL: Air Transport (Issues Paper) seeking comment on the key areas of contention for livestock prepared for and exported by air. The consultation period closed in May 2019.

Table 1 ASEL review process to date

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 2017</td>
<td>Commitment to undertake review, call for committee members.</td>
</tr>
<tr>
<td>February 2018</td>
<td>Stage 1 Issues Paper released, including draft reformatted standard.</td>
</tr>
<tr>
<td>March 2018</td>
<td>Submissions closed—19 submissions received.</td>
</tr>
<tr>
<td>17 May 2018</td>
<td>McCarthy Review report released.</td>
</tr>
<tr>
<td>24 May 2018</td>
<td>The then Minister for Agriculture and Water Resources, the Hon. David Littleproud MP, announced that the timeline for ASEL review would be accelerated.</td>
</tr>
<tr>
<td>23 August 2018</td>
<td>Issues Paper: Sea Transport released for consultation.</td>
</tr>
<tr>
<td>19 September 2018</td>
<td>Submissions closed—41 submissions received.</td>
</tr>
<tr>
<td>27 November 2018</td>
<td>Submissions closed—276 submissions received.</td>
</tr>
<tr>
<td>14 December 2018</td>
<td>Final report: sea transport handed to the department.</td>
</tr>
<tr>
<td>16 May 2019</td>
<td>Submissions closed—12 submissions received.</td>
</tr>
</tbody>
</table>

### 1.4 Out of scope

As noted in Section 1.3, the current stage of the review is focussed on the export of livestock by air. Matters relating to export by sea were considered in 2018. The committee’s terms of reference also exclude the following matters:

- expanding the scope of the standards within the supply chain
- assessing other livestock export licencing and regulatory arrangements such as approved arrangements and the Exporter Supply Chain Assurance System (ESCAS)
- examining legislation enabling livestock exports, with the view to amending it
- reviewing the Australian Position Statement on the Export of Livestock which is located at the front of the ASEL v2.3
- assessing the implementation and compliance by individual exporters
- commenting on the suitability of domestic animal welfare standards for livestock
- seeking endorsement of recommendations after providing them to the department, or drafting final orders
- considering the framework by which Australian Government Accredited Veterinarians (AAVs) or accredited stockpersons are engaged.
1.5 Issues Paper submissions

The committee’s Issues Paper sought feedback on the issues identified by stakeholders in Stage 1 of the ASEL review in 2018, comments received during further consultation in 2019, any relevant information and options as discussed in the 2012–13 ASEL review process as well as relevant recommendations and discussions from the ASEL: Sea Transport final report. Submissions were sought over a five week period from 11 April to 16 May 2019.

The submission process was advertised on the department’s website. A number of alerts and reminders were issued via social media platforms such as Twitter. The committee also made contact with members of the Stakeholder Reference Group, state and territory governments (via the Animal Welfare Task Group under the Agricultural Senior Officials’ Committee), the Live Export Animal Welfare Advisory Group and with industry participants including exporters, registered premises owners and AAVs.

The committee received 12 submissions. Submissions were received from businesses involved in the livestock export industry, animal welfare organisations, state government departments, representative bodies, peak industry bodies and service providers in agriculture. Some submissions focussed on particular issues, but most addressed the full range of issues raised in the committee’s Issues Paper.

Where agreed by the individuals concerned, submissions have been made available on the department’s website at: agriculture.gov.au/animal/welfare/export-trade/review-asel.

1.6 This report

The committee has adopted the principle that national minimum standards should ensure consistent welfare outcomes and provide industry participants with clear criteria for meeting their duty of care to the animals they manage along the export supply chain. The standards must, to the maximum extent possible, be evidence-based and, where available, supported by contemporary science relevant to Australian systems and the conditions faced during the journey from Australia. They also need to be enforceable. As required by the terms of reference, the committee has sought to balance implications for livestock welfare with the practicalities of livestock management, compliance costs and industry sustainability.

This draft report addresses the issues raised in the Issues Paper. For each issue, the draft report notes the approach taken in the ASEL v2.3, summarises the debate in submissions, outcomes of the independent literature review and outlines the committee’s deliberations. A draft recommendation is provided where the committee considered improvements could be made.

The committee is undertaking work on the cost implications of the changes proposed throughout the report and welcomes data from industry.

1.7 Standards

During the ASEL: Sea Transport review, the committee proposed a reformatted version of the standards. It incorporated the committee’s final recommendations and other administrative changes. The department elected to delay the implementation of a reformatted ASEL until after the air transport review has been completed. In the interim, the department is undertaking
further consultation with ASEL users to determine what format and features are most beneficial to everyday users of the ASEL. This consultation will help to inform the final decision on a reformatted ASEL.

1.8 This consultation and next steps
The committee is now keen to test its draft recommendations with stakeholders and welcomes submissions from stakeholders.

It is particularly interested to receive advice on factual misunderstandings in the report or new information that may influence final views. The committee is also keen to hear about implementation concerns and cost issues.

Submissions are due by close of business, Thursday 18 July 2019. For information on the submission process, visit the departments Have your Say website.

The committee will consider submissions in finalising its report, which is due to be provided to the department by September.

1.9 Background on the livestock air transport industry
Air transport is an important method of export for Australian livestock. It is regarded as offering higher animal welfare outcomes and is a much faster method of travel than sea transport.

Air transport accounts for a small percentage of the number of livestock exported from Australia, when compared with sea transport, as seen in Table 2. During the three years 2016–18, 2.8 per cent of sheep, 0.86 per cent of cattle and 0.04 per cent of buffalo were exported by air. During this time, all goats, camels, deer and alpacas exported from Australia travelled by air.

Despite the comparatively low numbers of livestock exported by air, it retains a valuable place in the export industry as a method for exporting high value livestock, particularly breeding livestock, and smaller consignments. In 2016–18, 2.43 per cent of slaughter and feeder sheep were exported by air highlighting that for some markets, air transport is a viable and competitive option.
Table 2 livestock exported by air and sea in 2016–2018

<table>
<thead>
<tr>
<th>Year</th>
<th>Category</th>
<th>Cattle by sea</th>
<th>Cattle by air</th>
<th>Sheep by sea</th>
<th>Sheep by air</th>
<th>Buffalo by sea</th>
<th>Buffalo by air</th>
<th>Goats by air</th>
<th>Alpacas by air</th>
<th>Deer by air</th>
<th>Camels by air</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>Slaughter and feeder</td>
<td>1,004,595</td>
<td>655</td>
<td>1,774,958</td>
<td>50,875</td>
<td>5,792</td>
<td>0</td>
<td>48,349</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Breeder</td>
<td>131,757</td>
<td>5,452</td>
<td>363</td>
<td>11,831</td>
<td>0</td>
<td>0</td>
<td>5,852</td>
<td>243</td>
<td>80</td>
<td>61</td>
</tr>
<tr>
<td></td>
<td>Subtotal exported</td>
<td>1,136,352</td>
<td>6,107</td>
<td>1,775,321</td>
<td>62,706</td>
<td>5,792</td>
<td>0</td>
<td>54,201</td>
<td>243</td>
<td>80</td>
<td>61</td>
</tr>
<tr>
<td></td>
<td>Mortalities</td>
<td>1,546</td>
<td>0</td>
<td>14,240</td>
<td>23</td>
<td>0</td>
<td>22</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2017</td>
<td>Slaughter and feeder</td>
<td>97,365</td>
<td>36</td>
<td>1,845,272</td>
<td>38,275</td>
<td>9,585</td>
<td>0</td>
<td>7,072</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Breeder</td>
<td>760,430</td>
<td>9,225</td>
<td>0</td>
<td>3,869</td>
<td>125</td>
<td>0</td>
<td>5,173</td>
<td>1,801</td>
<td>0</td>
<td>67</td>
</tr>
<tr>
<td></td>
<td>Subtotal exported</td>
<td>857,795</td>
<td>9,261</td>
<td>1,845,272</td>
<td>42,144</td>
<td>9,710</td>
<td>0</td>
<td>12,245</td>
<td>1,801</td>
<td>0</td>
<td>67</td>
</tr>
<tr>
<td></td>
<td>Mortalities</td>
<td>888</td>
<td>0</td>
<td>13,517</td>
<td>23</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2018</td>
<td>Slaughter and feeder</td>
<td>996,913</td>
<td>221</td>
<td>1,127,431</td>
<td>29,315</td>
<td>8,872</td>
<td>0</td>
<td>12,398</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Breeder</td>
<td>115,864</td>
<td>11,425</td>
<td>16,077</td>
<td>3,966</td>
<td>0</td>
<td>10</td>
<td>9,508</td>
<td>870</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Subtotal exported</td>
<td>1,112,777</td>
<td>11,646</td>
<td>1,143,508</td>
<td>33,281</td>
<td>8,872</td>
<td>10</td>
<td>20,725</td>
<td>870</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Mortalities</td>
<td>1,326</td>
<td>0</td>
<td>5,202</td>
<td>4</td>
<td>30</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2016–18</td>
<td>Total exported</td>
<td>3,106,924</td>
<td>27,014</td>
<td>4,764,101</td>
<td>138,131</td>
<td>24,384</td>
<td>10</td>
<td>88,352</td>
<td>2,914</td>
<td>80</td>
<td>132</td>
</tr>
<tr>
<td></td>
<td>Total mortalities</td>
<td>3,760</td>
<td>0</td>
<td>32,959</td>
<td>93</td>
<td>0</td>
<td>26</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
There are a number of Australian and international regulations and standards that apply to the export of livestock by air transport including the ASEL, the International Air Transport Association Live Animal Regulations (IATA Regulations), the World Organisation for Animal Health Terrestrial Animal Health Code (OIE Code), and the Australian Animal Welfare Standards and Guidelines for the Land Transport of Livestock (Land Transport Standards).

The IATA Regulations are the worldwide standards for the transport of live animals by air on commercial airlines. There are currently 290 airlines from 120 countries that are members of IATA and have adopted its standards, including Qantas and Virgin Australia.

The standards are designed to ensure the safety and welfare of animals transported while also ensuring consistency with commercial aircraft regulation and human safety. The IATA Regulations are reviewed twice a year and the updated standards are published once a year. The IATA Regulations include container specifications, stocking rates, labelling for different species and classes of animals, animal and container handling requirements as well as required documentation for air transport of live animals.

The OIE Code is the international standard setting code for animal health and welfare. The standards have been adopted by its 182 member countries, including Australia. The code is an extensive document covering animal diseases from diagnosis and notification to prevention and control, risk analysis, trade measures, import and export procedures, veterinary services, and animal welfare.

Chapter 7.4 of the OIE Code specifies the standards for transport of animals by air. The OIE Code outlines requirements on a species by species basis including appropriate container design and ventilation, species specific requirements, space allowances, preparation of animals for air transport, tranquilization and euthanasia of animals, emergency planning, food and waste handling and disposal, and disinfection and disinestation procedures and requirements.

The Land Transport Standards were developed by the Australian Federal Government in consultation with the State and Territory Governments, the livestock industry, animal welfare organisations and the general public to provide high welfare standards for the land transport of livestock. The Land Transport Standards play a very large and important role in air exports as the land transport component, from the registered or approved premises to the airport, can be a large portion of the total journey time experienced on an air export journey.

The Land Transport Standards apply to all parties involved in the land transport of livestock within Australia and define the requirements for livestock handling, transport vehicles and facilities, pre-transport selection of livestock, space allowances, loading and unloading of livestock, feed, water and rest requirements, contingency planning, and humane destruction (euthanasia).

In reviewing the ASEL, the requirements set out by the IATA Regulations, OIE Code and Land Transport Standards have been considered by the committee. The committee noted that the Land Transport Standards align closely with the Air Standards, particularly with regard to space allowances.
2 Sourcing and preparation of livestock

The way in which livestock are sourced and prepared for export has a significant impact on health and welfare outcomes during the air export journey. Several sourcing and preparation issues were identified by the committee for consideration. These are discussed further in this chapter.

2.1 Liveweight and body condition score for livestock exported by air

2.1.1 Current requirements

While there are minimum weight requirements for exports of the common livestock breeds, currently there are no provisions for special breeds within the standards, such as miniature breeds, that may not meet the minimum weight requirement but are otherwise fit for export.

The rejection criteria for air export requires that any livestock showing systemic conditions such as emaciated or over-fat must not be prepared for export. However, these terms are not defined.

<table>
<thead>
<tr>
<th>Species</th>
<th>Minimum weight for sourcing livestock</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle</td>
<td>150 kg</td>
</tr>
<tr>
<td>Buffalo</td>
<td>n/a</td>
</tr>
<tr>
<td>Goats</td>
<td>More than 14 kg</td>
</tr>
<tr>
<td>Sheep</td>
<td>More than 20 kg</td>
</tr>
<tr>
<td>Alpacas</td>
<td>More than 12 kg and are 3 months old</td>
</tr>
<tr>
<td>Camels</td>
<td>n/a</td>
</tr>
</tbody>
</table>

2.1.2 Discussion in submissions and literature review

Liveweight and body condition scores were discussed in a number of submissions. While some submissions supported increasing the minimum liveweight for sheep and goats, the current requirements were generally accepted. One submitter suggested that the minimum liveweight for boar goats should be increased to 20 kg, as an 18 kg boar goat is a young goat. Another submission raised issue with the minimum liveweight and age for alpacas. It was suggested the minimum liveweight should be raised to 20 kg or three months of age, citing that alpacas of three months that are less than 20 kg are suffering ill thrift. Most agreed that any risks to younger or light weight animals could be handled through a management plan.

It was raised in submissions that the Land Transport Standards, IATA Regulations and OIE Code do not impose prohibitions on the transport of cattle, sheep and goats by air based on weight or age. While light animals may require a higher standard of care, some submitters were of the view that blanket prohibitions on transporting animals with certain characteristics should only
be imposed when it is concluded that available risk mitigation procedures will not prevent poor welfare outcomes.

There was suggestion by some stakeholders that the minimum liveweight for cattle be increased by 20 kg. However, there was a general call in submissions for more research to be conducted before commenting on weight restrictions for other species. Many submitters supported a management plan for miniature breeds.

Most submissions supported the adoption of the body score condition tables recommended in the ASEL: Sea Transport final report and commented that these tables should be consistent throughout the ASEL.

The literature review noted anecdotal evidence that the minimum weight of livestock is not the critical factor, but that stock must be crated appropriately, with similar sized animals kept together and animals of different weights separated.

2.1.3 Committee views

Evidence was not presented to the committee to indicate that a change in the minimum liveweight of sheep by air from more than 20 kg to 24 kg, and goats from more than 14 kg to 18 kg, was needed. However, general views were expressed that younger animals are more vulnerable to increased stress during air transport. The committee noted that both sheep and goats within this range (from 20 kg to 24 kg and 14 kg to 18 kg) would be particularly small or young.

The committee also noted concerns raised in one submission about the minimum age and weight of alpacas sourced for export by air. The submission indicated alpacas should be at least 20 kg by the time they are three months of age, and those that were not could be considered ill-thrift or failing to thrive.

The committee would welcome and consider any further data or information from industry and other stakeholders on the minimum liveweights of goats, sheep and alpacas.

The committee recognised the importance that young and smaller animals be given a high standard of care during transport, including only being transported with animals of the same species and of a similar weight (see Recommendation 17). The committee was of the view that risks for younger livestock could be addressed through the use of a management plan.

The minimum weight requirements specified in Section 2.1.1 would cover the issue of young animals, except for deer which are not included in the current minimum weight requirement. The committee is of the view that deer under 6 months of age should only be exported by air with a management plan.

The committee also considered the minimum weight allowances for other species, including boutique consignments that may not conform to standard characteristics such as miniature breeds. The committee concluded that the current minimum weight requirements for sourcing livestock for air transport are adequate. However, the characteristics of miniature breeds, and other livestock that do not meet the standard requirements, means they may be unreasonably excluded from export due to not meeting the minimum weight ranges in the standards.
Therefore, the committee agreed that a management plan should be required to manage the sourcing, preparation and transport of these animals should an exporter intend to export them.

The committee noted the absence of body condition score tables in the ASEL standard 6 for air transport and industry concerns that were raised during the ASEL: Sea Transport review regarding body condition score tables. The committee saw the benefit of consistency in applying the body condition score tables recommended in the ASEL: Sea Transport final report. They are based on scoring tables recommended by livestock industry bodies and widely in use. The committee agreed that the body condition score tables, included in Appendix A of this report, should be adopted for air transport. The committee received an amended sheep body condition score table from industry which has been included in the draft recommendations.

### Draft recommendations

1) That the standards require a management plan for the sourcing and export of deer under 6 months of age.

2) That the standards require a management plan for the sourcing and export of miniature breeds and other livestock that do not meet the minimum liveweight requirements.

3) That the body condition score tables for beef and dairy cattle, buffalo, sheep, goats, camels and alpacas included in Appendix A be adopted for air transport.

### 2.2 Sourcing of deer and camelids

#### 2.2.1 Current requirements

To ensure positive animal welfare outcomes for livestock and handlers, there are a number of restrictions on male deer being sourced for export. These restrictions are based on the state of their velvet or antlers, including the stage of growth, status of velveting wounds and breeding season period. Similar restrictions also apply generally to deer within the rejection criteria for export, with the additional condition of deer exhibiting scabby mouth.

Restrictions are also placed on camels in relation to the rejection criteria for export specifying the need for animals to have been conditioned for handling and can be appropriately housed within the chosen transport container or pen.
Table 4 Summary of sourcing requirements in ASEL v2.3

<table>
<thead>
<tr>
<th>Species</th>
<th>Summary of requirement</th>
</tr>
</thead>
</table>
| Deer    | Male deer must not be sourced for export if they:  
|         | • Are in velvet or hard antler  
|         | • Are in the first week after velveting  
|         | • Have unhealed velveting wounds  
|         | • Are inside the roar and rut period.  
|         | Under the rejection criteria, deer must not be exported if they have:  
|         | • Hard antlers longer than 5 cm  
|         | • Bleeding horn/antler stumps  
|         | • Broken antlers  
|         | • Velvet exceeding 10 cm in length |
| Camels  | Camels, including wild-caught camels, must only be sought for export if they:  
|         | • Have become conditioned to being handled and to eating and drinking from troughs for a minimum of 14 days  
|         | • Meet transport and shipping height requirements of the intended transport |

2.2.2 Discussion in submissions and literature review

While there was general agreement on the risks associated with exporting deer and camelids, there were differing views on the appropriate point at which to impose requirements to appropriately manage risk. A number of submissions suggested that specific requirements for deer and camelids should be removed from the ASEL, consistent with recommendations from the ASEL: Sea Transport final report. It was also suggested during consultation, for both the air review and sea review, that the export of deer and camelids should be done through management plans. However, industry participants directly involved in the export of camelids and deer by air indicated the current requirements are appropriate.

One submitter suggested that wild-caught deer and camelids should not be exported due to the increased stress and risk to health and welfare.

In regard to deer antlers, one submitter suggested that a qualified veterinarian be consulted while another suggested amendments to the current standards that are acceptable to the deer industry be adopted.

The literature review found no relevant studies or projects on the sourcing of deer and camelids for air transport.

2.2.3 Committee views

In the ASEL: Sea Transport review process, the committee noted that provisions for deer and camelids transported by sea were outdated and not necessarily in keeping with current industry knowledge and practice. The committee observed that deer and camelids were rarely exported by sea. Accordingly, in the ASEL: Sea Transport final report the committee recommended that the specific provisions in ASEL be deleted and detailed management plans should be required instead.
Although the export of deer and camelids by air is not a frequent occurrence, it is the primary method of export for these species in recent years (as shown in Table 2). Therefore, the committee was inclined to maintain the specific requirements in ASEL for the sourcing of deer and camelids for export by air.

In the case of camelids, the committee could see no reason to revise the current requirements for sourcing, including the current criteria for rejection of camelids from consignments at any point in the export selection and preparation process.

The committee received a submission from industry concerning inadequacies of some of the current requirements for sourcing and rejection for deer. Issues were raised with respect to deer with antlers, deer in velvet, and the importance of avoiding the roar and rut periods for male deer over 12 months old. The committee reached the position that the sourcing and rejection criteria for deer would be improved by tightening the standards that prevent the sourcing of male deer for export by air with respect to hard antlers, velvet and velveting wounds, and avoiding the roar and rut periods for male deer older than 12 months of age.

**Draft recommendations**

4) That the standards (S6.15) be amended to prevent male deer being sourced for export by air unless they have hard antlers removed leaving only buttons, they are not in the first two weeks after velveting and they are outside the roar and rut periods if they are over one year of age.

5) That the rejection criteria in the standards be amended to prevent deer being exported that have broken velvet.

### 2.3 Pregnancy testing requirements

#### 2.3.1 Current requirements

In order to adequately manage the risks associated with pregnant animals on air export journeys, the pregnancy testing requirements and maximum days gestation for different classes of livestock have been defined. The maximum days gestation have been based on the gestation periods defined by the IATA Regulations and the OIE Code. Currently, ASEL outlines the requirements for suitability as a pregnancy tester based on the species and class of animal.

At the lower end of the requirement scale, the person must be able to demonstrate a suitable level of experience and skill, while at the upper end of the scale the person must be a veterinarian who is a member of the Australian Cattle Veterinarians and an accredited tester under the National Cattle Pregnancy Diagnosis Scheme, now known as PREgCHECK®.
Table 5 Summary of pregnancy testing requirements in ASEL v2.3

<table>
<thead>
<tr>
<th>Class</th>
<th>Summary of requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breeder livestock</td>
<td>Female livestock must only be sourced for export for breeding if they have been pregnancy tested (cattle using manual palpation, other species by ultrasound foetal measurement) within 30 days of export and certified, by written declaration, by a person able to demonstrate a suitable level of experience and skill, to be not more than the following maximum number of days pregnant at the scheduled date of departure:</td>
</tr>
<tr>
<td>Species</td>
<td>Maximum days of gestation at scheduled date of departure</td>
</tr>
<tr>
<td>Cattle and buffalo (for breeding)</td>
<td>250</td>
</tr>
<tr>
<td>Deer (axis, fallow, sika)</td>
<td>170</td>
</tr>
<tr>
<td>Deer (rusa, red, reindeer)</td>
<td>185</td>
</tr>
<tr>
<td>Sheep (for breeding)</td>
<td>115</td>
</tr>
<tr>
<td>Goats (for breeding)</td>
<td>115</td>
</tr>
<tr>
<td>Camelids</td>
<td>250</td>
</tr>
</tbody>
</table>
| Slaughter cattle and buffalo | Livestock that are declared to be pregnant or that have given birth in the last 48 hours must not be tendered for transport unless accompanied by a veterinary certificate certifying that the animal is fit to travel and there is no evidence of imminent parturition.  
  
  Breeder cattle and buffalo  
  For cattle and buffalo a declaration must be made in writing by a veterinarian who is a member of the Australian Cattle Veterinarians and an accredited tester under the National Cattle Pregnancy Diagnosis Scheme and who pregnancy tested the cattle or buffalo.  
  If the veterinarian:  
  is accredited under the National Cattle Pregnancy Diagnosis Scheme; and  
  determines that cattle or buffalo are too small to be manually palpated safely;  
  the veterinarian may base this certification for cattle or buffalo on assessment of the animals by a method other than manual palpation.  
  Slaughter sheep and goats  
  Ewes with a weight of 40 kg or more and all does (goats) must only be sourced for export as slaughter and feeder animals if they have been pregnancy tested by ultrasound within 30 days of export and certified not to be pregnant, by written declaration, by a person able to demonstrate a suitable level of experience and skill.  
  Slaughter Damara sheep  
  All female Damara breed sheep sourced as feeder or slaughter must be pregnancy tested within 30 days before export by ultrasound and certified not to be pregnant. The certification must be in writing, and given by a person able to demonstrate a suitable level of experience and skill.  
  Breeder alpacas and llamas  
  For alpacas and llamas a declaration must be made in writing by a registered veterinarian with demonstrable current experience in camelid pregnancy diagnosis and who pregnancy tested the alpacas and llamas.                                                                                                                                                                                                                                                                 |

2.3.2 Discussion in submissions and literature review

Pregnancy testing requirements were discussed in a number of submissions. There was general agreement in submissions that the current requirements relating to maximum days gestation were appropriate for all species, and it was noted they are consistent with the OIE Code. However, one submission suggested that cattle and buffalo should not be transported in their third trimester and another recommended that pregnant goats should not be exported, both due to a risk of negative health and welfare outcomes.

Many submissions agreed that there should be consistency between the air and sea standards for pregnancy testing requirements and supported the adoption of the pregnancy testing
requirements recommended in the ASEL: Sea Transport final report. However, there were some submissions that advocated for alternative options such as requiring pregnancy testing only be done by a registered veterinarian and the use of transabdominal ultrasound for sheep and goats. The literature review found no relevant studies or projects on pregnancy testing or gestation of livestock exported by air.

### 2.3.3 Committee views

The committee considered pregnancy testing requirements and gestation thoroughly in the ASEL: Sea Transport final report. The committee’s view was that pregnancy testing requirements for livestock exported by air should remain consistent where possible with livestock export by sea.

The committee agreed that the definitions of a competent pregnancy tester and a valid pregnancy test as outlined in the Issues Paper should be adopted. It was the committee’s considered view that flexibility in regards to the pregnancy testing window prior to export, should also be applied to air. The committee agreed that the department should be able to extend the validity of pregnancy tests beyond 30 days where necessitated by circumstances outside the control of the exporter and where the exporter can demonstrate that the extension will not impact on animal welfare outcomes.

Additionally, the committee agreed to extend the current requirement for pregnancy testing of Damara breed sheep to all female fat-tailed sheep breeds.

It was also decided the existing gestation requirements for all species, which are consistent with OIE Code and IATA Regulations, should be retained. The committee recognised that the existing gestation requirements mean that livestock can be exported during the third trimester. The committee agreed with views, supported by evidence, raised in submissions of the potential risks and adverse impacts on animal welfare outcomes that can present during transport in this stage of pregnancy. The committee’s view is that a management plan should be required to manage the potential risks this category of livestock may be exposed to during transport.

#### Draft recommendations

6) That the pregnancy testing requirements detailed in Appendix B be adopted for livestock exported by air.

7) That the standards require a management plan for livestock exported during the third trimester of pregnancy. The management plan must address potential risks during transport including the management of livestock during delays, access to water, rest periods and any additional space requirements.

### 2.4 Non-farmed livestock

#### 2.4.1 Current requirements

In order to provide positive animal welfare outcomes for wild-caught or non-farmed livestock, provisions have been made to ensure goats and camels have been conditioned to handling and are familiar with eating and drinking from troughs for a minimum period before entering a registered or approved premises.
### Table 6 Summary of non-farmed livestock requirements in ASEL v2.3

<table>
<thead>
<tr>
<th>Applies to</th>
<th>Summary of requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goats</td>
<td>Goats must not be sourced for export unless they have become conditioned to being handled and to eating and drinking from troughs for a minimum of 21 days before transfer to registered or approved premises.</td>
</tr>
</tbody>
</table>
| Camels     | Camels, including wild-caught camels, must only be sourced for export if they:  
|            | have become conditioned to being handled and to eating and drinking from troughs for a minimum of 14 days; and  
|            | meet transport and shipping height requirements of the intended transport (that is camels standing in their natural position do not touch any overhead structures). |

#### 2.4.2 Discussion in submissions and literature review

Submissions advocated the need for sufficient time to be provided for non-farmed livestock to adapt to handling as well as eating and drinking from troughs prior to export. Non-domesticated animals are more likely to suffer additional stress as they are not adapted to human contact, confinement and transport.

One submission indicated the time needed to adapt to handling should not be prescribed but should be determined on a consignment specific basis. Another noted the importance of removing any livestock that had not adapted to feed or handling.

In relation to goats, one submission suggested that while the requirement for goats to be held for a minimum of 21 days is directly relevant to sea transport, where the journey may take days or weeks, it is less applicable to air transport. This submission questioned the benefits of this practice for livestock exported by air transport, citing that livestock experience a quick export journey and slaughter process.

The literature review referred to a study by Petherick (2005) that found when non-farmed animals (rangeland or free-ranging animals) such as goats and camels are exported by air transport, these animals may be considered compromised due to their lack of exposure to human infrastructure when compared to farmed animals. Acclimatisation prior to export is the current method employed to reduce this risk.

In saying that, there is little published information regarding the required times or suitable methods for adaptation of non-domesticated animals to being handled, eating processed feeds and drinking from troughs. The effect of longer times (for example beyond the mandatory 14 days required for camels) on improving animal health and welfare outcomes is unknown.

However, a number of different methods for domestication of livestock have been investigated. It has been found that the methods employed to domesticate livestock during the preparation process are regarded as more important than the length of the process (Neindre et al. 1996; Flint and Murray 2001; Gherardi and Johnson 2004).

#### 2.4.3 Committee views

The committee noted that the current standard treats camels and goats similarly for export by either air or sea. Goats must have been conditioned to handling and to eating from troughs for 21 days before being transferred to a registered or approved premises (ASEL v2.3, S1.20 and
S6.13), for camels it is 14 days (ASEL v2.3, S1.23 and S6.16). However, the standard is silent on additional requirements for buffalo by air.

The committee considered the case presented in the Livecorp submission for reducing the amount of time goats should be conditioned to handling and to feeding from troughs prior to export by air. The committee noted that goats have the highest mortality rate for animals exported by air, although still very low at 31 deaths from 89,000 (or 0.03 per cent) head exported in 2016–2018.

The submission highlighted some of the potential benefits from minimising time spent in feedlot type situations, but stopped short of recommending what time period would be appropriate. The literature review refers to a study of rangeland goats in intensive farming practices over a period of three weeks by Miller et al. (2016), which found that the higher interaction between humans and the goats showed greater performance and behavioural changes.

It was the committee’s considered view that in the absence of more compelling data and scientific studies on how a shorter period would yield improved animal welfare outcomes, it would not be appropriate to recommend a change to the existing length of time goats are to spend being prepared for export. However, the committee saw benefit in clarifying that this requirement should apply to rangeland or non-farmed goats only, as they require a period of habituation to intensive farming conditions and to being handled prior to export. The committee saw no reason to change the existing requirements for wild-caught camels.

In the case of non-farmed buffalo, the committee considered that the standard should not be silent in relation to the export by air. It considered that there should be a specific requirement included in the standard that non-farmed buffalo be conditioned to handling and to feeding from troughs for a period of 21 days.

Draft recommendations

8) That the standard requiring goats to be conditioned to being handled and to eating and drinking from troughs for a minimum of 21 days before transfer to a registered or approved premises (S6.13) be amended to apply to non-farmed goats only (that is rangeland or feral goats).

9) That the standard include a requirement for non-farmed buffalo to become conditioned to being handled and to eating and drinking from troughs for a minimum of 21 days.

2.5 Vulnerable or special classes of livestock

2.5.1 Current requirements
ASEL v2.3 does not have requirements for livestock with young at foot, however there are provisions for livestock to be exported shortly after giving birth.

Table 7 Summary of vulnerable livestock requirements in ASEL v2.3

<table>
<thead>
<tr>
<th>Applies to</th>
<th>Summary of requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>All livestock</td>
<td>Livestock that are declared to be pregnant or that have given birth in the last 48 hours must not be tendered for transport unless accompanied by a veterinary certificate certifying that the animal is fit to travel and there is no evidence of imminent parturition.</td>
</tr>
</tbody>
</table>
2.5.2 Discussion in submissions and literature review
It was generally agreed that livestock with young at foot, pregnant livestock in the third trimester and livestock that had recently given birth are vulnerable classes of livestock. Many of the submitters recommended that any existing provisions in the standards be removed and a requirement for a management plan be written into the standards.

One submission indicated livestock with young at foot should not be exported. Handling and long-distance transport of young livestock may cause unnecessary stress to both the mother and young. Another suggested that if exported, young animals must be able to walk, feed and thermoregulate at a minimum. The export of livestock that had given birth within 48 hours of the scheduled export was also discouraged.

The literature review found no relevant studies or projects on vulnerable or special classes of livestock exported by air.

2.5.3 Committee views
The committee noted that most submissions accepted that special consideration should be given to vulnerable species of livestock or special classes of livestock, such as those that have recently given birth or that have young at foot, as they are potentially at a higher risk when transported. Vulnerable species need additional safeguards and management in relation to extended delays in the journey, access to water and rest periods. The committee noted that while many submissions supported management plans for these special classes of livestock, others were of the view that these livestock should not be exported at all.

The standard requires livestock that are declared pregnant or that have given birth in the last 48 hours to be accompanied by a veterinary certificate certifying that they are fit to travel and there is no evidence of imminent parturition (ASEL v2.3, S6.7). In discussions, the committee also referred to the Land Transport Standards, which require additional rest and water considerations for both pregnant livestock and livestock that have recently given birth. The committee considered the need for a fit to travel certificate essential for pregnant livestock, however given the higher welfare risk that livestock that have recently given birth could be exposed to during transport it was the committees view that this class of livestock should not be exported. The committee therefore recommends that livestock that have given birth in the five days prior to the expected date of departure are prevented from being sourced for export.

In its consideration of pregnancy testing in Section 2.3.3, the committee discussed the issues associated with transporting pregnant livestock, and accordingly recommended the standards should be amended to require management plans for animals in the third trimester of their pregnancy (see recommendation 7).

For the transport of animals with young at foot, the committee noted that animals in this category are not routinely exported. However, the committee accepted that where this is intended, additional requirements should be imposed to manage the inherent higher risks to animal health and welfare. The committee therefore recommends that the standards be amended to require management plans for animals exported by air with young at foot.
Draft recommendations

10) That the standards require a management plan for livestock that are exported with young at foot. This plan must address possible risks during transport including the management of livestock during delays, access to water, rest periods and any additional space requirements.

11) That the standards prevent livestock that have given birth in the five days prior to the expected date of departure, from being sourced for export.

2.6 Livestock with horns

2.6.1 Current requirements

Horned livestock pose a safety risk to themselves, other livestock in the consignment and handlers. Therefore, there are provisions to limit the length, width and tip sharpness of horns in cattle, buffalo, sheep and goats.

Table 8 Summary of horn requirements in ASEL v2.3

<table>
<thead>
<tr>
<th>Applies to</th>
<th>Summary of requirement</th>
</tr>
</thead>
</table>
| Cattle and buffalo | Horned cattle and buffalo must only be sourced for export as slaughter and feeder animals:  
  a) For cattle, if the horns are 12 cm of less in length and tipped (blunt);  
  b) For buffalo, if the horns are no longer than the spread of the ears and are blunt; and  
  c) If de-horned, wounds are healed.  
Otherwise, horned cattle and buffalo must only be sourced for export with the approval of the relevant Australian Government agency. |
| Sheep | Horned sheep or rams must only be sourced for export if the horns:  
  a) Are not turned in so as to cause damage to the head or eyes;  
  b) Would not endanger other animals during transport;  
  c) Would not restrict access to feed or water during transport; and  
  d) Are one full curl or less, or are tipped back to one full curl or less.  
Otherwise, horned sheep or rams must only be sourced for export with the approval of the relevant Australian Government agency. |
| Goats | Goats must only be sourced for export if the horns:  
  a) Are not turned in so as to cause damage to the head or eyes;  
  b) Would not endanger other animals during transport;  
  c) Would not restrict access to feed and water during transport; and  
  d) Are no more than 15 cm long and are blunt or are no more than 22 cm long with tips no more than 20 cm apart.  
Otherwise, horned goats must only be sourced for export with the approval of the relevant Australian Government agency. |

2.6.2 Discussion in submissions and literature review

It was widely agreed that horn requirements for goats, cattle, buffalo and sheep should be consistent across the standards for sea and air.
A number of industry submissions noted that it is not common for horned cattle to be exported, and that dehorning mature cattle was not good animal welfare practice. It was suggested that cattle horn requirements should be in line with the Australian Animal Welfare Standards and Guidelines for Cattle – that “tipping should only remove a solid, nonvascular portion of the horn, and result in a blunt horn end”. One submitter noted that if trimming the non-vascular portion of the horn results in a horn exceeding the maximum length, then it is not fit for shipping.

It was also suggested that the current standard for horned goats is confusing and difficult to measure. It was proposed that this requirement could be revised to improve clarity and animal welfare outcomes. The Land Transport Standards were referenced in relation to trimming or removing horns, and acceptable horn length requirements.

The literature review found no relevant studies or projects on horned livestock exported by air.

2.6.3 Committee views
The committee’s considerations for horn length for cattle, buffalo and sheep were informed by the discussion in the ASEL: Sea Transport final report. The committee noted the Land Transport Standards guideline suggests horned bulls should have the nonvascular horn tip removed to a diameter of 3 cm as well as the Australian Animal Welfare Standards and Guidelines for Cattle, which suggest tipping should only remove a solid, nonvascular portion of the horn, and result in a blunt horn end.

The committee’s view was that requirements for livestock exported by air should remain consistent where possible with livestock exports by sea. The committee’s position was to adopt the horn length requirements as per the ASEL: Sea Transport final report, with the exception of horn requirements for cattle. Rather, the committee recommends adopting the text in the Australian Animal Welfare Standards and Guidelines for Cattle:

- a) for cattle, no longer than 12 cm in length and tipping should only remove a solid, nonvascular portion of the horn, and result in a blunt horn end;
- b) for buffalo, if the horns are no longer than the spread of the ears; and
- c) for sheep, are no longer than one full curl.

The committee received a range of submissions and feedback from stakeholders that indicated the current requirements for goats in are not adequate (ASEL v2.3, S6.12). The committee considered the requirements for goats in the Land Transport Standards, and reached a position that the standards should be amended to reflect the Land Transport Standards:

“...Where tipping is applied for bucks, horns should be tipped within 2.5–5 cm from the tip (no further down than two cm diameter of horn) and for does less than two cm from tip to avoid sensitive zones. Tipping, where applied, should be done at least seven days before transport.”
Draft recommendations

12) That the requirements for horned cattle, buffalo and sheep outlined in Section 2.6.3 of this report be adopted for air transport. That is;
   a) for cattle, no longer than 12 cm in length and tipping should only remove a solid, nonvascular portion of the horn, and result in a blunt horn end;
   b) for buffalo, if the horns are no longer than the spread of the ears; and
   c) for sheep, are no longer than one full curl.

13) That the standards (ASEL v2.3, S6.12) for sourcing horned goats for export by air be amended in line with the Land Transport Standards: Horn trimming or removing sharp horn points is recommended to minimise injury to other goats. Where tipping is applied for bucks, horns should be tipped within 2.5-5 cm from the tip (no further down than two cm diameter of horn) and for does less than two cm from tip to avoid sensitive zones. Tipping, where applied, should be done at least seven days before transport.

2.7 On-farm preparation of livestock

2.7.1 Current requirements
The standards allow livestock to be prepared in either approved premises or registered premises. It stipulates that where livestock are prepared in registered premises then the standards for that part of the export chain apply (ASEL v2.3, 6.4(2)). There is no such requirement for livestock prepared in approved premises.

Maximum travel times and associated rest periods for livestock during land transport are outlined in the Land Transport Standards and Standard 2 of the ASEL v2.3. The maximum acceptable travel times vary for different species, and these are described in the appendices to the ASEL v2.3 (Appendixes 2.1 and 2.2). However, ASEL does not prescribe a set rest period for stock returned to the approved premises or property of origin from the airport should a delay occur, and prior to being reloaded for transport back to the airport.

2.7.2 Discussion in submissions and literature review
There was a great deal of discussion about on–farm preparation in submissions. Some submissions supported a maximum travel time from the property where the livestock are prepared to the airport, suggesting eight hours as an appropriate distance which would make travel times consistent with sea transport.

Others argued alternative options. Some submissions supported a maximum time off water for the entire air export journey, rather than the standards imposing a maximum eight-hour travel time from the premises to an airport. One submission noted it is common practice for exporters to spell livestock along the trucking route from the premises to the airport. Most submissions agreed that travel times and rest periods if prescribed, should be consistent with the Land Transport Standards.

Introducing the mandatory use of registered premises (or an alternative) for livestock exported by air was not supported in most submissions, with some arguing the introduction would not produce improved animal welfare outcomes, but would substantially affect the economics of the

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trade. Submissions gave many reasons for supporting this view with many noting the high animal welfare outcomes produced under current processes. One submission also noted that using approved premises allows small or boutique shipments to be prepared without having to move the livestock from the property of origin.

It was generally supported that a minimum rest period be required for livestock that have been returned to the property, or other premises, from the airport, prior to them being reloaded onto trucks for export. Again, submissions referenced consistency with the Land Transport Standards for any new requirements. One submission indicated this could be outcomes-based, requiring livestock to be well rested, eating and drinking and fit to export prior to re-loading. Others agreed a period of 24 hours rest for adult livestock would be sufficient.

The literature review referred to studies and anecdotal evidence that indicated the pre-export preparation of livestock influences the performance of livestock on the export journey significantly. The majority of both exporters and scientific experts in the field of live exports (100 per cent and 55 per cent respectively) believed that on-farm handling facilities and procedures have a moderate to high impact on performance during live export (Alliance Consulting and Management, 2001).

Exposing sheep to a pre-embarkation feedlot allows them to become accustomed to handling facilities and procedures while on farm. Animals conditioned to well-designed handling facilities using trained stock people, are less stressed by handling (Grandin, 1997). It has also been found cattle that are handled gently overtime are less agitated, have less bruising and show improved weight gain (Grandin, 1997a).

The literature review also suggested that conditioning of livestock should be done early in life rather than just prior to export. Two studies found that the earlier livestock are handled, the better able they are to adapt to the psychological stressed caused by handling later in life (Dantzer and Mormede, 1983; Grandin, 1997).

Lastly, the literature review refers to studies that found total transport time is the most significant factor in transport stress (Wythes et al, 1981; Holmes et al, 1982; Warriss, 1990). Hence, it is important to keep the road journey to the airport as short as possible. It also pointed to evidence that exists that shows the negative effects of stress adaptation can be recovered if animals are allowed to rest after a stressful episode (Adams, 2000).

2.7.3 Committee views
The current ASEL is not prescriptive on where livestock should be prepared for export by air and the distance the premises/farm can be from the departure airport.

The requirements for livestock to be prepared in a premises approved for pre-export are detailed in the Export Control (Animals) Order 2004. Maximum travel times and associated rest periods for livestock during land transport are outlined in the Land Transport Standards and Standard 2 of the ASEL v2.3.

During discussions, the committee noted that the ASEL requires livestock to be prepared in a registered premises for export by sea and some livestock prepared for export by air may be held in a registered premises, or in an approved premises. A registered premises must be no more

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than eight hours journey time from the port of embarkation (ASEL v2.3, S3.0) but there is no equivalent limitation on livestock prepared in approved premises.

Many air export consignments involve small numbers of animals, often from a single farm, which can be more efficiently and effectively prepared at a location other than a registered premises. In addition, the committee recognised that the benefits of registered premises for conditioning livestock to be exported by sea may not exist or be required for livestock exported by air. This is, amongst other reasons, due to the significant difference in journey times for sea and air transport, and taking into account that livestock are rarely fed during air export journeys.

For small consignments (for example, alpacas for breeding) that can be prepared on or near their property of origin, the concept of an approved premises is likely to result in superior animal welfare outcomes than requiring them to be moved to a registered premises. In addition, there was no evidence that preparation of animals at an approved premises had resulted in an adverse welfare outcome or had failed to meet importing country requirements. The committee concluded that the approved premises option for air exports is fundamentally sound and should be retained.

Having decided that approved premises should remain as an option, the committee then considered whether the eight hour transport rule should apply to approved premises. The committee did not consider there was compelling evidence presented to make a change. It concluded that, given all of the elements and variables in the air transport supply chain, focussing on a time limit for just one segment of that supply chain did not achieve an optimal outcome. Instead, the committee concluded that the focus should be on the time livestock spend off water during the entire journey, which is discussed in more detail in Section 4.

It is inevitable that, despite best planning efforts, delays will occur during air transport. Weather events or mechanical issues can delay flights or render the aircraft unavailable, in turn delaying the export of a consignment. The standards currently require exporters to provide plans for such events (ASEL v2.3, S6.25). In the Issues Paper, the committee asked whether the standards should define a minimum rest period if livestock have to be returned to the approved/registered premises because of a flight delay. There was broad agreement in submissions that a minimum rest period should be provided before re-loading again. The committee agreed with the views in submissions and concluded that the rest period should be a minimum of 24 hours.

### Draft recommendations

14) That the standards require a minimum 24 hour rest period for any livestock that have been returned to the approved premises or property of origin after being transported to the airport, and prior to being reloaded for transport back to the airport.
3 Penning arrangements and crate design

3.1.1 Current requirements
ASEL v2.3 has established a number of penning and crate requirements which are detailed in Appendix 6.1 (of the standard), however there are some aspects of space allowance and penning arrangements not adequately covered. The space allowance for alpacas prescribes the use of the sheep space allowances, there is no provision for the penning arrangements or crate design for camels over 300 kg, and there is no provision for the appropriate segregation of different types or classes of livestock.

<table>
<thead>
<tr>
<th>Applies to</th>
<th>Summary of requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpacas</td>
<td>The space allowances table for sheep applies.</td>
</tr>
<tr>
<td>Camels</td>
<td>IATA Regulations stipulate that trained camels must be penned individually for air transport. However, wild-caught camels are not accustomed to individual penning or segregation and are best transported by air in cattle pens. Use of cattle pens must be limited to camels under 300 kg liveweight.</td>
</tr>
</tbody>
</table>

3.1.2 Discussion in submissions and literature review
Penning arrangements and crate design were discussed in a number of submissions. The current requirements were generally considered adequate. It was acknowledged that penning arrangements and crate design should be consistent with current international standards for the transport of livestock by air such as the OIE Code and the IATA Regulations. It was noted in submissions that any changes to penning arrangements, without proven scientific evidence, that differ significantly from current international standards could result in potential violations and unintended negative animal welfare outcomes.

It was also noted that penning arrangements for livestock transported by air should minimise excessive stock movement of livestock at take-off, landing and during turbulence.

In relation to the additional 10 per cent space allowance required in the lower hold of aircraft, submissions argued that this was not necessary. It was suggested that there is no benefit to applying a 10 per cent space increase for all consignments in the lower hold, which is over and above the IATA Regulations requirement. The IATA Regulations requires an additional 10 per cent space for livestock loaded with mixed cargo in aircraft lower holds.

While many submitters did not support rounding up of livestock space allocations, one submission noted that rounding up is not proven to have resulted in inferior welfare outcomes for air transport and that low morbidity and mortality levels for air shipments suggest that welfare has not been compromised. It was also acknowledged that industry practice is discretionary in applying the rounding up requirement. Where animal welfare could benefit from rounding down it is often done at the discretion of industry. One submission stated that
current OIE Code and IATA Regulations recognise that animals are different shapes and specifying loading densities is an imprecise science. It was also noted that rounding up is not permitted on other forms of transport such as land or sea.

The committee specifically questioned penning arrangements for camels and alpacas in the Issues Paper, noting the limited prescription currently contained within the standards. A number of submissions commented on the characteristics of camels and alpacas that should be considered when looking at penning arrangements for these species such as the ability for the animals to crouch during transport. Another submission suggested that the alignment of alpacas with sheep space allowances (as prescribed in the IATA Regulations) is not appropriate, and that alpacas require more room than sheep. It was recommended that aligning alpaca space allowances with the Land Transport Standards may be more appropriate.

The issue of head clearance height within crates was addressed by a number of submissions, with many supporting the IATA Regulations requirement for head clearance. That is “animals standing in their natural position, without any part of their body touching the overhead part of the crate”. It was also noted that the current Land Transport Standards do not have any related provisions. One submission questioned the subjectivity of the IATA Regulations requirement and instead suggested amending the standard to “animal’s natural standing position” and a height limit imposed on individuals in a given consignment.

Many submissions called for the separation of entire males and females. While some submissions suggested that species, class and size, general health of the animal and level of aggression should all be considered prior to penning and crating for air transport. In addition, some suggested that penning and crating animals from different properties is generally not recommended unless animals are background checked first.

The literature review confirmed the importance of pen space allocations in all aspects of air transport. It influences animal comfort, behaviour and welfare from a space perspective; the production of heat, moisture, and expired gases such as carbon dioxide which will effect ventilation effectiveness. Critically, it will also affect the weight and load plan of the aircraft.

No scientific evidence was found regarding the impact of the current recommended space allocations or the process of rounding up on livestock behaviour during the crated journey, either in-flight or when waiting in transit. However, it has been found that at higher stocking rates it is known that animals may not be able to lie down simultaneously, or may be prevented from lying down (Cockram et al. 1996; Knowles et al. 1998), this may cause fatigue and muscle damage, particularly on long journeys (Knowles et al. 1998).

Animals must be stocked and managed at a density that allows them to maintain balance during take-off, landing and during periods of turbulence, similar to that experienced in road transport. How the temperament of animals may affect the manner in which they endure the long crating period or in-flight conditions is also not documented.

With regard to crate design, the literature review notes that transport crates must provide strong, secure holding for the livestock, but need to provide aircraft specific features as well, such as consideration of weight, capacity for airflow through the crate, and holding of effluent.
The review references a research project by Hogan and Willis (2009) which contains recommendations for best practice design of crates for livestock by air.

3.1.3 Committee views

It is important to note when the ASEL v2.3 was developed, the IATA Regulations and the OIE Code were considered, and penning arrangements and crate design specified in the ASEL are mostly consistent with IATA requirements. In considering penning issues, the committee was also mindful of its terms of reference to balance the implications for animal welfare with the practicalities of livestock management, compliance costs and industry sustainability; plus the direction that its recommendations must not be inconsistent with the OIE Code.

Penning arrangements, particularly space allowances, are critical to both animal welfare and the economics of the trade. Livestock stocked at too high a density can have adverse animal welfare outcomes through over-crowding, and those stocking livestock at too low a density can inadvertently create adverse welfare outcomes during take-off and landing. As the OIE Code notes:

"Animals confined in groups, especially in pens, should be stocked at a high enough density to prevent injuries at take-off, during turbulence and at landing, but not to the extent that individual animals cannot lie down and rise without risk of injury or crushing..." (Terrestrial Animal Health Code, Chapter 7.4, Article 7.4.3(f))

The space allowances in the current ASEL reflect the IATA Regulations and the OIE Code allowances in most instances, although there are slightly higher space allowances for heavier cattle in ASEL than the OIE Code suggests. The data on stocking rates and consignment outcomes that was available to the committee did not suggest that current space allowances were inadequate from an animal welfare perspective, except in the case of alpacas.

The ASEL requires alpacas to be stocked at the same space allowance as sheep. The committee considered this inadequate given the physical differences between the species. The committee was provided an analysis of space allowances used by industry when exporting alpacas by air over the past five years. It was clear to the committee that exporters are currently stocking alpacas at a rate over and above the sheep space allowances contained in the ASEL. The space allowances used by exporters aligned more closely to the space allowances required under the Land Transport Standards. As was suggested in submissions and evidenced by current industry processes, the committee concluded that alpacas should be provided at a minimum, the same space allowances as in the Land Transport Standards.

Camels do not currently have a separate table listing space allowances. The ASEL quotes the IATA Regulations for camels as detailed in Table 9. The committee is concerned that camels over 300 kg are not addressed by this requirement. The committee is of the view that camels over 300 kg should be penned in accordance with a management plan which would address the specific needs of the animal and conform to IATA crate requirements.

ASEL also stipulates that space allowances should be increased by 10 per cent in five situations:

1. For horned cattle, buffalo, sheep and deer;
2. For goats with horns that exceed the limits in S6.12;
3. For journeys in excess of 24 hours;
4. For sheep and goats with more than 25mm of wool or fibre; and
5. For livestock loaded with mixed cargo in the lower holds.

The committee considers that these requirements should remain. In the case of horned animals, the provision of additional space is consistent with the committee’s views as expressed in the ASEL: Sea Transport final report. For journeys in excess of 24 hours and animals with heavy wool/fibre, these are consistent with the IATA Regulations and the OIE Code.

In relation to whether additional space should be provided for animals loaded into the lower hold, the committee considered the findings of Hogan and Binns (2010). It was raised in submissions that the findings of this project indicate an additional 10 per cent space should not be required in the lower hold as the capacity of the ventilation system in the lower hold is generally better than the main holds;

“...if systems are correctly set by flight crews and airflows are not restricted by other cargo then the capacity of ventilation systems in lower holds of aircraft are generally better than main holds (p59)...”

The committee noted that ASEL requires, consistent with the IATA Regulations, additional space when livestock are loaded with mixed cargo in aircraft lower holds. The Hogan and Binns (2010) findings seem to apply only when there is no other cargo restricting airflow.

Additionally, the committee looked at a follow on study by Flynn, Wockner and Lott (2014), that aimed to validate the predictions of the LATSA software, through the acquisition of real time data on flights. This study found, amongst other things, that the LATSA model, which was used in the Hogan and Binns (2010) study, under-estimated relative humidity and wet and dry bulb temperatures in the lower hold by about 7°C.

The committee concluded that when there are mixed cargoes in the lower hold, given there is an increased chance that airflow could be restricted by other cargo containers, that the additional 10 per cent space allowance should remain.

The committee also sought feedback on crate design in relation to head height clearance. The ASEL requires that when an animal stands in a natural position, no part of the animal's body (or horns) should touch any overhead part of the container. As no scientific evidence for change was presented to the committee, the IATA Regulations and the OIE Code were considered when discussing this issue.

The OIE Code requires 10 cm clearance for an animal standing in its normal position. The IATA Regulations require 10 cm clearance for small animals and 20 cm clearance for large animals. As discussed in Section 7, the committee is recommending the standards include a general provision to require compliance with IATA Regulations and therefore it is the committee’s view that the standards do not need to be amended at this time to reflect a minimum head clearance height.

In respect of penning of livestock of different classes, the views in submissions varied from a full prohibition on mixed sex loading, to allowing castrated males to be penned alongside females,
and mixing animals from different source properties being prohibited. The committee agreed that loading castrated males with females of similar species and weight was acceptable. However, the committee is recommending the standard be amended to prevent entire males being penned with females.

The committee noted during its discussions that it is standard industry practice for animals of similar size and weight to be penned together and that, where possible, exporters also seek to keep animals from the same source property together. The committee thought it was important to include a provision in the standard to ensure livestock are penned with like animals, that is animals of the same species, class and weight.

The committee also considered the provision in the standards for rounding up when calculating space allowances. The space allowances prescribed in the ASEL (and the IATA Regulations), rarely result in a whole number of animals per crate. When the calculation results in a fraction of an animal, the ASEL currently requires the number of livestock in the pen to be rounded to the nearest whole number, with n.5 rounded up (That is, ASEL requires anything less than n.5 is rounded down and anything equal to or greater than n.5 must be rounded up). Rounding up may result in each animal receiving less than the space allowance in ASEL while rounding down results in more space per animal. While some submissions suggested the practice of rounding up space allowances was a requirement under the IATA Regulations, the committee was unable to confirm this.

One of the practicalities to be considered is that aircraft crates are limited in their dimensions by aircraft systems. Additionally, there are standard pallet sizes depending on the aircraft type and load space (main deck or belly hold) which means crate space is not flexible. For the purposes of the committee's considerations an average, medium sized crate with a useable floor space of 6.3 m² has been assumed (source: Livecorp submission, page 17).

The committee examined a number of scenarios to assess the impact of rounding and the consequential impact on animal welfare, these scenarios are outlined in Table 10. For smaller animals the impact is modest, with a relatively small influence on the space allowance. However, for larger animals, such as heavy cattle, rounding can result in a significant change to the space allocation per animal.

For example, when loading cattle of 400 kg the ASEL allows 1.06 m² per head for journeys of less than 24 hours and 1.166 m² for journeys of more than 24 hours. In a medium size crate, 5.94 cattle can be loaded for a journey of less than 24 hours and 5.403 cattle can be loaded for a journey of more than 24 hours. The animals loaded into this crate would, in theory, be rounded up to 6 for a short journey and down to 5 animals for a journey of more than 24 hours. Each animal would get approximately 8 per cent more space than prescribed under ASEL for the longer journey, and marginally less space on the shorter journey.

In an another example, when loading cattle of 500 kg, the ASEL allows 1.27 m² per head for a journey of less than 24 hours. In a medium size crate, 4.51 cattle can be loaded. The animals loaded into this crate would, in theory, be rounded up to five animals. Each animal would get just under 10 per cent less space than prescribed under ASEL.
Table 10 Implications of rounding up at n.5 – Journeys of less than 24 hours

<table>
<thead>
<tr>
<th>Species and weight</th>
<th>ASEL space requirement (m²)</th>
<th>ASEL animals per crate</th>
<th>Rounded number of animals</th>
<th>Rounded space per animal (m²)</th>
<th>Percentage change from ASEL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cattle</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>300</td>
<td>0.840</td>
<td>7.500</td>
<td>8</td>
<td>0.788</td>
<td>-6.25%</td>
</tr>
<tr>
<td>320</td>
<td>0.890</td>
<td>7.079</td>
<td>7</td>
<td>0.900</td>
<td>1.12%</td>
</tr>
<tr>
<td>340</td>
<td>0.930</td>
<td>6.774</td>
<td>7</td>
<td>0.900</td>
<td>-3.23%</td>
</tr>
<tr>
<td>360</td>
<td>0.980</td>
<td>6.429</td>
<td>6</td>
<td>1.050</td>
<td>7.14%</td>
</tr>
<tr>
<td>380</td>
<td>1.020</td>
<td>6.176</td>
<td>6</td>
<td>1.050</td>
<td>2.94%</td>
</tr>
<tr>
<td>400</td>
<td>1.060</td>
<td>5.943</td>
<td>6</td>
<td>1.050</td>
<td>-0.94%</td>
</tr>
<tr>
<td>420</td>
<td>1.100</td>
<td>5.727</td>
<td>6</td>
<td>1.050</td>
<td>-4.55%</td>
</tr>
<tr>
<td>440</td>
<td>1.150</td>
<td>5.478</td>
<td>5</td>
<td>1.260</td>
<td>9.57%</td>
</tr>
<tr>
<td>460</td>
<td>1.190</td>
<td>5.294</td>
<td>5</td>
<td>1.260</td>
<td>5.88%</td>
</tr>
<tr>
<td>480</td>
<td>1.230</td>
<td>5.122</td>
<td>5</td>
<td>1.260</td>
<td>2.44%</td>
</tr>
<tr>
<td>500</td>
<td>1.270</td>
<td>4.961</td>
<td>5</td>
<td>1.260</td>
<td>-0.79%</td>
</tr>
<tr>
<td>520</td>
<td>1.310</td>
<td>4.809</td>
<td>5</td>
<td>1.260</td>
<td>-3.82%</td>
</tr>
<tr>
<td>540</td>
<td>1.360</td>
<td>4.632</td>
<td>5</td>
<td>1.260</td>
<td>-7.35%</td>
</tr>
<tr>
<td>560</td>
<td>1.400</td>
<td>4.500</td>
<td>5</td>
<td>1.260</td>
<td>-10.00%</td>
</tr>
<tr>
<td>580</td>
<td>1.440</td>
<td>4.375</td>
<td>4</td>
<td>1.575</td>
<td>9.38%</td>
</tr>
<tr>
<td>600</td>
<td>1.480</td>
<td>4.257</td>
<td>4</td>
<td>1.575</td>
<td>6.42%</td>
</tr>
<tr>
<td><strong>Sheep</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>0.190</td>
<td>33.158</td>
<td>33</td>
<td>0.191</td>
<td>0.48%</td>
</tr>
<tr>
<td>40</td>
<td>0.230</td>
<td>27.391</td>
<td>27</td>
<td>0.233</td>
<td>1.45%</td>
</tr>
<tr>
<td>50</td>
<td>0.270</td>
<td>23.333</td>
<td>23</td>
<td>0.274</td>
<td>1.45%</td>
</tr>
<tr>
<td>60</td>
<td>0.315</td>
<td>20.000</td>
<td>20</td>
<td>0.315</td>
<td>0.00%</td>
</tr>
<tr>
<td>70</td>
<td>0.360</td>
<td>17.500</td>
<td>18</td>
<td>0.350</td>
<td>-2.78%</td>
</tr>
<tr>
<td><strong>Goats</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>0.141</td>
<td>44.681</td>
<td>45</td>
<td>0.140</td>
<td>-0.71%</td>
</tr>
<tr>
<td>35</td>
<td>0.189</td>
<td>33.333</td>
<td>33</td>
<td>0.191</td>
<td>1.01%</td>
</tr>
<tr>
<td>45</td>
<td>0.237</td>
<td>26.582</td>
<td>27</td>
<td>0.233</td>
<td>-1.55%</td>
</tr>
<tr>
<td>55</td>
<td>0.285</td>
<td>22.105</td>
<td>22</td>
<td>0.286</td>
<td>0.48%</td>
</tr>
<tr>
<td>65</td>
<td>0.333</td>
<td>18.919</td>
<td>19</td>
<td>0.332</td>
<td>-0.43%</td>
</tr>
<tr>
<td>75</td>
<td>0.381</td>
<td>16.535</td>
<td>17</td>
<td>0.371</td>
<td>-2.73%</td>
</tr>
</tbody>
</table>

1. An average, medium sized crate has been assumed with dimensions of 2.14 m x 3.08 m, giving a gross area of 6.59 m². Allowing for the frame, the usable internal space is approximately 6.3 m² (source; Livcorp submission, page 17).
The committee also considered changing the rounding point from n.5 to n.7. The analysis showed that such a change would eliminate any large individual loss of space for animals less than 500 kg, with the most an animal may lose as a result of rounding limited to about 5 per cent. The results were more mixed for very heavy cattle (>800 kg) – they would still experience a reduction in individual space from rounding on short journeys of up to 10 per cent but on journeys over 24 hours would get additional space of up to 30 per cent.

Further, the committee examined the cattle weights in the current standards (ASEL v2.3, Appendix 6.1, Table A6.1.1) to assess the impact of raising the point for rounding from n.5 to n.7. For journeys of less than 24 hours, it found that 15 of the 86 weight categories would have one less animal per crate. For journeys of 24 hours or more, it found that 21 of the 86 weight categories would have one less animal per crate. Table 11 lists the weight categories that would change. The greatest impact occurs for very heavy cattle: for journeys of less than 24 hours, 5 of the 15 categories that would incur a reduction are for cattle in excess of 700 kg; and for journeys of 24 hours or more, 12 of the 21 categories that would incur a reduction are for cattle in excess of 600 kg.

**Table 11 Cattle weight categories that would change if the rounding point is raised from n.5 to n.7**

<table>
<thead>
<tr>
<th>Cattle weight categories (kg) that would require one less animal per crate of the rounding point is raised from n.5 to n.7</th>
<th>Journeys of less than 24 hours</th>
<th>Journeys of 24 hours or more</th>
</tr>
</thead>
</table>

The committee noted that the rounding up point can affect the economics of the trade. The analysis showed that for cattle, there are several key weights which would result in significantly higher freight costs per head. While all export journeys differ, the impact can be illustrated by examining a B747-400 flying from southern Australia to South-East Asia. For a consignment of cattle of 350 kg, the additional freight cost per head resulting from a change in the rounding point to n.7 would be in the region of $250–$300.

However, by selecting cattle at a slightly different weight, the impact could be avoided. For example, there would be no impact if the cattle were 340 kg. Exporters could be expected to change their selection requirements to mitigate the financial impact.

Analysis for goats showed that reducing the number of 45 kg goats in a crate from 27 to 26 would result in a 3.7 per cent increase in the freight cost per goat. The heavier the animal, the more significant the impact.

In considering changing the rounding requirement, the committee’s view was that the requirement to round up at n.5 should be revised to rounding down at n.7 (and below). The committee would consider any further data and analyses from industry and other stakeholders on the impact, both from an animal welfare perspective and an economic perspective, of changing the rounding point from n.5 to n.7.
Draft recommendations

15) That the space allowances in Appendix C be adopted for alpacas (this table is based on the Land Transport Standards space allowances).

16) That the standards require camels over 300 kg liveweight to be penned for air transport in accordance with a management plan.

17) That the standards require livestock to be penned for air transport with the same species, class, weight and gender (note: castrated males may be penned with females however whole males must be penned separately, unless immature). Particularly small (low weight) animals must be crated with similar weighted animals or the crate must be divided so that animals of unequal size are not mixed together in a given space.

18) That the current wording in 6.1.1 (2)(b) be changed to - "that when calculating the stocking density per pen, the number of livestock per pen may be rounded to the nearest whole number. n.7 (and below) must be rounded down."
4 Fodder and water requirements

4.1.1 Current requirements
Maximum water deprivation times are outlined within ASEL v2.3, Standard 2. They aim to prevent livestock suffering dehydration and other negative welfare impacts during transport. Feed and water are generally required to be offered to all livestock for export by air while in transit if the climatic conditions, species and class of livestock, and total journey time warrant, however there is no further elaboration of what these conditions are. There is also no provision for exporters to provide a plan addressing how they will provide water or feed to livestock on the journey or provision for a breach of water deprivation time to be a notifiable incident.

4.1.2 Discussion in submissions and literature review
There was strong support for a management plan for water deprivation time throughout the air export journey, including during transit. Many noted that the air export journey needs to be defined in the standards, with suggestions for the journey to begin at the approved premises and end at unloading at the final destination.

It was noted in a couple of submissions that exporters are very aware of managing water deprivation and feed and have a demonstrated history of working with importers to ensure livestock are not put at risk of any adverse animal welfare outcomes. These submissions did not support the inclusion of a management plan. Rather, they concluded that the current standards are working well and any additional regulatory burden, such as a management plan, would not provide an animal welfare benefit.

Overall, the maximum water deprivation times in the Land Transport Standards were referenced by a number of submissions, with general agreement that any maximum water deprivation time should align with the species and class requirements included in the Land Transport Standards. One submission noted that exporters are currently adopting the 48 hour maximum water deprivation time for livestock for the air export journey, as specified in the Land Transport Standards (this requirement is for livestock over 4–6 months).

Another suggested that water deprivation limits should be applied cumulatively to all parts of the journey, including the air transport phase. This would require reliable communication between receivers, transport operators, drivers and persons responsible for pre-transit livestock preparations.

The literature review noted that the effects of extended water deprivation times on livestock during air transport are not reported. Some studies have shown that cattle deprived of food and water up to 48 hours have shown some signs of dehydration (Schaefer et al. 1990, Phillips et al 1991, Parker et al 2003a). However, in these studies the level of dehydration even after 48 hours could not be classed as being of clinical concern.

A study by Ferguson and Fisher (2008) found that loading and the initial phase of transport were the most stressful to livestock as indicated by the increase in blood cortisol concentration and body temperature. They also concluded that current maximum transport duration, which is based on the maximum period of water deprivation (48 hours), within the welfare codes for
cattle and sheep are acceptable on animal welfare grounds for the class of stock examined and the experimental conditions that prevailed.

Parker et al (2003b) indicated that sheep may also be reasonably tolerant of considerable periods of water deprivation, with indications only appearing after 72 hours of water deprivation. The literature review also reported on the interaction between water deprivation and the environment, with animals subjected to hot and humid conditions are more affected by water deprivation that limits their capacity for evaporative heat loss and dehydration.

It was suggested that pre-transport curfews should be predicated on consideration of key factors such as the nutritional background and condition of the cattle and sheep, and the duration of the total transport process.

In addition, the literature review noted that total transport times is the most significant factor in transport stress (Wythes et al, 1981; Holmes et al, 1982; Warriss, 1990). All exporters and 90 per cent of experts believed that minimising total transport time will have a moderate to high impact on performance of stock during live export (Alliance Consulting and Management, 2001). However, unlike most land transport journeys, the animals to be exported by air are not provided access to food and water upon completion of the road journey. It is important to keep the road journey to the airport as short as possible.

4.1.3 Committee views

In considering the fodder and water requirements of livestock undertaking export journeys by air, the committee was mindful of a number of aspects of the air export process: the practical limitations of providing feed and water to livestock once they are crated for transport; the short time frame of most air export journeys from Australia; and current industry practices regarding water deprivation times. It is also important to note that negative animal welfare outcomes may result from attempts to provide water and feed to livestock while in flight.

The committee was of the view that the provision of feed to livestock during export journeys by air was generally unnecessary and the current ASEL provisions relating to provision of feed to livestock were adequate.

In relation to maximum water deprivation times, the committee was concerned that when pre-export land transport, holding periods and transit stops were taken into account, some air export journeys from Australia could be quite long. Furthermore, unexpected delays along the journey could significantly extend the planned period that livestock are in transport crates beyond acceptable water deprivation times. Although the committee found no reports that confirmed the withholding of water during flight had created welfare problems, a number of submissions supported the idea that water deprivation should be closely managed.

The committee did not believe it was necessary to specify time limits for any particular phase of an air export journey, or to require provision of water during transit stops (over and above current requirements). Rather, the committee considered the matter in terms of a maximum water deprivation time covering the whole journey. The committee was of the view that the Land Transport Standards provide an existing standard that is nationally agreed and widely adopted by industry already. This view was supported throughout submissions. The committee
resolved that the maximum water deprivation time defined in the Land Transport Standards should be adopted into ASEL for each species.

The committee was of the view that a management plan setting out routine and contingency arrangements for avoiding unacceptable periods of water deprivation would provide a useful and practical means for exporters to demonstrate that risks will be managed. The plan should set out arrangements that will be in place to manage the water deprivation time and how the exporter will ensure that the acceptable maximum water deprivation time will not be exceeded.

For example, if the total air export journey cannot be completed within the maximum water deprivation time then the management plan would need to include arrangements for the animals to be watered at a point in the journey so that the maximum water deprivation time is not exceeded. The department should examine the times proposed in the export plan to ensure they are realistic, and have the power to adjust them as needed.

In considering the potential added burden of such a requirement, the committee expected that most exporters make such provisions already in their planning for air consignments of livestock.

Additionally, the committee noted that current reporting arrangements were insufficient to provide information about water deprivation times currently experienced by livestock during air export journeys.

The committee is of the view that minimising water deprivation is extremely important to an animal’s health and welfare and, as such, is recommending that a new notifiable incident be created if a consignment exceeds the allowable maximum water deprivation times. The committee also believes that it would be useful to include more information in end of journey reports. Further discussion on this is under Section 6 of this report.

### Draft recommendations

19) That a management plan for water deprivation time during the air export journey be required for all livestock consignments by air. This plan should address the plan for the time livestock are off water and include water management arrangements during delays and transit stops, aimed at ensuring maximum water deprivation times are not exceeded.

20) That the maximum water deprivation times reflect the Land Transport Standards and be adopted in ASEL for the air export journey, as detailed in Appendix D.

21) The regulator should be required to assess the air export journey times proposed by the exporter to ensure they are realistic and that the maximum water deprivation time is not likely to be exceeded and have the ability to vary the plan if it considers the proposed times are not realistic.
5  Inspection of livestock

5.1.1  Current requirements
In order to ensure the health and welfare of livestock exported by air, inspections must be carried out. These are prescribed at set points during the air export journey where it is feasible to inspect livestock. Any livestock that are identified during inspection as distressed or injured must be appropriately treated, separated or removed from others, or euthanized as necessary and feasible.

Table 12 Summary of inspection requirements in ASEL v2.3

<table>
<thead>
<tr>
<th>Summary of requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Livestock for export by air must be checked to ensure they remain fit to travel:</td>
</tr>
<tr>
<td>a) Immediately before departure;</td>
</tr>
<tr>
<td>b) Where feasible:</td>
</tr>
<tr>
<td>i. Within 30-60 minutes of commencement of the journey;</td>
</tr>
<tr>
<td>ii. At least every 2-3 hours as conditions warrant;</td>
</tr>
<tr>
<td>c) Immediately prior to departure after any stops.</td>
</tr>
<tr>
<td>Any livestock for export identified during transport by air as being distressed or injured must, where feasible:</td>
</tr>
<tr>
<td>a) Be given immediate treatment if distressed or injured;</td>
</tr>
<tr>
<td>b) Be euthanized without delay as necessary; and</td>
</tr>
</tbody>
</table>
| c) Arrangements must be made to remove or separate sick or dead livestock from pens carrying multiple animals in transit. If animals need to be off-loaded, arrangements must be made to ensure the health and welfare of the animals.

5.1.2  Discussion in submissions and literature review
Most submissions agreed that the current inspection requirements in ASEL were generally practical and feasible. However, there were some suggestions for additional inspection points including prior to departure from the premises; before being loaded into crates; once loaded into crates, before being loaded on to the aircraft; and as soon as the aircraft lands. Another submission suggested that in the absence of manual inspections – which can be stressful for animals – use of video monitoring should be utilised during flight. Real time monitoring can be used to monitor the on-board environment – such as cabin pressure, ventilation, humidity, temperature and lighting – and may be included as a reporting requirement.

While there was wide support for an appropriately skilled and competent person to accompany livestock on-board flights, it was also understood that sometimes this was not possible. In those cases, where access to livestock transported in the lower hold was not possible, it was noted that the greatest risks for animals transported by air occur during loading, unloading, transit stops or if an aircraft is diverted. A number of submissions supported having a competent person available to monitor these aspects of the journey and argued that it is critical to ensure the welfare of the livestock.
It was noted in one submission that the facilities at airports do not always provide staff with appropriate access to inspect animals or remove any unfit/rejected animals. Another suggested that businesses should invest in good quality, fit-for purpose infrastructure, including loading and unloading equipment—forcing yards, ramps and enclosed gantries—to safely and efficiently load livestock into cargo planes, noting that currently trucks are used as mobile forcing yards, with livestock transferred directly from the truck into the crates in which they are transported.

The literature review noted that there was very limited information on the ability to inspect livestock at airports. Anecdotal evidence suggests there can be a lack of access to crates during flights and transit, and it is unclear to what degree the current standard can be met.

In relation to monitoring temperature and environmental condition monitoring during flight, the literature review refers to a study by Hogan and Binns (2010) which looked at the Live Air Transport Safety Assessment (LATSA) software. The program presents the heat, moisture and carbon dioxide outputs for any single consignment of cattle, sheep and goats and any combination of these livestock. It then uses psychometric calculations together with publicly available aircraft ventilation data to determine if the aircraft has the basic capability to transport the consignment without incident.

5.1.3 Committee views
The committee examined the current ASEL requirements for inspection of livestock and considered all relevant submissions. The committee accepted that the opportunity for, and welfare benefits of, inspecting livestock during flight are limited. Livestock in netted crates are difficult to inspect, and attempts to do so may unduly agitate the livestock and have negative welfare affects. Notwithstanding this, it was the committee's view that the current requirements (ASEL v2.3, S6.22 and S6.23) were adequate as general provisions.

A number of submissions highlighted that the greatest risks to animal welfare involving air transport is during loading, unloading and at transit stops including when an aircraft is diverted. Having a competent person available during these periods can ensure that the health and welfare of the animals is taken care of, and that handling, unloading and/or loading of livestock crates can be completed appropriately and with due regard to animal welfare. If this person were a representative/appointee of the exporter they would also be in a position to be in direct contact with the exporter during any unexpected delays or diversions should any situation of concern arise.

The committee noted the support in submissions for an attendant to accompany major shipments. The committee also noted advice from industry that from 1 July 2019 it will recommend an attendant accompany any shipment of livestock on a freighter aircraft, irrespective of the number of animals in the shipment. The cost of requiring an attendant to accompany a flight is not insignificant when salary, return air fare, hotel accommodation, ground transportation and incidentals are factored in.

The committee considered that there may be justification for the ASEL to require a competent, exporter-appointed attendant accompany air consignments when the livestock were exported on a charter/freighter aircraft, to oversee the welfare of the livestock during flight, but in particular at transit stops and unloading. However, given the cost implications, the committee
would welcome views on whether an attendant should accompany every consignment on a freighter aircraft (irrespective of the size of the consignment). Alternatively, views would also be welcome on what is an appropriate size consignment (that is how many head of livestock) where an attendant should be required?

For consignments transported on aircraft in the lower holds or passenger aircraft, that is when the stock are not accessible during flight, it is the committee’s view that there should be an exporter-appointed attendant available/accessible at transit stops and unloading to oversee the management and handling of the livestock to ensure due regard is taken to the health and welfare of the animals. The committee is of the view that this attendant may be a locally engaged person, who would have the necessary security and access clearances for the airport already in place.

The committee received a number of submissions regarding the facilities at Australian airports for the inspection and loading of livestock into crates. The committee attended Melbourne airport during the loading of a consignment of cattle for export and observed the procedures and facilities. Cattle were unloaded from trucks, including from upper decks down reasonably steep ramps, directly into the crates. Arrangements for the orderly pushing of cattle between truck pens and down ramps were of a poor standard compared to most cattle unloading facilities in Australia, such as at saleyards. Risks of injury to personnel were not insignificant. Based on submissions received, and the committee’s observations, the committee believes the facilities at airports for livestock unloading and inspection could be improved.

**Draft recommendations**

22) The exporter must ensure a competent attendant can be present during transit stops (planned and unplanned) and unloading of livestock to oversee the welfare of the animals.

23) That the standards require a competent attendant appointed by the exporter accompany consignments where the livestock are transported in a charter/freighter aircraft dedicated or substantially dedicated to livestock. The role of the attendant is to oversee the welfare of the livestock during flight, at transit stops and unloading.

24) The department should work with the relevant organisation/s to review and improve the facilities available at airports for the unloading of livestock from land transport, inspection and loading into crates and loading onto the aircraft, to ensure they meet the standards expected to mitigate risks associated with work health and safety, and animal health and welfare.
6 Reporting requirements

6.1 Reportable mortality rate

6.1.1 Current requirements

Reportable mortality is currently defined as a whole-of-consignment mortality rate for the livestock export journey which, if exceeded, triggers the requirement for the journey to be investigated as having a notifiable incident occur. A notifiable incident is defined by ASEL v2.3 as including a mortality rate equal to or greater than the reportable level as previously described.

Table 13 Summary of reporting requirements in ASEL v2.3

<table>
<thead>
<tr>
<th>Species</th>
<th>Current requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sheep, goats, camelids and deer</td>
<td>2 per cent or 3 animals, whichever is greater</td>
</tr>
<tr>
<td>Cattle and buffalo, voyages ≥ 10 days</td>
<td>1 per cent or 3 animals, whichever is greater</td>
</tr>
<tr>
<td>Cattle and buffalo, voyages &lt; 10 days</td>
<td>0.5 per cent or 3 animals, whichever is greater</td>
</tr>
</tbody>
</table>

6.1.2 Discussion in submissions and literature review

It was generally agreed that the reportable mortality rates should be lowered in line with the recommendations from the ASEL: Sea Transport final report. Performance indicators for the past three years show a very low mortality rate in sheep and goats and no mortalities for other species.

The literature review found no relevant studies or projects on the mortality levels for livestock exported by air transport.

6.1.3 Committee views

The committee examined the current ASEL requirements for the reportable mortality rates and considered all relevant submissions. The committee accepted that the recent performance of export consignments (during 2016–2018) shows, in general, very low mortality rates. It was also noted that the mortality rates experienced are considerably lower than the current reportable rates, bringing into question the suitability of the current rates for air transport. The infrequent occurrence of a reportable mortality event or investigation was also noted by the committee. It was the committee’s considered view that the mortality rates for air transport should be reduced, and the mortality rates recommended in the ASEL: Sea Transport final report should be adopted.

Draft recommendations

25) That the reportable level for mortalities for sheep, goats, camelids and deer should be set at 1 per cent, or three animals, whichever is greater.

26) That the reportable level for mortalities for cattle and buffalo should be set at 0.5 per cent, or three animals, whichever is greater.
6.2 Contingency planning and reporting requirements

6.2.1 Current requirements
Contingency planning must be undertaken for each consignment exported by air transport. This planning must address how the following issues will be dealt with: unavailability of aircraft to be used for transport, mechanical breakdown and rejection of the consignment by the overseas market. There are currently no contingency planning requirements for euthanasia of livestock on-board the aircraft.

An end of journey report is required to be prepared and provided to the relevant Australian Government agency, in this case the Department of Agriculture, within five days of completion of discharge at final port of disembarkation and must contain the relevant details as outlined in ASEL v2.3, Appendix 6.2. This end of journey report currently only pertains to the air transport leg of the overall air export journey, and does not include any aspects of the road transport journey from the approved or registered premises to the airport of export.

6.2.2 Discussion in submissions and literature review
While many submitters felt that the current definition of notifiable incident is adequate – some offered some additions including: unavailability of aircraft, mechanical breakdown, severe turbulence or the disablement of the ventilation system – even if this does not have any adverse effect on animal health or welfare.

It was noted in submissions that contingency planning, should also be required for any significant delays in any stage of the air export journey including during transit stops, air traffic or airport congestion.

It was also suggested by one submitter that as part of the contingency planning a list of alternative non-hostile airports or premises with adequate facilities and trained personnel be prepared and provided to the captain.

The literature review found no relevant studies or projects on the contingency reporting for livestock exported by air transport.

6.2.3 Committee views
The committee accepted that there was opportunity for, and welfare benefits of, improved planning, monitoring and reporting of travelling livestock with particular attention to the total water deprivation time for livestock, and the potentially extended time animals remain crated. In addition, it was decided that more details regarding contingency planning were required.

Several submissions highlighted the potential risks to animal welfare when transport by air is delayed, before departure from Australia, during transit stops and when an aircraft is diverted. The committee viewed a loading of dairy heifers exported from Melbourne and witnessed the routine wait that is undertaken once animals are loaded into crates and before they are loaded into the aircraft (so that flight planning, load calculations and fuel requirements can be determined). The committee also consulted with key personnel involved and calculated the anticipated total journey times for animals on a range of journeys.
In order for the department to gain a better understanding of the total water deprivation time, its potential impact on animal welfare and at what point common delays occur, it is suggested that exporters should be required to provide more details on the travel time for each leg of the total journey.

The committee believes that the exporter should provide detailed estimates of journey times in the NOI and report on actual journey times in the end of journey report. This will allow points where repeated delays occur to be identified, and consequently lead to ways that extended times in crates, or water deprivation can be minimised improving animal welfare.

In addition, as the department and various stakeholders have agreed, the revised ASEL should move away from mortality as the main indicator of welfare. The committee recommends that more details on how the livestock travelled as well as the weather and climate experienced during the journey should be included in the end of journey report.

The committee suggests amending the end of journey report to include:

- time animals are removed from access to water (at the premises or property)
- time when first crated (first animal is loaded in a crate)
- time of flight(s) including any stopovers or transits
- time of arrival at final destination airport
- time when animals are released from the crate (time when the last animal is out)
- time when animals are first offered water
- weather details and at each airport and if ventilation was provided during transit stops
- number, species, type of any animal that is affected by injury or ill-health, including the cause and any treatment
- general behaviour of the animals - standing resting or other
- a description of the effect on animals of any episode of turbulence or alteration to ventilation whilst inside the aircraft.

Given the likelihood that delays and diversions to aircraft may occur and sometimes will occur in foreign ports, and possibly in hot humid climates, the committee felt more detailed contingency planning was required for each consignment prior to approval.

As described by at least one submission, aircraft have limited endurance and therefore the holding of animals is limited, before the aircraft may need to land at the closest suitable airport. A clear plan of the livestock management in the event of a diversion from the intended destination should be provided by exporters. This may include details of how livestock could be offloaded for spelling, rest or watering as required or if animals cannot be unloaded, details of inspection and provision of water by bucket if required.

Additional planning must include airports where access to, and use of, captive bolt or other firearm or veterinary drugs (sedation or barbiturate) for humane euthanasia is possible. Some airports and jurisdictions are known for their strict animal biosecurity arrangements, which
may forbid the unloading of animals, even for animal welfare grounds and these must be considered. It is suggested that unless the exporter can produce realistic contingency plans, the consignment should not be approved.

As discussed in Section 4 of this report, in keeping with several views expressed in the submissions, the committee deemed that it was important to ensure animals were transported within acceptable water deprivation times, and not any longer than those established in the Land Transport Standards. The committee determined that a journey in which the maximum water deprivation period is exceeded should be a notifiable incident. The additional reporting requirement will assist the department in monitoring this element of the air export journey. It was also noted that within the one consignment there may be varying upper limits for maximum water deprivation times if the consignment carries pregnant animals in their last trimester.

### Draft recommendations

27) That the standards require a contingency plan for the management of livestock in the event the aircraft is diverted and forced to land at a location different from the intended transit stop/s or destination.

28) That the standards require a contingency plan for euthanasia for any animal where it is deemed as required either on-board the aircraft if livestock are accessible and it is safe to do so, or as soon as possible after unloading from the aircraft.

29) That the requirements for the end of journey report be updated as per Appendix E of this report to include more detailed animal welfare monitoring and to cover more aspects of the air export journey.

30) That the standards include a notifiable incident if the maximum water deprivation time is exceeded. If maximum water deprivation times are exceeded, exporters should notify the department as soon as possible. The report should include details of any mitigating measures that have been employed to address the issue.
7 General

7.1.1 Current requirements
The IATA Regulations were considered in the development of ASEL v2.3 and many provisions within Standard 6 are consistent with them.

7.1.2 Discussion in submissions and literature review
It was suggested in submissions that ASEL should reference international standards such as the IATA Regulations and the OIE Code, rather than reproduce these international standards. It was also suggested that where the ASEL provides further regulation over that of international standards, than the ASEL should prevail.

7.1.3 Committee views
The committee considered that referencing international standards in ASEL was good practice. As the IATA Regulations are updated annually on the recommendations of an expert group, the committee is of the opinion that specific references to particular regulations would not be appropriate. A general compliance clause would suffice. Additionally, the department should provide exporters with a notice of any changes that occur on an annual basis, through an Export Advisory Notice.

The committee noted that there are times when international regulations differed from ASEL. It was suggested that standards in the IATA Regulations should apply, unless the ASEL provided for over and above the IATA Regulations requirements in which case ASEL should apply.

Draft recommendations

31) That the standards include a provision that the IATA Regulations, as amended and in force from time to time, shall apply to the export of livestock by air from Australia, unless conflicting with the ASEL, in which case the ASEL should apply.

32) That the department releases an Export Advisory Notice when the IATA Regulations are amended.
8 Management Plans

Throughout the report the committee has recommended the use of management plans to address additional risks faced by certain classes of livestock.

8.1 Current requirements

All livestock exporters need an approved arrangement to export livestock from Australia. Since 1 January 2017, under the Export Control (Animals) Order 2004, the department cannot approve Notices of Intention (NOI) for exports or issue export permits and health certificates for livestock to exporters who do not have an approved arrangement (unless a small and infrequent exporter exemption has been granted).

An approved arrangement is an agreement between the department and a livestock exporter that allows for a streamlined export certification process. The purpose of the approved arrangement is to describe the operations which, when correctly applied by a livestock export business (the exporter), will effectively manage the preparation and certification of livestock exported from Australia. This approach is consistent with other export commodity approved arrangements.

Where an exporter wants to undertake certain activities, such as exporting heavy cattle, they need to include a management plan to cover this activity in their approved arrangement.

Once these management plans are approved, any consignment that requires a management plan must invoke the relevant management plan in the consignment specific export plan (CSEP) and include the relevant management plan/s on the application for Export Permit and Health Certificate.

Exporters must have management plans of these types approved as part of their approved arrangement before they submit a NOI where the relevant management plan is required.

8.2 Committee views

The committee has recommended that ASEL is updated to require the use of management plans for certain activities when exporting livestock by air. The management plans should detail how the exporter intends to manage the heightened risk of animal welfare issues associated with the:

- export of young animals
- sourcing and export of miniature breeds and other livestock that do not meet the minimum liveweight requirements
- export of livestock during the third trimester of pregnancy
- export of livestock that have recently given birth
- export of livestock with young at foot
- penning arrangements for camels over 300 kg liveweight
- management of total water deprivation time during the air export journey.
8.2.1 General inclusions in a management plan
A management plan must include details of how the exporter will manage the sourcing and transport of these animals, in particular:

- The age, weight and breed (where applicable) of the animals covered by the plan
- Induction and sourcing activities – including weighing, inspection and segregation (if required)
- Animal health and treatments - including additional treatments or veterinary requirements
- Feeding and water requirements – details of any feeding programs/ regimes
- Loading and penning arrangements – detail the process for selecting and stocking appropriate crates, including segregation where required
- Monitoring and inspections during the air transport journey – detail how the animal welfare will be monitored throughout the journey.

8.2.2 Total water deprivation time
A management plan for the total water deprivation time during the air export journey must include details of how the exporter will manage the water deprivation time for animals, in particular:

- Routine curfew arrangements
- Expected journey time – including from the premises to the airport, time spent at the airport prior to and including loading, total flight time and expected time the animals will be uncrated and offered water at the destination.
- Provision of water during delays or transit stops
- Contingency arrangements if the maximum water deprivation time is exceeded – including details of how animals can be provided water enroute or during transit
9 Definitions

**Air export journey** covers the period from the time the first animal is loaded into a crate for transport by air, until the time the last animal is unloaded from a crate at the final destination airport.

**Approved premises** is a place approved by the Department of Agriculture for the pre-export preparation of livestock by air.

**Competent pregnancy tester** a person permitted under a relevant state or territory law to conduct pregnancy tests in livestock. Competent pregnancy testers may only diagnose pregnancy for feeder/slaughter cattle or buffalo by manual palpation and are not approved to use ultrasound diagnoses or the IDEXX pregnancy test. They cannot complete pregnancy testing of breeder or buffalo consignments for any market.

**Competent stock handler** the person has the requisite knowledge, skills, experience, attitude and behaviour to perform the requirement, and has the ability to manage and handle animals humanely, efficiently and capably at the relevant stage(s) of the livestock export chain.

Supporting evidence of competency includes any of the following:

- Records of on-the-job training
- Relevant experience
- Recognised training and staff training registers
- Induction training
- Supervisor sign-off for specific tasks, or
- Demonstrated ability.

For clarity, an accredited stockperson, the airline crew or a representative of the importer can count towards the requirement for competent stock handlers, provided they have the required skills/expertise.

**Emaciated or over-fat body condition** Livestock is in an emaciated or over-fat body condition if it is assessed by a competent person against the corresponding species scoring system within Appendix A, as having the following body scores:

<table>
<thead>
<tr>
<th>Species</th>
<th>Emaciated (inclusive)</th>
<th>Fit to export (inclusive)</th>
<th>Over-fat (inclusive)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle</td>
<td>Less than 2</td>
<td>2 or more, less than 5</td>
<td>5 or more</td>
</tr>
<tr>
<td>Dairy cattle</td>
<td>Less than 3.5</td>
<td>3.5 or more, less than 5.5</td>
<td>5.5 or more</td>
</tr>
<tr>
<td>Buffalo</td>
<td>Less than 2</td>
<td>2 or more, less than 5</td>
<td>5 or more</td>
</tr>
<tr>
<td>All other livestock</td>
<td>Less than 2</td>
<td>2 or more, less than 4</td>
<td>4 or more</td>
</tr>
<tr>
<td>---------------------</td>
<td>-------------</td>
<td>------------------------</td>
<td>----------</td>
</tr>
</tbody>
</table>

**Management plan** is an export management plan for the individual characteristics of a consignment, and should include any risks and management details for the consignment.

**Notifiable incident** with regard to export of livestock by air includes, but is not limited to:

- a) loss of aircraft;
- b) disablement of ventilation systems on an aircraft carrying livestock causing a serious adverse effect on animal health and welfare;
- c) rejection of livestock at an overseas airport;
- d) a mortality rate equal to or greater than the reportable level;
- e) any other incident that has an adverse effect on animal health and welfare; or
- f) the maximum water deprivation times are exceeded for the air export journey.

**Reportable level** in respect of a species, means the percentage listed or 3 animals, whichever is the greater number of animals:

- a) sheep and goats: 1 per cent;
- b) cattle and buffalo: 0.5 per cent;
- c) camelids: 1 per cent;
- d) deer: 1 per cent.

**Valid pregnancy test** a valid pregnancy test is that which has been completed in accordance with the species pregnancy testing requirements within Appendix B of this standard. For the purposes of pregnancy testing requirements, the day that the animal is pregnancy tested is taken to be day zero (0). For example, if a heifer is pregnancy tested on 1 July, day zero is 1 July and the day of loading must be no later than 31 July to meet the valid pregnancy test requirements of testing during the 30 day period.

**Water deprivation time** the time that animals can be deprived of access to adequate water of a quality to maintain good health and welfare. Water deprivation time is the total continuous period of water deprivation, starting when all animals last had access to water. The Land Transport Standards uses the term time off water to describe this.
10 References


Hogan and Binns (2010) Upgrade to Livestock Air Transport Safety Assessment (LATSA) software (W.LIV.0269), Meat and Livestock Australia

Hogan and Willis (2009) *Best Practice design of crates for livestock by air* (W.LIV.0261) Meat and Livestock Australia


Petherick 2005 Animal welfare issues associated with extensive livestock production: The northern Australian beef cattle industry. *Applied Animal Behaviour Science* 92,


### Appendix A Body condition score tables

#### Table 14 cattle body condition scoring

<table>
<thead>
<tr>
<th>Score</th>
<th>Traditional muscle score equivalent</th>
<th>Traditional fat score equivalent</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>E</td>
<td>0</td>
<td>Severely emaciated</td>
</tr>
<tr>
<td>1</td>
<td>D</td>
<td>0</td>
<td>The individual bones are sharp to the touch, with no fat at the head of the tail. Hip bones and ribs are prominent.</td>
</tr>
<tr>
<td>2</td>
<td>B-E</td>
<td>1</td>
<td>The individual bones can be felt easily, but feel rounded rather than sharp. There is some tissue cover around the tail head. Individual ribs are no longer visually obvious.</td>
</tr>
<tr>
<td>3</td>
<td>A-E</td>
<td>2</td>
<td>The short ribs can be felt only with firm thumb pressure. Areas either side of the tail head have fat cover which can be felt easily.</td>
</tr>
<tr>
<td>4</td>
<td>A-E</td>
<td>3</td>
<td>The ribs cannot be felt and fat cover around the tail head is easily seen as slight mounds, soft to touch. Folds of fat are beginning to develop over the ribs and thighs.</td>
</tr>
<tr>
<td>5</td>
<td>A-E</td>
<td>4-6</td>
<td>The bone structure of the animal is no longer noticeable and the tail head is almost completely buried in fatty tissue.</td>
</tr>
</tbody>
</table>

This picture assists with body condition scoring for beef cattle.
Table 15 dairy cattle body condition scoring

<table>
<thead>
<tr>
<th>Condition Score</th>
<th>How sunken is the area between the tail and pins?</th>
<th>Are the insides of the pins hollow?</th>
<th>Is the backbone a bumpy ridge?</th>
<th>Is the depression between the pins and hips</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>deeply sunken</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>3.5</td>
<td>sunken</td>
<td>NO</td>
<td>NO</td>
<td>U-SHAPED</td>
</tr>
<tr>
<td>4</td>
<td>slightly sunken</td>
<td>NO</td>
<td>NO</td>
<td>SHALLOW</td>
</tr>
<tr>
<td>4.5</td>
<td>filled in</td>
<td>NO</td>
<td>NO</td>
<td>FLAT</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 16 buffalo body condition scoring

<table>
<thead>
<tr>
<th>Score</th>
<th>Optional Score</th>
<th>Description</th>
<th>P8 Fat mm thickness</th>
<th>Loin Surface</th>
<th>Illustration of vertical section of the loin region between spinous and transverse processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Emaciated; very weak -- extreme muscle wastage. All bones highly visible. Skin 'draped' over skeleton. Unsteady gait.</td>
<td>0</td>
<td>Severely concave</td>
<td>![Illustration]</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>Very lean; becoming quite angular, concave around most muscle groups including legs with muscle depletion evident.</td>
<td>0</td>
<td>Very concave</td>
<td>![Illustration]</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>Lean; short ribs visible, hook and pin bones still prominent. Can easily count all ribs. Some muscle depletion. No subcutaneous fat visible or palpable.</td>
<td>0</td>
<td>Moderately concave</td>
<td>![Illustration]</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>Backward store; tail head still prominent with hollows to pins. Ribs visible only at top and rear.</td>
<td>[1-2]</td>
<td>Slightly concave</td>
<td>![Illustration]</td>
</tr>
<tr>
<td>5</td>
<td>7</td>
<td>Store; (Average) good muscle definition, with fat starting to be deposited, rib outlines disappearing, hook and pin bones still defined.</td>
<td>[1-4] [3-4]</td>
<td>Level, even slope</td>
<td>![Illustration]</td>
</tr>
<tr>
<td>6</td>
<td>8</td>
<td>Forward Store; hook and pin bones becoming more rounded. Pin to stifle leg straight to slightly convex.</td>
<td>[5-7]</td>
<td>Slightly convex</td>
<td>![Illustration]</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
<td>Prime; quite even and smooth over whole backline. Muscling becoming more convex due to fat deposition.</td>
<td>[5-35] [9-14]</td>
<td>Moderately convex</td>
<td>![Illustration]</td>
</tr>
<tr>
<td>8</td>
<td>8</td>
<td>Fat; well-rounded all over all bone. Some unevenness of fat deposits appearing around rump area.</td>
<td>[15-35]</td>
<td>Very convex</td>
<td>![Illustration]</td>
</tr>
<tr>
<td>9</td>
<td>9</td>
<td>Overfat; usually only mature cows can achieve this condition. Butous fat deposits both sides of tail head. Pin and hook bones not discernable.</td>
<td>(&gt;35) [&gt;36]</td>
<td>Severely convex crease / dip along spine</td>
<td>![Illustration]</td>
</tr>
<tr>
<td>Score</td>
<td>Backbone</td>
<td>Short ribs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>----------</td>
<td>------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>The bones form a sharp narrow ridge. Each vertebra can be easily felt as a bone under the skin. There is only a very small eye muscle. The sheep is quite thin (virtually unsaleable).</td>
<td>The ends of the short ribs are very obvious. It is easy to feel the squarish shape of the ends. Using fingers spread 1 cm apart, it feels like the fingernail under the skin with practically no covering.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>The bones form a narrow ridge but the points are rounded with muscle. It is easy to press between each bone. There is a reasonable eye muscle. Store condition – ideal for wethers and lean meat.</td>
<td>The ends of the short ribs are rounded but it is easy to press between them. Using fingers spread 0.5 cm apart, the ends feel rounded like finger ends. They are covered with flesh but it is easy to press under and between them.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>The vertebrae are only slightly elevated above a full eye muscle. It is possible to feel each rounded bone but not to press between them. Forward store condition ideal for most lamb markets now. No excess fat.</td>
<td>The ends of the short ribs are well rounded and filled in with muscle. Using 4 fingers pressed tightly together, it is possible to feel the rounded ends but not between them. They are well covered and filled in with muscle.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>It is possible to feel most vertebrae with pressure. The backbone is a smooth slightly raised ridge above full eye muscles and the skin floats over it.</td>
<td>It is only possible to feel or sense one or two short ribs and only possible to press under them with difficulty. It feels like the side of the palm, where maybe one end can just be sensed.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>The spine may only be felt (if at all) by pressing down firmly between the fat covered eye muscles. A bustle of fat may appear over the tail (wasteful and uneconomic).</td>
<td>It is virtually impossible to feel under the ends as the triangle formed by the long ribs and hip bone is filled with meat and fat. The short rib ends cannot be felt.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Lifetime Wool.
To determine the condition score, feel the grid reference (GR) site of the goat. This point is located 110mm from the backline along the second-last long rib. The condition score relates to the tissue depth (in mm) at the GR site. Table 18 provides guidance on what to feel for when condition scoring. As the table indicates, the live condition scores assigned in Australia are from one to five. Refer to the diagram to locate the positions on the goat indicated by A, B, C and D in the first row of Table 18.
### Table 19 alpaca body condition scoring

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Severely concave between spine and ribs. The backbone is very noticeable, ribs are clearly felt and brisket shows no fat.</td>
<td><img src="image1.png" alt="Illustration" /></td>
</tr>
<tr>
<td>2</td>
<td>Slightly concave between spine and ribs. You can feel backbone, ribs are noticeable and brisket is firm.</td>
<td><img src="image2.png" alt="Illustration" /></td>
</tr>
<tr>
<td>3</td>
<td>Neither concave nor convex between spine and ribs. You can feel the backbone, but it does stand out and you can just feel the ribs and the brisket.</td>
<td><img src="image3.png" alt="Illustration" /></td>
</tr>
<tr>
<td>4</td>
<td>Slightly convex between spine and ribs. You can feel the backbone, but it does not stand out and you can just feel the ribs and the brisket.</td>
<td><img src="image4.png" alt="Illustration" /></td>
</tr>
<tr>
<td>5</td>
<td>Severely convex between spine and ribs, the top of the back feels flat. You cannot feel backbone or ribs, brisket wobbles when touched.</td>
<td><img src="image5.png" alt="Illustration" /></td>
</tr>
</tbody>
</table>

The picture on the left is an example of how to body score an alpaca by placing hand on the backbone, just forward of the pelvic area (or toward the last of the ribs).
### Table 20 camel body condition scoring

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Little or no fat in the hump sac; hump hairy and may be leaning to one side.</td>
<td>![Illustration](Note 1)</td>
</tr>
<tr>
<td>2</td>
<td>Hump with moderate development rising 5 per cent higher than chest depth, but may also be leaning to one side.</td>
<td><img src="2" alt="Illustration" /></td>
</tr>
<tr>
<td>3</td>
<td>Hump with good development and rising to 10 per cent higher than chest depth. Hump is still sculptured inwards on both sides and still fits over the chest and abdominal area.</td>
<td><img src="3" alt="Illustration" /></td>
</tr>
<tr>
<td>4</td>
<td>Hump fully developed and rising to 15 per cent higher than chest depth. Hump rounded outwards on both sides and runs from the shoulder to the rump.</td>
<td><img src="4" alt="Illustration" /></td>
</tr>
<tr>
<td>5</td>
<td>Hump overextended and rising more than 15 per cent higher than chest, or so full that it is rounded on the sides like a semicircle.</td>
<td><img src="5" alt="Illustration" /></td>
</tr>
</tbody>
</table>

### Table 21 deer body condition scoring

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
<th>Pelvis, ribs and spine</th>
<th>Rump area</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Emaciated — no fat cover</td>
<td>Prominent</td>
<td>Concave</td>
</tr>
<tr>
<td>2</td>
<td>Lean — minimal fat cover</td>
<td>Prominent but appear rounded rather than sharp</td>
<td>Slightly concave</td>
</tr>
<tr>
<td>3</td>
<td>Prime — ideal fat cover</td>
<td>Not readily distinguished</td>
<td>Flat</td>
</tr>
<tr>
<td>4</td>
<td>Fat — fat (some trimming necessary)</td>
<td>Pelvis rounded, spine covered by fat</td>
<td>Rounded</td>
</tr>
<tr>
<td>5</td>
<td>Over-fat — over-fat (excessive trimming required)</td>
<td>Pelvis concealed by fat, spine hard to palpate</td>
<td>Very convex</td>
</tr>
</tbody>
</table>
Appendix B Pregnancy testing requirements

Pregnancy testing for breeder cattle or buffalo
A valid pregnancy test for breeder cattle or buffalo must:

(a) have been carried out during the 30 day period before export, unless otherwise agreed by the relevant Australian Government agency, with that agreement to be provided only where necessitated by circumstances outside the control of the exporter and where the exporter can demonstrate it will not impact on animal welfare.

(b) be evidenced by written certification by the person carrying out the test that the animal is no more than 250 days pregnant at the scheduled date of departure.

NOTE: For consignments where an accredited PREgCHECK® tester is required, the exporter must ensure the name of the accredited tester, their accreditation number and a statement of their accreditation is provided on the pregnancy declaration for the consignment.

(c) That in relation to (b), the veterinarian may base this certification on assessment of the animals by a method other than manual palpation if the veterinarian:
   (i) is accredited under the PREgCHECK® Scheme, and
   (ii) determines that cattle or buffalo are too small to be manually palpated safely.

Pregnancy testing for feeder or slaughter cattle or buffalo
A valid pregnancy test for feeder or slaughter cattle or buffalo must:

(a) have been carried out during the 30 day period before export, unless otherwise agreed by the relevant Australian Government agency, with that agreement to be provided only where necessitated by circumstances outside the control of the exporter and where the exporter can demonstrate it will not impact on animal welfare

(b) be carried out by a registered veterinarian

(c) be evidenced by written certification by the person carrying out the test, that the animal is not detectably pregnant.

Pregnancy testing for camelids
A valid pregnancy test for camelids must:

(a) have been carried out during the 30 day period before export, unless otherwise agreed by the relevant Australian Government agency, with that agreement to be provided only where necessitated by circumstances outside the control of the exporter and where the exporter can demonstrate it will not impact on animal welfare

(b) have been carried out by ultrasound, or in the case of breeders by ultrasound foetal measurement

(c) be carried out by a registered veterinarian with demonstrable current experience in camelid pregnancy diagnosis
(d) be evidenced by written certification by the person carrying out the test, that the animal is not detectably pregnant, or in the case of breeders, not more than 250 days pregnant.

**Pregnancy testing for goats, sheep or deer**

A valid pregnancy test for goats, sheep or deer must:

(a) have been carried out during the 30 day period before export, unless otherwise agreed by the relevant Australian Government agency, with that agreement to be provided only where necessitated by circumstances outside the control of the exporter and where the exporter can demonstrate it will not impact on animal welfare

(b) have been carried out by ultrasound, or in the case of breeders by ultrasound foetal measurement

(c) be carried out by a person able to demonstrate a suitable level of experience and skill, and

(d) be evidenced by written certification by the person carrying out the test, that the animal is not detectably pregnant, or in the case of breeders, not more than the specified number of days pregnant at the scheduled date of departure in Table 22:

<table>
<thead>
<tr>
<th>Livestock</th>
<th>Maximum days gestation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deer (axis, fallow, sika)</td>
<td>170</td>
</tr>
<tr>
<td>Deer (rusa, red, reindeer)</td>
<td>185</td>
</tr>
<tr>
<td>Sheep</td>
<td>115</td>
</tr>
<tr>
<td>Goats</td>
<td>115</td>
</tr>
</tbody>
</table>
Appendix C Pen space allowances for alpacas

The following pen space allowances have been taken from the Land Transport Standards.

Table 23 pen space allowance for alpacas

<table>
<thead>
<tr>
<th>Mean liveweight (kg)</th>
<th>Minimum floor area (m²/head)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>0.4</td>
</tr>
<tr>
<td>30</td>
<td>0.5</td>
</tr>
<tr>
<td>40</td>
<td>0.6</td>
</tr>
<tr>
<td>50</td>
<td>0.7</td>
</tr>
<tr>
<td>60</td>
<td>0.8</td>
</tr>
<tr>
<td>80</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Alpacas must have enough space to be able to crouch during transport, that is sit with their legs folded underneath them.

The estimated area for an alpaca crouch is approximately 0.55 m² for a 40–50 kg alpaca.
Appendix D Maximum water deprivation times for the air export journey

The following maximum water deprivation and minimum rest times must be observed for the air transport of animals:

**Table 24 maximum water deprivation time and minimum rest times**

<table>
<thead>
<tr>
<th>Species</th>
<th>Class</th>
<th>Maximum water deprivation time</th>
<th>Minimum rest period (prior to commencing another journey)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpacas</td>
<td>over 12 months</td>
<td>24 hours</td>
<td>24 hours</td>
</tr>
<tr>
<td></td>
<td>6 to 12 months, or up to second trimester of pregnancy</td>
<td>8 hours</td>
<td>12 hours</td>
</tr>
<tr>
<td></td>
<td>in the third trimester of pregnancy; lactating with young at foot; or cria up to 6 months</td>
<td>4 hours</td>
<td>12 hours</td>
</tr>
<tr>
<td>Buffalo</td>
<td>over 6 months; or up to second trimester of pregnancy</td>
<td>36 hours</td>
<td>24 hours</td>
</tr>
<tr>
<td></td>
<td>1 to 6 months; in third trimester of pregnancy; or lactating with young at foot</td>
<td>24 hours</td>
<td>12 hours</td>
</tr>
<tr>
<td>Camels</td>
<td>over 6 months; or up to second trimester pregnancy</td>
<td>48 hours</td>
<td>36 hours</td>
</tr>
<tr>
<td></td>
<td>1 to 6 months; in third trimester of pregnancy; or lactating with young at foot</td>
<td>24 hours</td>
<td>12 hours</td>
</tr>
<tr>
<td>Cattle</td>
<td>over 6 months</td>
<td>48 hours</td>
<td>36 hours</td>
</tr>
<tr>
<td></td>
<td>1 to 6 months; lactating with young at foot; or in third trimester of pregnancy</td>
<td>24 hours</td>
<td>12 hours</td>
</tr>
<tr>
<td>Deer</td>
<td>over 6 months</td>
<td>48 hours</td>
<td>36 hours</td>
</tr>
<tr>
<td></td>
<td>1 to 6 months</td>
<td>28 hours</td>
<td>12 hours</td>
</tr>
<tr>
<td></td>
<td>in third trimester of pregnancy</td>
<td>24 hours</td>
<td>12 hours</td>
</tr>
<tr>
<td>Goats</td>
<td>over 6 months</td>
<td>48 hours</td>
<td>36 hours</td>
</tr>
<tr>
<td></td>
<td>1 to 6 months</td>
<td>28 hours</td>
<td>12 hours</td>
</tr>
<tr>
<td></td>
<td>third trimester pregnancy</td>
<td>24 hours</td>
<td>12 hours</td>
</tr>
<tr>
<td>Sheep</td>
<td>over 4 months</td>
<td>48 hours</td>
<td>36 hours</td>
</tr>
<tr>
<td></td>
<td>1 to 4 months</td>
<td>20 hours</td>
<td>12 hours</td>
</tr>
<tr>
<td>------------------------</td>
<td>---------------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>in third trimester of</td>
<td>24 hours</td>
<td>12 hours</td>
<td></td>
</tr>
<tr>
<td>pregnancy</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Appendix E Air export journey report

This report must provide a general overview of the air export journey, with mention of any specific issues relevant to the health and welfare of the livestock, and must include the following information:

## Table 25 air export journey report

<table>
<thead>
<tr>
<th></th>
<th>Details</th>
<th>Details and time (local)</th>
<th>Cumulative time off water (hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Approved premises/property</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Departure airport(s)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total loaded, by species</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Aircraft type(s) and airline(s)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Flight number(s)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Date and departure time (of flight)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Details</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Curfew time – animals are removed from access to water (at premises or property)</td>
<td>For example curfew began at xxxxx</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Loading time – time that the loading of crates began</td>
<td>For example loading began at xxxxx</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Total flight(s) time-including any stopovers or transits</td>
<td>For example flight departed at xxxxx</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>flight arrived at xxxxx</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time when animals are released from the crate (time when the last animal is out)</td>
<td>For example animals were unloaded from crates at xxxxx (local time)</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time when animals are first offered water</td>
<td>For example animals were offered water at the destination property at xxxxx</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>TOTAL water deprivation time</td>
<td></td>
<td>22</td>
</tr>
<tr>
<td>6</td>
<td>Transit stops</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Feed and water</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Access</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Maintenance issues</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Weather conditions</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ventilation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Flight conditions</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Weather conditions</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Temperature (where the livestock is kept)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ventilation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Health and welfare of livestock</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of livestock born during the journey</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of abortions</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of mortalities and details of mortality/cause of death</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number, species of any animal that is affected by injury or ill health, including cause and any treatment.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>General behaviour of animals in flight (standing, resting, etc.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>General demeanour of animals:</strong> Alert/active/lethargic/anxious/dull or other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Effect on animals of any turbulence or alteration to ventilation inside aircraft.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Discharge airport(s)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Date</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Comments on discharge operations</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>