

Standard 4 — Vessel preparation and loading

Guiding principle

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

Required outcomes

- Livestock are healthy, fit to travel and comply with importing country requirements.
- The vessel meets Australian requirements for the safe carriage of livestock.
- Sufficient personnel must be available both at loading and during the voyage to ensure that livestock husbandry and welfare needs are addressed.
- Livestock are handled and loaded in a manner that prevents injury and minimises stress.
- The travel and loading plans adequately address the health and welfare of the livestock.
- A health certificate and an export permit are issued by the Australian Quarantine and Inspection Service (AQIS).

Overview

The Australian Maritime Safety Authority (AMSA) is responsible for the inspection of selected foreign flag ships to monitor their compliance with safety and environment protection standards, including safe carriage of livestock as cargo.

The master of the vessel is responsible for the vessel's loading configuration and for ensuring the safety of the vessel, crew and cargo during loading.

Livestock vessels carry crew in sufficient numbers with experience in the care of animals to satisfactorily provide for their tending, feeding and watering, as well as assisting the accredited stock person(s) and/or veterinarian onboard in their responsibilities during the voyage.

The loading phase begins with the arrival of livestock at the port of loading. It ends when all of the animals have been loaded onto the vessel. Once loading has been completed in accordance with the loading plan, an export permit and health certificate will be issued.

The exporter is responsible for providing competent animal handlers to ensure that livestock are loaded in a manner that prevents injury and minimises stress, and for ensuring that suitable loading facilities are provided. The vessel owner is responsible for ensuring that the vessel is appropriately designed, constructed, equipped, maintained and certified to carry the cargo of livestock.

The exporter must ensure that stocking densities meet all legislative requirements; that there is adequate provisioning of the vessel before departure, including feed, water and veterinary supplies; and that accredited stock persons and, when required, an accredited veterinarian have been engaged.

The exporter must be able to demonstrate that the loading of the livestock at the port of loading has been conducted in accordance with the approved loading plan, any importing country requirements relating to the consignment, and relevant requirements of the Australian Government and the state or territory for loading of livestock.

These Standards are relevant to each stage of the livestock export chain and should be reflected in relevant quality assurance programs. Livestock sourced for export must meet any requirement under a law of a state or territory. State and territory governments are responsible for ensuring that these jurisdictional requirements are met under respective state and territory legislation. AQIS must be satisfied that importing country requirements and the standards have been met before issuing a health certificate and export permit.

Further details regarding roles and responsibilities and the export chain process is outlined in the Australian Position Statement on the Export of Livestock (www.daff.gov.au/livestockexportstandards).

Linkages to other parts of the export chain

Only fit animals that comply with these Standards and importing country requirements can be transported to the port of loading for export.

Once loading begins, the master of the vessel assumes responsibility for the management and care of the livestock to the point of disembarkation. The exporter must provide details of any aspect of the preparation for export that may affect the future health and welfare of the livestock, and any relevant instructions for the care of the livestock during the voyage.

Definitions

Accredited stock person means a stock person who is accredited by LiveCorp for the shipboard husbandry of livestock.

Accredited veterinarian means a veterinarian who is accredited by AQIS to carry out duties in relation to the export of livestock.

Version 2.2 — Standard for vessel preparation and loading

Number	Standard
S4.1	<p>A vessel to be used for the export of livestock must comply with all Australian and international vessel biosecurity requirements and requirements for the safe carriage of livestock, as indicated by a valid Australian Certificate for the Carriage of Livestock (ACCL) issued by AMSA in respect of the species to be carried.</p> <p>As part of having a valid ACCL, the vessel must have adequate operational communication equipment to enable daily ship-to-shore communications to be conducted.</p>
S4.2	(Note: Standard S4.2 deleted).
S4.3	<p>Before loading of livestock for export begins, a loading plan must be prepared in accordance with the specifications in Appendix 4.1, including details of:</p> <ul style="list-style-type: none"> (a) the net available pen area on the ship (excluding the area of the hospital pens) according to the vessel's record of equipment for the carriage of livestock; and (b) the number of livestock that may be loaded on the vessel, based on the minimum pen area per head for the relevant livestock species and class as specified in Appendix 4.1, Tables A4.1.1–A4.1.6.
S4.4	<p>Pregnant cattle must be kept in pens that have an average floor area for each head of cattle of at least:</p> <ul style="list-style-type: none"> (a) for pregnant heifers* of a <i>Bos taurus</i> breed — the minimum area required for cattle under Table A4.1.2; and (b) for pregnant heifers of a <i>Bos indicus</i> breed — the minimum area required for cattle under Table A4.1.1; and (c) for pregnant cows** of a <i>Bos taurus</i> breed — an area five (5) per cent larger than the minimum area required for cattle under Table A4.1.2; and (d) for pregnant cows of a <i>Bos indicus</i> breed — an area five (5) per cent larger than the minimum area required for cattle under Table A4.1.1. <p>* heifer means a female bovine animal less than three (3) years of age that has not produced a calf</p> <p>** cow means a female bovine animal that has produced a calf or is over three (3) years of age</p>
S4.5	<p>An accredited stock person who is employed or contracted by the exporter and who is not ordinarily a member of the ship's crew must be appointed to accompany each consignment of livestock for export to its destination. In addition, if required by the relevant Australian Government agency, an accredited veterinarian must be appointed to accompany a consignment.</p>
S4.6	<p>Sufficient personnel must be available both at loading and during the voyage to ensure that livestock husbandry and welfare needs are addressed.</p>

Number	Standard
S4.7	<p>Upon arrival of the livestock at the port of embarkation:</p> <ul style="list-style-type: none"> (a) responsibility for the livestock must be transferred to a competent person nominated by the exporter; and (b) that person must be notified of any aspect of transport to the port of embarkation that might affect the future health and welfare of the livestock.
S4.8	<p>To ensure that only fit and healthy livestock are transported and are loaded on board:</p> <ul style="list-style-type: none"> (a) the exporter must arrange for the livestock to be inspected for health and welfare and fitness to travel, immediately before they are loaded onto the vessel; (b) only livestock that are healthy and fit to travel can be loaded; (c) any livestock rejected for export must be distinctively identified, and humane and effective arrangements must be made for their removal from the port; (d) if euthanasia is necessary, it must be carried out humanely and promptly; and (e) dead livestock must be removed from the port, and carcasses must be disposed of in compliance with all relevant health and environmental legislation.
S4.9	<p>When livestock for export are loaded on vessels with enclosed decks, the ventilation system must be run continuously from the commencement of loading.</p>
S4.10	<p>Livestock for export must be loaded onto the vessel by competent stock handlers in a manner that prevents injury and minimises stress.</p>
S4.11	<p>Livestock for export must be presented for loading, and penned on the vessel, in lines segregated by species, class, age, weight, criteria in S2.10e(i-iii), and any other relevant characteristic (and, where relevant, port of destination), in accordance with the approved loading plan.</p>
S4.12	<p>Stocking densities and pen-group weight-range tolerances for species of livestock must be in accordance with specifications in Appendix 4.1 and heat stress assessment using an agreed heat stress risk assessment unless a variation is required and approved by the relevant Australian Government agency:</p> <ul style="list-style-type: none"> b) Humane and effective arrangements must be made for the handling and care of any livestock surplus to requirements. <p>(Note: Standard S4.12a deleted).</p>
S4.13	<p>All livestock for export must be offered feed and water as soon as possible after being loaded on the vessel, but no later than twelve (12) hours after loading.</p>
S4.14	<p>Supplies of feed and water:</p> <ul style="list-style-type: none"> (a) Adequate water of a quality to maintain good health and suitable feed to satisfy the energy requirements of the livestock for the duration of the voyage, and statutory reserves as specified in Appendix 4.2, must be loaded. (b) The feed and water provisions must take into consideration the livestock species, class, age and expected weather conditions.

Number	Standard
S4.15	Bedding must be provided in accordance with specifications in Appendix 4.3.
S4.16	As the livestock for export are loaded on board the vessel at the port of export, responsibility for the livestock transfers to the master of the vessel, who must be notified of any aspect of the preparation of the livestock for export that might affect their future health and welfare.

AMSA = Australian Maritime Safety Authority

Appendix 4.1 Preparation of a loading plan

1. A suitably competent person must be appointed by the exporter to be responsible for the handling, husbandry and welfare of the livestock for export, and to ensure that loading facilities and livestock handling standards at the port are satisfactory during unloading from the land transport, inspection and loading onto the vessel.

2. A communication plan involving all responsible parties must be established before the loading of livestock for export begins. This plan must cover:

- roles and responsibilities of the exporter or nominated representative/s, the accredited stock person, the accredited veterinarian (if required), the master of the vessel, nominated officers and crew members, and government and port authorities;
- arrangements for regular meetings of key people before, during and after loading; and
- reporting procedures during and on completion of the voyage.

3. Written instructions and/or standard operating procedures for the care and handling of the livestock being exported, to maintain their health and welfare during the voyage, must be prepared before departure of the vessel from an Australian port. These must address:

- the quantity and type of feed to be provided, and frequency of feeding required, for each class of livestock during the voyage;
- if water is not supplied *ad libitum*, the quantity of water to be provided and frequency of watering required during the voyage;
- pen cleaning requirements;
- treatment of livestock during the voyage; and
- authority to humanely destroy any animal that is seriously ill or injured.

4. Loading arrangements must be made, and must take into consideration:

- port facilities, including the available water supply rate;
- port and ship security;
- environmental management;
- labour availability and competency; and
- occupational health and safety.

5. A loading plan for the vessel on which the livestock for export are to be transported must be prepared and be compliant with relevant ship safety standards and must give due consideration to:

- differences in handling, holding and husbandry needs of each livestock species, number of animals, sex, class, reproductive status, weight, breed, origin, preparation and transport history;
- pen layout, available pen area for the particular consignment, ventilation, vessel characteristics, port rotation, discharge sequence and stability; and
 - the segregation of livestock in accordance with criteria in S2.10a-e;
 - separation of cattle or buffalo from other species by a passageway, an empty pen or an effective impermeable barrier, to the satisfaction of an accredited stock person or accredited veterinarian;
 - location of livestock in relation to hatchways (there must be no location of livestock over a hatchway, unless the hatchway is protected against consequent damage and the hatchway covers are secured against movement); and

- location of livestock in relation to health and welfare (there must be no penning or location of livestock on or in any part of a vessel where the livestock, livestock fittings, livestock equipment or carrying arrangements could substantially compromise livestock health and/or welfare);
 - provision of clearly identified hospital pens (or stalls), constructed to the standard required for the species of livestock for which they are intended as specified in Marine Orders 43 (27), on each deck or otherwise in a manner readily accessible to livestock; and
 - stocking densities and pen-group weight-range tolerances for the species in accordance with the specifications in the tables below, unless a variation is approved by the relevant Australian Government agency based on an agreed heat stress risk assessment.
6. Restraint facilities and veterinary equipment, including medicines, instruments and stores sufficient for the species and number of livestock carried, must be provided on the vessel.
- The minimum restraint equipment to be carried on ships exporting feeder and slaughter cattle and/or buffalo from Australia to facilitate treatment and minimise the potential for livestock injury and stress is outlined in Table A4.1.8.
 - The minimum requirements for veterinary equipment to be carried on ships exporting feeder and slaughter cattle, and/or buffalo from Australia, based on the injuries and diseases likely to occur during a normal voyage, are shown in Table A4.1.8.
 - The minimum requirements for veterinary equipment to be carried on ships exporting sheep and goats from Australia, based on the injuries and diseases likely to occur during a normal voyage, are shown in Table A4.1.9.
 - Appropriate equipment for the humane killing of livestock of the species to be carried must be provided.
7. A contingency plan for emergencies and interruption to loading must be prepared, including procedures for contacting the exporter in the event of an animal health or welfare emergency.

Table A4.1.1 Minimum pen area per head for cattle exported by sea — default table^a

Liveweight (kg) ^b	Minimum pen area (m ² /head)	Liveweight (kg) ^b	Minimum pen area (m ² /head)	
			Voyages of 10 days or more ^c	Voyages of less than 10 days ^c
200 or less	0.770	405	1.467	1.459
205	0.787	410	1.484	1.468
210	0.804	415	1.501	1.487
215	0.821	420	1.518	1.505
220	0.838	425	1.535	1.519
225	0.855	430	1.552	1.533
230	0.872	435	1.567	1.547
235	0.889	440	1.586	1.560
240	0.906	445	1.603	1.574
245	0.923	450	1.620	1.588
250	0.940	455	1.637	1.602
255	0.957	460	1.654	1.615
260	0.974	465	1.671	1.629
265	0.991	470	1.688	1.643
270	1.008	475	1.705	1.657
275	1.025	480	1.722	1.670
280	1.042	485	1.739	1.684
285	1.059	490	1.756	1.698
290	1.076	495	1.773	1.712
295	1.093	500	1.790	1.725
300	1.110	505	1.807	1.739
305	1.127	510	1.824	1.753
310	1.144	515	1.841	1.767
315	1.161	520	1.858	1.780
320	1.178	525	1.875	1.794
325	1.195	530	1.892	1.808
330	1.212	535	1.909	1.822
335	1.229	540	1.926	1.835
340	1.246	545	1.943	1.849
345	1.263	550	1.960	1.863
350	1.280	555	1.977	1.877
355	1.297	560	1.994	1.890
360	1.314	565	2.011	1.904
365	1.331	570	2.028	1.918
370	1.348	575	2.045	1.932
375	1.365	580	2.062	1.945
380	1.382	585	2.079	1.959
385	1.399	590	2.096	1.973
390	1.416	595	2.113	1.987
395	1.433	600	2.130	2.000
400	1.450	more than 600	^d	^e

^a Pen-group liveweight range: the liveweight range in each pen of cattle should not exceed the pen average plus or minus 50 kg.

^b For cattle weighing between 200 kg and 600 kg, for weights between those shown in the table, the minimum pen area per head should be calculated by linear interpolation.

^c Time from completion of loading in Australia until anticipated arrival at the first port of discharge overseas.

^d For cattle weighing more than 600 kg, on voyages of 10 days or more, the minimum pen area per head is 2.13 m² plus 0.017 m² for each 5 kg above 600 kg.

^e For cattle weighing more than 600 kg, on voyages of less than 10 days, the minimum pen area per head is 2.00 m² plus 0.014 m² for each 5 kg above 600 kg.

Table A4.1.2 Minimum pen area per head for cattle exported by sea from a port south of latitude 26 degrees south, from 1 May to 31 October

Liveweight (kg) ^a	Minimum pen area (m ² /head)	Liveweight (kg) ^a	Minimum pen area (m ² /head)
200 or less	0.847	355	1.427
205	0.866	360	1.445
210	0.884	365	1.464
215	0.903	370	1.483
220	0.922	375	1.502
225	0.941	380	1.520
230	0.959	385	1.539
235	0.978	390	1.558
240	0.997	395	1.613
245	1.016	400	1.668
250	1.034	405	1.688
255	1.053	410	1.707
260	1.071	415	1.727
265	1.090	420	1.746
270	1.109	425	1.766
275	1.128	430	1.785
280	1.146	435	1.805
285	1.165	440	1.824
290	1.184	445	1.844
295	1.203	450	1.863
300	1.221	455	1.883
305	1.240	460	1.902
310	1.258	465	1.922
315	1.277	470	1.941
320	1.296	475	1.961
325	1.315	480	1.980
330	1.333	485	2.000
335	1.352	490	2.019
340	1.371	495	2.039
345	1.390	500	2.060
350	1.408	more than 500	^b

^a For cattle weighing between 200 kg and 500 kg, for weights between those shown in the table, the minimum pen area per head should be calculated by linear interpolation.

^b For cattle weighing more than 500 kg, the minimum pen area per head is 2.06 m² plus 0.02 m² for each 5 kg above 500 kg.

Note: For shipments that originate or load from a port south of latitude 26 degrees south and take a route that does not cross latitude 15 degrees south, stocking densities will be calculated from Table A4.1.3 regardless of the date of the voyage.

Table A4.1.3 Minimum pen area per head for cattle exported by sea from a port south of latitude 26 degrees south, from 1 November to 30 April

Liveweight (kg) ^a	Minimum pen area (m ² /head)	Liveweight (kg) ^a	Minimum pen area (m ² /head)
200 or less	0.770	380	1.382
205	0.787	385	1.399
210	0.804	390	1.416
215	0.821	395	1.433
220	0.838	400	1.450
225	0.855	405	1.467
230	0.872	410	1.484
235	0.889	415	1.501
240	0.906	420	1.518
245	0.923	425	1.535
250	0.940	430	1.552
255	0.957	435	1.569
260	0.974	440	1.586
265	0.991	445	1.603
270	1.008	450	1.620
275	1.025	455	1.637
280	1.042	460	1.654
285	1.059	465	1.671
290	1.076	470	1.688
295	1.093	475	1.705
300	1.110	480	1.722
305	1.127	485	1.775
310	1.144	490	1.827
315	1.161	495	1.880
320	1.178	500	1.932
325	1.195	505	1.984
330	1.212	510	2.035
335	1.229	515	2.086
340	1.246	520	2.137
345	1.263	525	2.157
350	1.280	530	2.176
355	1.297	535	2.196
360	1.314	540	2.215
365	1.331	545	2.235
370	1.348	550	2.255
375	1.365	more than 550	^b

^a For cattle weighing between 200 kg and 550 kg, for weights between those shown in the table, the minimum pen area per head should be calculated by linear interpolation.

^b For cattle weighing more than 550 kg, the minimum pen area per head is 2.255 m² plus 0.02 m² for each 5 kg above 550 kg.

Note: For shipments that originate or load from a port south of latitude 26 degrees south and take a route that does not cross latitude 15 degrees south, stocking densities are to be calculated from Table A4.1.3 regardless of the date of the voyage.

Table A4.1.4 Minimum pen area per head for buffalo exported by sea

Liveweight (kg)	Minimum pen area (m ² /head)	Liveweight (kg)	Minimum pen area (m ² /head)
200	0.770	430	1.552
205	0.787	435	1.569
210	0.804	440	1.586
215	0.821	445	1.603
220	0.838	450	1.620
225	0.855	455	1.637
230	0.872	460	1.654
235	0.889	465	1.671
240	0.906	470	1.688
245	0.923	475	1.705
250	0.940	480	1.722
255	0.957	485	1.739
260	0.974	490	1.756
265	0.991	495	1.773
270	1.008	500	1.790
275	1.025	505	1.807
280	1.042	510	1.824
285	1.059	515	1.841
290	1.076	520	1.858
295	1.093	525	1.875
300	1.110	530	1.892
305	1.127	535	1.909
310	1.144	540	1.926
315	1.161	545	1.943
320	1.178	550	1.960
325	1.195	555	1.977
330	1.212	560	1.994
335	1.229	565	2.011
340	1.246	570	2.028
345	1.263	575	2.045
350	1.280	580	2.062
355	1.297	585	2.079
360	1.314	590	2.096
365	1.331	595	2.113
370	1.348	600	2.130
375	1.365	605	2.147
380	1.382	610	2.164
385	1.399	615	2.181
390	1.416	620	2.198
395	1.433	625	2.215
400	1.450	630	2.232
405	1.467	635	2.249
410	1.484	640	2.266
415	1.501	645	2.283
420	1.518	650	2.300
425	1.535		

Note: Buffalo stocking density is to be calculated according to the formula: $(0.0034 \times \text{liveweight (kg)}) + 0.09 \text{ m}^2$.

Table A4.1.5 Minimum pen area per head for sheep and goats exported by sea^a

Liveweight (kg)	Minimum pen area (m ²)		Liveweight (kg)	Minimum pen area (m ²)	
	Nov – Apr	May – Oct		Nov – Apr	May – Oct
28	0.261	0.261	51	0.320	0.322
29	0.263	0.263	52	0.324	0.329
30	0.265	0.265	53	0.329	0.337
31	0.268	0.268	54	0.333	0.344
32	0.270	0.270	55	0.338	0.351
33	0.273	0.273	56	0.342	0.357
34	0.275	0.275	57	0.347	0.363
35	0.278	0.278	58	0.351	0.369
36	0.280	0.280	59	0.356	0.375
37	0.283	0.283	60	0.360	0.381
38	0.285	0.285	61	0.367	0.389
39	0.288	0.288	62	0.374	0.398
40	0.290	0.290	63	0.380	0.406
41	0.293	0.293	64	0.387	0.415
42	0.295	0.295	65	0.394	0.423
43	0.298	0.298	66	0.401	0.432
44	0.300	0.300	67	0.408	0.441
45	0.303	0.303	68	0.415	0.450
46	0.305	0.305	69	0.422	0.459
47	0.308	0.308	70	0.429	0.468
48	0.310	0.310	75	0.465	0.515
49	0.313	0.313	80	0.502	0.563
50	0.315	0.315	90	0.575	0.658

^a For horned rams an additional 10% pen space must be allocated.

For goats with horns in excess of Standard S1.17, the goats are penned separately and an additional 10 % space must be allocated.

For sheep carrying more than 25 mm of wool, an additional 10% pen space must be allocated.

Note: For weights between those shown, the minimum pen area per head should be calculated by linear interpolation.

Table A4.1.6 Minimum pen area per head for farmed red or red × wapiti deer exported by sea

Liveweight (kg)	Pen area (m ²)
Below 100	TBA
100	1.54
110	1.57
120	1.59
130	1.62
140	1.64
150	1.67
200	1.80
250	2.08
300	2.36

Note: Intermediate values should be calculated by linear interpolation.

Any variation of this space allowance must be approved by an Australian Quarantine and Inspection Service (AQIS) authorised officer, taking into account considerations such as breed, pregnancy status, length of voyage, ventilation and likely environmental temperatures and humidity variations.

Deer must be penned in solid-walled pens with an adequate number of ventilation holes and 250–300 mm at top and bottom.

Deer must be loaded onto the ship through raceways with solid walls, such as plywood, preferably at least two (2) metres high. Any variation from this requirement must be approved by an AQIS authorised officer, taking into account considerations such as breed, class and number of deer to be loaded.

Table A4.1.7 Minimum pen area per head for camels exported by sea

Average weight (kg)	Stocking density (m ² /camel)
300	1.16
400	1.54
500	1.93
600	2.31

Note: An acceptable stocking density will meet the current camel industry standard. The area is arrived using the formula: area required (m²) = 0.00385 × average weight (kg).

Where a range of different animal sizes and types are to be carried, the area must be calculated for each line rather than on the basis of average weight of the entire shipment.

When camels are loaded onto a ship, the clearance between the hump and the deck of the ship must be at least 50 mm, at entrances it can be 0 mm if there are no sharp protrusions.

When loading camels, gateways and hatches may be the same opening height as the resting camel's hump height, provided there are no sharp edges. Deck clearance on board ship should be 50 mm above resting hump height.

Pens approved for the carriage of cattle are suitable for camels with two further considerations. First, a suitable bedding material must be supplied. Second, where there is deemed to be a risk of leg injury, the rails must be covered with mesh or plywood kickboards to a height of one (1) metre. The opening in the rails for feed and water troughs must be at least 450 mm but not exceeding 500 mm.

Camels of different size and sex are to be penned separately. Camels are to be segregated from other species by an empty pen, passageway or another effective, approved barrier.

Table A4.1.8 Minimum restraint and veterinary equipment — slaughter or feeder cattle or buffalo

Restraint equipment	<ul style="list-style-type: none"> Adjustable head bale (1 per ship) should be included Rope halter (1 per ship) Nose grip pliers (1 pair per ship) 	
Drugs and equipment (per 1000 cattle and buffalo)	Voyages of 10 days or more	Voyages of less than 10 days
<u>Injectable antibiotics</u>		
penicillin (short acting)	30 cattle doses	15 cattle doses
oxytetracycline (long acting) or equivalent	30 cattle doses	15 cattle doses
<u>Antibiotic(s) appropriate for the treatment of bovine respiratory disease*</u>	30 cattle doses	15 cattle doses
<u>Anti-inflammatory drugs</u>		
dexadrosson	30 cattle doses	15 cattle doses
flunixin or equivalent	30 cattle doses	15 cattle doses
Topical wound treatment	Sufficient to treat 20 minor wounds	Sufficient to treat 10 minor wounds
An effective pink eye treatment system	1 box of 20 tubes	10 tubes
<u>Sedative</u>		
Xylazine	10 cattle doses	5 cattle doses
Thermometers	3 per ship	3 per ship
Needles (18 G, 1½") or equivalent	1 box of 100	1 box of 100
Hypodermic syringes	40 × 20 mL, 10 × 5 mL	20 × 20 mL, 5 × 5 mL
Postmortem kit	2 postmortem knives plus steel and sharpening stone per ship	
Remotely triggered syringe device	1 syringe plus spare parts per ship, plus 10 spare needles per 1000 animals	
Captive-bolt gun	1 per ship, plus 40 cartridges per 1000 animals	

Additional drugs and equipment may be necessary if there are other classes of cattle or buffalo in the consignment (eg mastitis treatment and obstetrical supplies for pregnant cows, scour treatments for calves).

*The following antibiotics can be used for the treatment of bovine respiratory disease:

- Florfenicol
- Tilmicosin
- Tulathromycin
- Cetiofur
- Tylosin

Table A4.1.9 Minimum veterinary equipment – sheep and goats^a

Drugs and equipment (per 10,000 sheep and goats)	
<u>Injectable antibiotics</u>	
penicillin (short acting)	10 sheep doses
oxytetracycline (long acting) or equivalent	10 sheep doses
Flystrike dressing	Sufficient to treat 20 wounds
An effective pink eye treatment system (similar acting to Orbenin)	1 box of 20 tubes
Thermometers	3 per ship
Needles (18 G, 1½") or equivalent	100
Hypodermic syringes	10 x 20 mL, 2 x 5 mL
Footrot secateurs	1 pair
Postmortem kit	2 postmortem knives plus steel and sharpening stone per ship
Captive-bolt gun	1 per ship, plus 100 cartridges per 10,000 animals

^a Drugs and equipment per 10 000 animals unless otherwise noted.

Additional drugs and equipment may be necessary if there are other classes of sheep and/or goats in the consignment (eg obstetrical supplies for pregnant animals).

Appendix 4.2 Shipboard ration specifications and provisioning

General

The shipboard ration must not contain more than thirty (30) per cent by weight of wheat, barley or corn, unless the livestock have been adapted to the ration over a period of at least two (2) weeks before export.

All pelleted feed must be accompanied by a manufacturer's declaration that states it is manufactured in accordance with national pellet standards.

All feed from a previous voyage that is suitable for livestock consumption may remain in a feed storage tank provided that:

- each tank is completely emptied at least once in every ninety (90) days;
- all feed that is no longer suitable for livestock consumption is emptied in its entirety before further feed is loaded; and
- records are maintained of the emptying of feed storage tanks and are made available for inspection.

Sheep and goats

Pellets used as the shipboard ration must conform to the nutritional specifications outlined in Table A4.2.1.

At the time of departure, there must be sufficient feed and water on the ship to meet the anticipated needs of the sheep and goats during the voyage, plus an additional twenty-five (25) per cent or three (3) days feed and water, whichever is less.

Feed and water allowances must be as follows:

- for young sheep and goats (up to and including four (4) permanent incisor teeth), at least three (3) per cent of liveweight of feed per head per day;
- for sheep and goats with more than four (4) permanent incisor teeth, at least two (2) per cent of liveweight of feed per head per day; and
- for sheep and goats, at least four (4) litres of water per head per day, except for days when the ambient temperature is expected to exceed 35°C, when allowance must be made for at least six (6) litres of water per head per day.

Allowance may be made for fresh water produced on the ship while at sea.

Table A4.2.1 Pellet specifications for sheep and goats

Pellet composition	Specification
Moisture content	< 12%
Ash ^a	< 13%
Crude protein ^a	< 12%, > 9%
Urea ^a	< 1.2%
Acid detergent fibre ^a	18–35%
Metabolisable energy	> 8.0 MJ/kg dry matter

^a As a percentage of dry matter

Cattle and buffalo

There must be sufficient water on the ship to meet the anticipated needs of the cattle and buffalo during the voyage, plus an additional three (3) days water.

There must be sufficient feed on the ship to meet the anticipated needs of the cattle and buffalo during the voyage, plus an additional twenty (20) per cent or three (3) days feed, whichever is less.

When calculating feed and water requirements, allowance must be made:

- a) for at least the quantity of feed shown in Table A4.2.2;
- b) for at least twelve (12) per cent of liveweight of water per head per day:
 - This water allowance may be reduced to at least ten (10) per cent of liveweight per head per day if water consumption on the ship for each of the previous three (3) voyages averaged less than ten (10) per cent of liveweight per head per day.
 - Allowance may be made for fresh water produced on the ship while at sea.
- c) Fodder for cattle exported from an Australian port south of latitude 26 degrees south must include at least one (1) per cent of the required feed as chaff and/or hay.

Table A4.2.2 Feed specifications for cattle and buffalo

Class of cattle and buffalo	Minimum feed allowance/head/day (% liveweight)
Cattle and buffalo weighing less than 250 kg	2.5
Breeding heifers with six or fewer permanent incisor teeth (regardless of pregnancy status)	2.5
Pregnant cows	2.5
Other classes of cattle and buffalo	2.0

Deer

Deer must be fed no less than maintenance rations. Two (2) per cent of liveweight per head per day as good quality hay or its equivalent will usually achieve maintenance rations.

Where concentrates are fed, the concentrates should be included at a ratio of 1:4 with the roughage.

Sufficient feed must be loaded on the ship to meet maintenance requirements for the duration of the voyage, plus:

- an extra two (2) days for voyages up to and including twenty (20) days; and
- an extra three (3) days for voyages between twenty-one (21) and thirty (30) days.

Feed requirements should be calculated on the basis of daily requirements of metabolisable energy (ME) in Tables A4.2.3 and A4.2.4.

Table A4.2.3 Seasonal nutritional requirements of mature deer

Mature deer	Energy requirement (MJ ME/day) ^a			
	Autumn	Winter	Spring	Summer
Stags				
Red	19	35	42	38
Elk x red	25	47	56	51
Elk or wapiti	34	62	71	66
Hinds				
Red	27	26	28	49
Elk x red	48	46	50	85
Elk or wapiti	64	61	67	120

^a Metabolisable energy (ME), measured in megajoules (MJ) produced in fermentation of food, is the digestible energy of the food provided, less the energy lost in the production of methane and urine (16–20% total).

Note: This assumes that diets containing 14–16% crude protein are adequate for maintenance.

Table A4.2.4 Seasonal nutritional requirements for maintenance and growth of red deer from weaning till slaughter

	Liveweight (kg)							
	40	50	60	70	80	90	100	110
<u>Maintenance stag requirements (MJ ME/day)</u>								
Autumn (winter sheltered)	11.9	14.1	16.2	18.2	20.1	21.9	23.7	25.5
Winter	13.5	16.0	18.3	20.6	22.7	24.8	26.9	28.9
Spring	10.8	12.8	14.7	16.5	18.2	19.9	21.5	23.1
Summer	9.9	11.7	13.4	15.0	16.6	18.1	19.6	21.1
<u>Gain (g/day)</u>								
	50	100	150	200	250	300	350	400
Extra energy needed (MJ/day)	2.7	5.3	8.0	10.6	13.3	15.9	18.6	21.2

Notes: Seasonal maintenance requirements are affected by the weather, and so may be lower when temperatures are warmer than normal and higher when temperatures are lower than normal.

Add extra energy for gain to the maintenance requirement to get total requirement.

Camelids

There must be sufficient water on the ship to meet the anticipated needs of the camelids during the voyage, plus an additional three (3) days water.

There must be sufficient feed on the ship to meet the anticipated needs of the animals during the voyage, plus an additional twenty (20) per cent or three (3) days feed, whichever is less.

When calculating feed and water requirements allowance must be made:

- for at least the quantity of feed shown in Table A4.2.5; and
- for at least twelve (12) per cent of liveweight of water per head per day:
 - This water allowance may be reduced to at least ten (10) per cent of liveweight per head per day if water consumption on the ship for each of the previous three (3) voyages averaged less than ten (10) per cent of liveweight per head per day.
 - Allowance may be made for fresh water produced on the ship while at sea.

Table A4.2.5 Feed specifications for camelids

Class of camelids	Minimum feed allowance/head/day (% liveweight)
Camelids weighing less than 250 kg	2.5
Breeding females with six or fewer permanent incisor teeth (regardless of pregnancy status)	2.5
Pregnant cows	2.5
Other classes of camelids	2.0

Table A4.2.6 Pellet/cube specifications for camelids

Pellet composition	Specification
Moisture content	< 12%
Ash ^a	< 13%
Crude protein ^a	< 12%, > 9%
Urea ^a	< 1.2%
Acid detergent fibre ^a	18–35%
Metabolisable energy	> 8.0 MJ/kg dry matter

^a As a percentage of dry matter

Appendix 4.3 Provision of bedding

Cattle and buffalo

Cattle and buffalo exported on voyages of ten (10) days or more must be provided with sawdust, rice hulls or similar material to be used exclusively for bedding at a rate of at least seven (7) tonnes or twenty-five (25) cubic metres for every 1000 square metres of cattle pen space.

This does not apply to cattle and buffalo loaded from Brisbane or a port north of latitude 26 degrees south and exported to Southeast Asia or Japan.

Deer

Bedding, such as straw, shavings or sawdust, must be provided on all voyages and must be spread at a rate of at least seven (7) tonnes or twenty-five (25) cubic metres for every 1000 square metres of deer pen space before animals are loaded.

Camelids

Bedding, such as straw, shavings or sawdust, must be provided on all voyages and must be spread at a rate of at least seven (7) tonnes or twenty-five (25) cubic metres for every 1000 square metres of camelid pen space before animals are loaded.