

**PRIMARY INDUSTRIES MINISTERIAL COUNCIL**

# **Australian standards and guidelines for the welfare of animals**

## **Land transport of livestock**

### **Regulatory Impact Statement**

**3 October, 2008**

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This regulatory impact statement was prepared for Animal Health Australia by Tim Harding & Associates in association with Rivers Economic Consulting. The assistance of the Standards Reference Group and Ms. Maria Butler, Mr. Damien Coffey, Mr. Ian Davison, Dr. Kevin de Witte, Ms. Michelle Edge, Mr. Tim Flor, Mr. Luke Fraser, Dr. Sue Hides, Dr. Bidda Jones, Dr. Vivien Kite, Dr. Danielle Marotti, Mr. Jed Matz, Ms. Alex Owens, Ms. Melina Tensen, Mr. Peter Weeks, Ms. Liz Schmidt in supplying information and advice is gratefully acknowledged.

## Foreword

Animal Health Australia is a not-for-profit public company established by the Australian, state and territory governments and major national livestock industry organisations. The company is a dynamic partnership of governments and livestock industries that strengthens Australia's animal health status and reinforces confidence in the safety and quality of our livestock products in domestic and overseas markets. The partnership initiates and manages collaborative programs that improve animal and human health, food safety and quality, market access, livestock productivity, national biosecurity and livestock welfare.

The Australian Animal Welfare Strategy (AAWS) is an Australian Government initiative that will guide the development of new, nationally consistent policies and will enhance existing animal welfare arrangements in all Australian states and territories. The Strategy was developed over five years by the Australian Government with assistance from the [National Consultative Committee on Animal Welfare](#), in consultation with state and territory governments, animal industry organisations, animal welfare groups and the general public.

The Strategy covers the humane treatment of all animals in Australia including:

- livestock/production animals
- animals used for work, sport, recreation or display
- companion animals
- animals in the wild
- aquatic animals, and
- animals used in research and for teaching purposes.

The AAWS has funded the development of these Australian Animal Welfare Standards and Guidelines for the Land Transport of all commercial livestock as the inaugural project in a high priority program to develop standards and guidelines for all commercial livestock species and all aspects of the production supply chain.

This Regulatory Impact Statement assesses the proposed standards in the Australian Standards and Guidelines for the Welfare of Animals - Land Transport of Livestock. The proposed standards are intended to replace the various existing land transport model codes of practice and include new standards for species and classes of livestock that are not covered by the existing model codes.

The stated purpose of the proposed standards is to set standards that ensure the welfare of livestock during land transport, including by both road and rail and by livestock transport vehicle aboard a ship. The standards are intended to establish a basis for developing and implementing consistent legislation and enforcement across Australia, and provide guidance for all people responsible for livestock during land transport. They are based on scientific knowledge, recommended industry practice and community expectations.

The standards apply to all those responsible for the care and management of transported livestock, including: drivers, transport companies, owners, agents and livestock handlers at farming enterprises, depots, saleyards, feedlots, and livestock processing plants. Extensive consultations and collaborations have been conducted during development under the guidance of a broadly representative Reference Group. A period of public consultation has also been conducted which has served to highlight ethical and practical issues and has led to the development of a better package.

Animal Health Australia has considered all stakeholder responses in developing the final standards and guidelines for recommendation by the Reference Group to Primary Industry Ministers. On behalf of Reference Group members I would like to thank all those who took the time and effort to provide input into the development of this important livestock welfare policy reform.

Mike Bond  
CEO Animal Health Australia.

## Summary

### Introduction

This regulatory impact statement (RIS) assesses the proposed Australian Standards and Guidelines for the Welfare of Animals - Land Transport of Livestock (the proposed standards) as set out in Appendix 9 to the RIS.

The proposed standards are the first Australian welfare standards to be developed under a new system stemming from the Australian Animal Welfare Strategy (AAWS) as outlined in Part 1.2.3 of the RIS. They are intended to replace the various existing land transport model codes of practice and include new standards for species and classes of livestock that are not covered by the existing model codes.

The stated purpose of the proposed standards is to set standards that ensure the welfare of livestock during land transport, including both road and rail. The standards are intended to establish the basis for developing and implementing consistent legislation and enforcement across Australia, and provide guidance for all those responsible for livestock during land transport. They are distilled from a blend of scientific knowledge, recommended industry practice and community expectations.

The scope of the standards and guidelines covers the transport of livestock by road, rail and livestock transport vehicle aboard a ship. The standards apply to the major commercial livestock industries in Australia; that is, to alpacas, buffalo, camels, cattle, deer, emus, goats, horses, ostriches, pigs, poultry and sheep.

The standards apply to all those responsible for the care and management of transported livestock. Those responsible include drivers; transport companies; consigners; agents; and livestock handlers at farming enterprises, depots, saleyards, feedlots and livestock-processing plants. An explanatory guide to the proposed standards is provided in Appendix 1.

State and territory governments have the main responsibility for implementing animal welfare law. Through the Australian Animal Welfare Strategy, ministers have agreed that endorsed standards will be consistently implemented under animal welfare regulatory systems of the jurisdictional governments. The guidelines will not be regulated.

While the document assessed by this RIS is a proposed set of national standards and guidelines rather than regulations, it is envisaged that the standards, if endorsed by the Primary Industries Ministerial Council (PIMC), will be adopted or incorporated into regulations by the various jurisdictions, after which compliance with the standards will become mandatory. For this reason, the RIS treats the standards and their alternatives as if they are mandatory, and uses the existing model codes of practice (MCOPs) as the base case for assessment of costs and benefits (refer to Part 5.2 of this RIS).

The RIS is required to comply with the *'Best Practice Regulation - A Guide for Ministerial Councils and National Standard Setting Bodies'* as endorsed by the Council of Australian Governments in October 2007.

## **The livestock transport industry**

Livestock transport is a crucial link in the supply chain that brings together all aspects of the meat and livestock industries. The livestock transport industry provides the key service of transporting livestock between farms and stations, as well as transport to and from saleyards, feedlots, processing establishments and live export ports across the country.

While a large component of livestock transport is for purposes of slaughter, there is also considerable movement of animals from one location to another for purposes of management (e.g. lack of local pasture/fodder) or for resale and relocation as live animals.

The value of livestock transported in Australia is estimated to be around \$12 billion per year. An estimated 969.4 million animals are transported 142 million kilometres, taking 1.84 million hours per year. Of the total number of animals transported, most are transported by road and roughly 600,000 head of cattle and roughly 900 head of horses are transported by rail in a typical year in Queensland. The estimated total annual cost of transporting livestock for slaughter, export/import and other purposes by road (excluding rail and the cost of horse transport for recreational purposes) is between approximately \$606.8m and \$672.7m.

## **The issues**

Animal welfare concerns are becoming increasingly important for the farming and transport of livestock, both in Australia and internationally. Practices which may have once been deemed acceptable are now being reassessed in light of new knowledge and changing attitudes.

‘Animal welfare’ is a difficult term to define and has many dimensions, including the mental and physical aspects of an animal’s well-being, as well as people’s subjective ethical preferences. The variation in the definition of animal welfare in science, philosophy and the general community has created much confusion and controversy.

Where an animal is failing to cope with a problem, it is said to be stressed. Stress is a physiological response by the individual in the attempt to cope with factors causing the stress. Stress can be objectively measured in animals using indicators such as the level of cortisol in the blood. If stress factors are minimised, poor welfare outcomes can be prevented or made less likely.

Transportation can be a major stressor for livestock and can have deleterious effects on health, well-being, productivity and ultimately, product quality.

Animals being transported by road and rail are subject to a number of stress factors throughout the journey, including handling, loading, transporting, mixing of unfamiliar animals, unloading and total time without water or food. These risk factors can be cumulative and apply across all phases of land transport, from assembly and handling before the journey, to unloading at the destination.

Animal welfare is now recognised as a characteristic of product quality and customer requirements in some industry sectors. There is increasing recognition by livestock industries that animal welfare is an integral part of good animal husbandry. In the past few years, several food safety-based quality assurance schemes have been

implemented either within businesses and/or across industries and these may include animal welfare components. The Quality Assurance (QA) scheme most relevant to animal welfare issues in regard to transport is the Australian Livestock Transport Association's 'TruckCare' program.

### **Process and consultation**

Extensive consultation has taken place with government agencies, researchers, industry and animal welfare organisations in the development of the proposed standards and their predecessors.

The standards were developed under the auspices of the Animal Welfare Working Group (AWWG), which is ultimately responsible to the Primary Industries Ministerial Council (PIMC). Membership of AWWG comprises representatives from each of the State and Territory departments with responsibility for animal welfare, CSIRO, and the Commonwealth Department of Agriculture, Fisheries and Forestry - Australia.

The standards development process was managed by Animal Health Australia (AHA) and was initially undertaken by a small writing group comprising research, government and industry representatives; supported by a widely representative Standards Reference Group (SRG). Further drafts of the standards were developed by AHA in consultation with the SRG and smaller working groups covering each species or issue. The SRG was comprised of representatives of the livestock transport industry, the production, saleyard, feedlot and processing sectors of industry for all the animal species involved, animal welfare organisations, state and federal regulators, policy specialists and other technical experts from the veterinary, teaching and research fields.

Livestock welfare stakeholders and the general public were invited to make submissions on the proposed standards and/or the RIS for a 60-day period between 27th of March and the 27th of May, 2008. The proposed standards and this RIS have been amended in response to the submissions received.

### **The problems**

The problems that the proposed standards are endeavouring to address include the need:

- for greater national consistency in livestock welfare standards;
- to 'fill in gaps' in current standards;
- to update current model codes of practice;
- to minimise risks to livestock welfare;
- for clear, essential and verifiable standards;
- to ensure that the benefits justify the costs of standards;
- for standards to be considered within an international context; and
- to meet community expectations.

Market forces alone would not be expected to solve these problems and intervention in the form of regulated standards is necessary.

### **The policy objective**

In relation to the proposed standards and possible alternatives, the following overarching policy objective is identified:

*To ensure that the conditions under which livestock are transported on land are consistent with reasonable animal welfare outcomes.*

### **Assessment of costs and benefits**

Because compliance with the guidelines is voluntary, costs are imposed by the proposed standards rather than by the guidelines. Most of the proposed standards are consistent with the requirements of existing national model codes of practice, where they exist, as listed under the base case in Part 5.2 of the RIS. The main overall difference is that proposed standards are not explicitly stated in the existing model codes. The proposed standards make more verifiable the unverifiable guidelines in the existing model codes, to facilitate incorporation into state and territory regulations and the auditing of compliance with such regulations. In many cases, the proposed standards increase the coverage of livestock species, minimise risks to livestock welfare and reduce unnecessary costs to industry.

The term ‘base case’ means the situation that would exist if the proposed standards were not adopted. The base case provides the benchmark for measuring the incremental costs and benefits of the proposed standards and the other options. The base case includes all relevant existing model codes of practice, which can be adopted as standards in regulations at any time, as some states and territories already have. It also includes the relevant state and territory animal welfare legislation but this has not been reviewed in detail for this study.

There is a perception by some industry associations that the RIS does not assess the full cost to industry of the adoption of the proposed standards by regulations. It could be argued that because the proposed standards are more verifiable and enjoy more industry and government confidence than the existing model codes, they are more likely to be adopted by the various states and territories in regulations than the existing codes, resulting in higher total costs to industry than reflected in the RIS. Nevertheless, for the reasons given above, the RIS must assess the incremental costs and benefits of the proposed standards in comparison to the base case.

Relative to the base case, the proposed standards would impose minimal to minor incremental costs or savings per journey in the following areas:

- transport costs and savings
- training costs
- veterinary/pathology costs
- verification/auditing/enforcement costs

No costs to livestock welfare have been identified. In other words, no species or class of animal is likely to incur a reduction in its welfare, compared to the existing codes of practice. On the contrary, there is likely to be a net benefit to livestock welfare as a result of the implementation of the proposed standards.



Veterinary and pathology costs will be directly incurred by the relevant livestock owners. The transport costs/savings and the training costs will be incurred initially by livestock transporters, but costs are in most cases likely to be passed on to livestock owners and possibly consumers of meat and other livestock products, depending on whether or not stock are auctioned and on consumer price sensitivities.

Verification, auditing and enforcement costs will be incurred by the relevant government agencies if and when the proposed standards are adopted by regulations or the appropriate legal mechanism. However, most state and territory departments advise that there is unlikely to be any significant increase in enforcement costs of the proposed standards relative to the base case. Some industry associations may choose to develop or modify their own quality assurance programs to encourage compliance with the proposed standards. However, any such costs would be voluntarily incurred, rather than imposed by the proposed standards. It is recognised that industry and industry QA can make an important contribution to livestock welfare practices but this is not considered as a regulatory cost in this study.

A comparison of the proposed standards with the relevant World Organisation for Animal Health (OIE) guidelines shows that there are no significant differences between the proposed Australian standards and the relevant equivalent international standards, except in relation to a few proposed standards as discussed in Part 3.3 of the RIS. These differences are considered reasonable and justified.

The proposed standards would result in a *net incremental cost* to the livestock industry, relative to the base case, estimated to be between approximately **\$31.4m** and **\$33.9m** per annum or approximately **\$146.8m** and **\$158.3m** over 5 years, in present value terms (2008 dollars). There are also some relatively minor unquantifiable costs and savings, as set out in Part 5.3.2 of the RIS.

The quantifiable cost over 5 years (in present value terms) represents between 5.04% and 5.18% of the total cost of livestock transport of approximately \$2.84b and \$3.14b. The estimated change in retail meat prices would entail approximately a 1% increase for beef, a 2% increase for lamb, a 0.3% reduction for pork and a 4.8% increase for chicken.

If and when incorporated into regulations, the proposed standards are expected to result in the following benefits:

- improved livestock welfare outcomes – risks to welfare will be minimised and no species or class will be worse off;
- greater national consistency in the setting of standards;
- clear and verifiable standards, differentiated from guidelines, that are capable of being incorporated into regulations;
- the gaps that exist in the current model codes of practice will be filled in, including coverage of all livestock transported by land;
- the updates to current model codes of practice are reflected in the new standards and guidelines, in the light of new knowledge and circumstances, including industry best practice;

- the proposed standards have been reviewed to ensure that their benefits justify their costs, and that they meet the expectations of the Australian community, which is likely to improve community confidence and implementation of the standards.
- an enhanced international reputation (from providing clear statements of Australia's livestock welfare standards to the international community, especially our trading partners).

### Alternatives considered

In the case of national standards, practical alternatives are limited to alternative standards that are relevant and could be applied in all jurisdictions. Having no standards at all is not a practical alternative, because the 'base case' is that the existing model codes will remain in place, and can be incorporated by states and territories in regulations at any time, as some already have. (The 'base case' is used as a point of reference for comparison of the proposed standards and the practical alternatives).

The practicable alternatives together with the proposed standards will from here on be referred to as 'options'. As discussed in Part 4.0 of the RIS, the options assessed in terms of costs and benefits were:

- **Option A:** Encourage the development of industry codes, QA programs etc (i.e. a self-regulatory option);
- **Option B:** the proposed standards;
- **Option B1:** the proposed standards with a variation to standard SB4.5 changing the minimum age for transport of calves for slaughter (other than to a calf-rearing facility) to 8 days rather than 5 days;
- **Option C:** more outcome-based and less prescriptive standards leading to possibly greater choice in ways to satisfy the standards;
- **Option D:** less expensive standards i.e. the most costly standards to become voluntary guidelines;
- **Option E:** more effective standards for livestock welfare that will incur a higher cost to livestock industries i.e. higher standards relating to maximum time off water for particular species/class of species and a minimum voluntary spell of 6 hours to allow recognition of the spell period as a credit in the total water deprivation time calculation; and
- **Option E1:** more effective standards for livestock welfare that will incur a higher cost to livestock industries s i.e. higher standards relating to maximum time off water for particular species/class of species and a minimum voluntary spell of 12 hours to allow recognition of the spell period as a credit in the total water deprivation time calculation.

A comparison of quantifiable annual and five year incremental costs or savings for all options is given in the following table.

Option	Annual value min	Annual value max	Present value over 5 years min	Present value over 5 years max
A	+\$0.9m	+\$0.9m	+\$0.9m	+\$0.9m
B	+\$31.4m	+\$33.9m	+\$146.8m	+\$158.3m
B1	+\$44.1m	+\$46.6m	+\$206.2m	+\$217.8m
C	Not quantifiable but likely more costly than Option B	Not quantifiable but likely more costly than Option B	Not quantifiable but likely more costly than Option B	Not quantifiable but likely more costly than Option B
D	-\$0.8m	-\$1m	-\$3.7m	-\$4.6m
E	+\$117.8m	+\$131.9m	+\$550.7m	+\$616.5m
E1	+\$133.4m	+\$149.6m	+\$623.8m	+\$699.1m

A weighted criteria decision analysis was used to compare the relative costs and benefits of various options (refer to Part 5.4 of the RIS). Option B (the proposed standards) provides the highest weighted score of **+1.4** with Option C (more outcome-based and less prescriptive standards) providing the lowest weighted score of **-0.4**. **The proposed standards are therefore the preferred option, in which the expected costs are considered to be outweighed by the expected benefits.**

#### **National competition policy test**

To the extent that the standards impact on livestock transporters and other businesses, such businesses would be equally affected by the same regulatory environment. The likely incremental costs of the proposed standards are not so high as to constitute a barrier to entry for such businesses. Thus the proposed regulations are unlikely to restrict competition.

#### **Implementation and review**

All jurisdictions can make regulations to require compliance with the proposed standards, and all regulations except those in New South Wales and the Northern Territory can adopt the standards by reference. (New South Wales and the Northern Territory would have to make regulations using similar wordings as the standards).

The proposed standards will be reviewed after five years from the agreed implementation date; however there could be an earlier review if considered necessary within the five year period.

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## 1.0 Background

### 1.1. Introduction

This regulatory impact statement (RIS) assesses the proposed Australian Standards and Guidelines for the Welfare of Animals - Land Transport of Livestock ('the proposed standards') as set out in Appendix 9 to the RIS.

The proposed standards are the first Australian welfare standards to be developed under the new system stemming from the Australian Animal Welfare Strategy (AAWS) as outlined in Part 1.2.3 of the RIS. They are intended to replace the various existing land transport model codes of practice<sup>1</sup> and include new standards for species and classes of livestock that are not covered by the existing model codes.

The stated purpose of the proposed standards is to set standards that ensure the welfare of livestock during land transport, including by both road and rail.<sup>2</sup> The standards are intended to establish a basis for developing and implementing consistent legislation and enforcement across Australia, and provide guidance for all people responsible for livestock during land transport. They are distilled from a blend of scientific knowledge, recommended industry practice and community expectations.

The scope of the proposed standards is as stated in their introduction –

- The standards cover the land transport of livestock by road, rail and by livestock transport vehicle aboard a ship.
- They apply to the major commercial livestock industries in Australia: alpacas, buffalo, camels, cattle, deer, emus, goats, horses, ostriches, pigs, poultry (broilers, ducks, geese, guinea fowl, layers, partridge, pheasants, pigeons, quail and turkeys) and sheep.
- The standards apply to all those responsible for the care and management of transported livestock, including: drivers, transport companies, owners, agents and livestock handlers at farming enterprises, depots, saleyards, feedlots, and livestock processing plants. The chain of responsibility for livestock welfare in transport begins with the owner or their agent, and extends to the final receiver of the livestock.

The standards and guidelines should be read in conjunction with other requirements for the transport of livestock, and with related Commonwealth, state and territory legislation (refer to Part 1.2.3 of this RIS).

Whilst the document assessed by this RIS is a proposed set of national standards and guidelines rather than regulations, it is envisaged that the standards, if endorsed by the Primary Industries Ministerial Council (PIMC), will be adopted or incorporated into regulations by the various jurisdictions, after which compliance with the standards will become mandatory. For this reason, the RIS treats the standards and their alternatives as if they are mandatory, and uses the existing model codes of practice as the base case for assessment of costs and benefits (refer to Part 5.2 of this RIS).

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<sup>1</sup> As listed on page 1 of the proposed standards and in Part 5.2 of this RIS.

<sup>2</sup> Transport by rail takes place only in Queensland, and is used primarily for cattle plus a small number of horses.

The RIS is required to comply with '*Best Practice Regulation - A Guide for Ministerial Councils and National Standard Setting Bodies*' as endorsed by the Council of Australian Governments in October 2007.<sup>3</sup> These guidelines state that an RIS should:

- clearly identify the fundamental problem(s) that need to be addressed;
- clearly articulate the objectives, intended outcomes, goals or targets of government action;
- identify a range of viable options including, as appropriate, non-regulatory, self-regulatory and co-regulatory options;
- provide an adequate analysis of the costs and benefits of the feasible options, including comparison with any relevant international standards and any competition effects;
- include a statement of the consultation undertaken;
- provide a clear statement as to which is the preferred option and why; and
- provide information on how the preferred option would be implemented, monitored and reviewed.

## **1.2. Setting the scene**

To set the scene for this RIS, this Part provides some general background information about the Australian livestock land transport industry.

It is important to emphasise that the role of this RIS is strictly to assess the proposed standards, and not to assess existing commonwealth or state legislation, codes of practice, enforcement strategies or other considerations. Nevertheless, relevant background information may be helpful to interested parties in understanding the proposed standards within their legislative, economic, national and international contexts.

### **1.2.1 Overview of the Australian livestock land transport industry**

Livestock transport is a crucial link in the supply chain that brings together all aspects of the meat and livestock industries. The livestock transport industry provides the key service of transporting livestock between farms and stations, as well as transport to and from saleyards, feedlots, processing establishments and live export ports across the country.

While a large component of livestock transport is for purposes of slaughter, there is also considerable movement of animals from one location to another for purposes of management (e.g. lack of local pasture/fodder) or for resale and relocation as live animals. A projection of estimates for the total number of livestock transported per annum by road and rail per species is summarised in Table 1 (refer to Appendix 5 for derivation)

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<sup>3</sup> COAG, October 2007.

**Table 1 – Projected estimates of total numbers, distances and hours of livestock transported per annum by species/class of species**

Species/class of species	Total no. Transported (000's)	Estimated total distance (km) travelled by road/ annum	Weighted total hrs of transport/ annum
Buffalo	2.875	8,788	115
Cattle	23,880.105	67,603,648	895,529
Calves for rearing	161.053	84,267	1,053
Calves for slaughter	955.556	426,901	5,336
Lamb < 4 months old	107.162	39,642	514
Sheep	66,210.170	30,042,052	389,425
Pigs	7,729.286	5,219,823	65,248
Poultry for meat	422,333.300	29,200,542	365,007
Chicks	443,449.965	1,886,804	23,585
Horses (slaughter + export*)	17.87	44,800	560
Horses (sales + major events) <sup>4</sup>	2,890.48	6,714,982	83,937
Deer	49.333	38,203	478
Camels	0.787	2,077	26
Alpacas	66.990	37,774	472
Goats	1,535.294	655,643	8,499
Emus	5.111	6,453	81
Ostriches	10.778	12,038	150
<b>Total</b>	<b>969,406.114</b>	<b>142,024,436</b>	<b>1,840,014</b>

\* Includes imports and re-imports for horses.

As shown in Table 1, an estimated 969.4 million animals are transported 142 million kilometres, taking 1.84 million hours per year. Most of these trips are well within reasonable limits but there is a need in Australia for livestock to be transported long distances to markets or for management.

Of the total number of animals transported, roughly 600,000 head of cattle<sup>5</sup> and roughly 900 head of horses<sup>6</sup> are transported by rail, in Queensland.<sup>7</sup> The estimated total annual cost of transporting livestock for slaughter, export/import and other purposes<sup>8</sup> by road (excluding the cost of horse transport for recreational purposes) is between approximately \$606.8m and \$672.7m (refer to Part

<sup>4</sup> Recreation horse movements are estimated at 16 million p.a. and are not included in RIS calculations because the new standards will not have a major cost impact due to short journey length and expected high compliance with the proposed standards. The standards nonetheless will apply to all livestock movements.

<sup>5</sup> The estimate provided by Queensland Rail notes that in 2006 there were 360,000 head of cattle transported by rail however this was 40% lower than a typical year due to drought.

<sup>6</sup> The estimate is determined by assuming 5% of horses are transported by rail on advice of Queensland Rail.

<sup>7</sup> A map of the Australian rail network is available at <<http://www.ara.net.au/railnetwork.htm>>.

<sup>8</sup> Other purposes include: mustering; management; companionship; non-event recreation; breeding/breeder replacement; growing out or finishing; racing; show/exhibition and sale.



A6.2 of Appendix 6). The total gross value of livestock transported in Australia for slaughter, disposal and export is estimated to be around \$12 billion per year.<sup>9</sup>

The export destinations of Australian livestock products are relevant to the later comparison of the proposed standards with equivalent international standards (refer to Parts 1.2.3.4 and 3.3 of the RIS).

Australia constitutes the second largest beef exporter in the world after Brazil.<sup>10</sup> The other main exporters of beef in order of world market share are; India; New Zealand; Canada; Argentina; Uruguay; the United States; and EU-25.<sup>11</sup> In 2004, Australia produced about 1.3 million tonnes carcass weight of beef, of which more than 950,000 tonnes (see Table 2) was exported to over 100 countries. Australia was the main exporter of beef and veal to the United States from 2002 to September 2007, followed by Canada, New Zealand, Uruguay and Brazil.<sup>12</sup>

**Table 2 – Volume of Australian livestock product exports – 2004/05 to 2006/07**

<b>Livestock product</b>	<b>Unit</b>	<b>2004-05</b>	<b>2005-06</b>	<b>2006-07</b>
Beef and veal	kt	948	892	974
Mutton	kt	137	145	162
Lamb	kt	123	143	150
Pig meat	kt	43	44	41
Poultry meat	kt	20	22	28
Live sheep	'000	3,233	4,248	4,138
Live cattle	'000	574	549	638

Source: ABARE, (December 2007), Australian Commodity Statistics

**Table 3 – Value of Australian livestock product exports \$m – 2004/05 to 2006/07**

<b>Livestock Product</b>	<b>2004-05</b>	<b>2005-06</b>	<b>2006-07</b>
Beef and veal	4,584	4,272	4,634
Mutton	398	432	458
Lamb	673	767	749
Pig meat	150	143	142
Poultry meat	20	21	26
Live sheep	207	291	289
Live cattle	374	358	437
<b>Total</b>	<b>6,405</b>	<b>6,284</b>	<b>6,735</b>

Source: ABARE, (December 2007), Australian Commodity Statistics

Indonesia is Australia's largest market for live cattle and Australia's competitiveness in the market for feeder cattle has been enhanced by Indonesia's restrictions on cheap buffalo meat imports from India and frozen beef from Brazil.<sup>13</sup>

Australia has become a net importer of pig meat products since 2002. In 2006 Australia exported only 67kt of pig meat as compared to 1,080kt by Canada and 1,359kt by the United States<sup>14</sup>.

<sup>9</sup> Refer to Appendix 5.

<sup>10</sup> Meat and Livestock Australia (August 2006), *Australia's Beef Industry: Fast Facts 2006*

<sup>11</sup> Meat and Livestock Australia (August 2006), *Australia's Beef Industry: Fast Facts 2006*

<sup>12</sup> United States Department of Agriculture USDA <<http://www.ers.usda.gov/Data/MeatTrade/BeefVealYearly.htm>>

<sup>13</sup> Martin, P et al (February 2007), Australian Beef 07.1 ABARE

Australia is considered to be the world's largest goat meat exporter and total goat meat shipments for the January – April period 2005 totalled 6,960 MT (shipped weight) with the USA being the major destination. Live goat exports are mostly destined for Malaysia.<sup>15</sup>

Australia was also the main exporter of lamb and mutton to the United States from 2002 to September 2007, followed by New Zealand<sup>16</sup>. Australia and New Zealand are the largest exporters of lamb and mutton in the world.<sup>17</sup> Saudi Arabia is the world's largest importer of Australian livestock (i.e. namely live sheep) – notwithstanding the two-year ban which ended in 2005. A summary of trade patterns for sheep meat is provided in Table 4.

**Table 4 – Volume/pattern of trade of sheepmeat for selected countries 1999 to 2006**

	1999	2000	2001	2002	2003	2004	2005	2006
	kt	kt	kt	kt	kt	kt	kt	kt
Exports from Australia	257	300	298	281	234	258	293	320
Exports from NZ	347	357	346	341	378	367	380	389
Imports								
France	167	169	120	139	133	135	135	137
– from Australia	2	3	4	3	2	3	2	2
– from New Zealand	26	28	30	39	33	32	30	30
Germany	41	40	42	40	33	32	38	39
– from Australia	1	1	2	1	1	1	1	1
– from New Zealand	30	32	34	32	27	26	30	31
Saudi Arabia	49	55	45	45	54	52	60	52
– from Australia	21	23	23	26	24	20	26	26
– from New Zealand	14	19	13	11	15	13	14	13
United Kingdom	113	109	93	102	111	116	110	114
– from Australia	13	12	9	12	12	13	13	14
– from New Zealand	88	85	71	77	81	82	79	83
United States	47	55	61	67	69	74	75	79
– from Australia	32	39	44	46	43	47	54	59
– from New Zealand	15	15	17	21	26	27	21	20

Source: ABARE, (December 2007), Australian Commodity Statistics

The proportion of trade of livestock/meat products for 2006/2007 by main export destination is summarised in Table 5 below:

<sup>14</sup> ABARE, (December 2007), Australian Commodity Statistics

<sup>15</sup> Elliot, M (2005), *Australia Livestock and Products Emerging Goat Meat Industry 2005*, USDA Foreign Agricultural Service, GAIN Report, GAIN Report Number: AS5015

<sup>16</sup> United States Department of Agriculture USDA

<<http://www.ers.usda.gov/Data/MeatTrade/LambMuttonYearly.htm>>

<sup>17</sup> Meat and Livestock Australia (August 2006), *Australia's Sheepmeat Industry: Fast Facts 2006*

**Table 5 – Main export destination of selected Australian livestock products 2006/2007**

<b>Product</b>	<b>% of export by major destination<sup>18</sup></b>	<b>% of export by other export destination</b>
Live cattle exports (676,877 head)	Indonesia – 66.81% Malaysia – 7.72%	25.47%
Beef and veal exports (973,880 tonnes)	USA – 31.1% Japan – 41.4% Korea – 16.09%	11.41%
Australian mutton exports (162,217 tonnes)	Total Middle East – 31.3% South Africa – 12.84% USA – 11.01% Taiwan – 5.83% Malaysia – 5.03%	34.16%
Lamb meat exports (150,242 tonnes)	USA – 27.55% Total Middle East – 13.39% Total EU – 8% China – 7.81% PNG – 7.32% UK – 6.04% Japan – 5.98%	23.90%
Live goat exports (75,344 head)	Malaysia – 75.1% Singapore – 7.92%	16.98%
Live sheep exports (4,140,069 head)	Saudi Arabia – 34.7% Kuwait – 21.68% Bahrain – 13.2% Jordan – 12.02% Oman – 8.23%	10.18%
Goat meat exports (17,994 tonnes)	USA – 58.35% Taiwan – 24.29% Caribbean – 8.08% Canada – 6.03%	3.25%
Pig meat exports <sup>19</sup>	Singapore – 49% New Zealand – 22% Hong Kong – 5% Japan – 5% Other – 19%	19%

Source: <<http://marketdata.mla.com.au/>> (data for Pig meat exports extrapolated from APL Export Report, Market Reporting Unit, July2006 to December 2006 and from APL Import, Export & Domestic Production Report, Marketing Report, April 2007 to June 2007)

### 1.2.2 Animal welfare issues

Animal welfare concerns are becoming increasingly important to industry, government, consumers and the general public, both in Australia and internationally. Practices which may have once been deemed acceptable are now being reassessed in light of new knowledge and changing attitudes. The need to continue demonstrating sound animal welfare practices is becoming important in both domestic and import/export markets.

‘Animal welfare’ is a difficult term to define and has several dimensions including the mental and physical aspects of the animal’s well-being, as well as people’s subjective ethical preferences.<sup>20</sup>

<sup>18</sup> Only 5% or more is reported in this column

<sup>19</sup> ABS – Year Book Australia, 2008.

The modern scientific and ethical consideration of animal welfare became a legitimate concern in the late 18th century when it was accepted that animals could suffer.<sup>21</sup> Variations in the meaning of animal welfare in science, philosophy and the general community have created much confusion and controversy.<sup>22</sup> Notwithstanding the challenges of defining animal welfare, it is nonetheless important when dealing with animal welfare to separate scientific considerations of welfare (biological facts) from attitudes and moral judgments about what is appropriate (ethics).<sup>23</sup>

### 1.2.2.1 The ‘five freedoms’ approach

The UK Brambell Committee introduced the concept of the ‘five freedoms’ for animals - a set of principles which provide a logical and comprehensive framework for analysis of welfare within any animal production system. The five freedoms have been promoted by the UK Farm Animal Welfare Council for many years, and have been adopted by many animal welfare organisations, including RSPCA Australia, as the basis for their policies on the treatment of food animals and other livestock. These five freedoms for farm animals are:

1. Freedom from hunger and thirst - by ready access to fresh water and a diet to maintain full health and vigour.
2. Freedom from discomfort - by providing an appropriate environment including shelter and a comfortable resting area.
3. Freedom from pain, injury or disease - by prevention or rapid diagnosis and treatment.
4. Freedom to express normal behaviour - by providing sufficient space, proper facilities and company of the animal's own kind.
5. Freedom from fear and distress - by ensuring conditions and treatment which avoid mental suffering.<sup>24</sup>

The ‘five freedoms’ approach to welfare assessment is useful for reflecting ethical preferences and community values.

### 1.2.2.2 Scientific approaches

It is arguable whether these five freedoms in fact represent an adequate basis for welfare, as it is thought that some require further definition (for example what defines normal behaviour across a wide variety of production systems). Barnett and Hemsworth (2003) argue that most would agree with the ethical basis of this general approach to animal welfare, however it lacks definition and until such time that definitions are provided, ‘this approach is not open to scientific scrutiny.’<sup>25</sup>

From a welfare perspective, scientists argue that ‘the freedom to express normal behaviour’ requires a definition of both desirable and undesirable behaviour, especially in an agricultural environment.<sup>26</sup> For example ‘normal’ behaviour in the wild often represents the animal’s effort to survive in a life-

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<sup>20</sup> Productivity Commission, (1998).

<sup>21</sup> Productivity Commission, (1998).

<sup>22</sup> Barnett, J.L, and Hemsworth, P.H, (October 2003).

<sup>23</sup> Productivity Commission, (1998).

<sup>24</sup> Brambell, 1965

<sup>25</sup> Barnett, J.L, and Hemsworth, P.H, (October 2003), p.618.

<sup>26</sup> Barnett and Hemsworth note that modern domestic animals are the result of thousands of years of selective breeding and consequently both the physiology and behaviour of domestic animals have been modified (i.e. the behaviour of even domestic animals placed in wild or semi-wild conditions is different to their wild relatives).

and-death struggle to find food and avoid predation - however this is a situation which would clearly reduce animal welfare compared to many farming practices.<sup>27</sup>

An alternative definition of the welfare of an animal has been provided by Broom as follows:

[The animal's] state as regards its attempts to cope with its environment and includes both the extent of failure to cope and the ease or difficulty in coping. Health is an important part of welfare whilst feelings – such as pain, fear and various forms of pleasure – components of the mechanisms for attempting to cope and should be evaluated where possible in welfare assessment.<sup>28</sup>

While welfare may be considered to be a subjective experience, it has a biological function that is related to the fitness and survival of the animal, and researchers have suggested that welfare is compromised when the animal's evolutionary fitness is reduced. Fitness can be reduced when the animal is subject to a stressor, and activities such as physiological and behavioural responses in the attempt to cope, fail, thus subjecting the animal to stress and distress. Where an individual is failing to cope with a problem, it is said to be stressed. Stress is a physiological response exhibited by the animal when it is attempting to cope with a stressor (i.e. handling, aggression, predation). Stress can be objectively measured in animals using indicators such as the level of cortisol in the blood.

Transport can be a major stressor to livestock and in some instances can have longer-term deleterious effects on health, well-being, productivity and ultimately, product quality. In extreme circumstances, the failure to cope with a stressor may lead to illness, significant morbidity or even death of the animals affected. On the other hand, if stress is minimised, poor welfare outcomes can be prevented or made less likely.<sup>29</sup>

The process of transport begins with the assembly of selected animals, followed by loading, confinement, motion, unloading and penning in a different location.<sup>30</sup> The adverse stimuli that livestock are exposed to during transport and lairage (see glossary) include handling during loading and unloading; removal from familiar to unfamiliar conditions; noise; mixing of unfamiliar animals; crowding; fluctuating temperatures; and deprivation of food and water.<sup>31</sup> There can be deleterious effects on health, well-being, productivity and ultimately, product quality.<sup>32</sup> Events that are unfamiliar to animals, such as transportation, will often be perceived by an animal as dangerous and, even in the absence of pain, can result in elevated levels of cortisol.<sup>33</sup>

### **1.2.2.3 Animal welfare issues related to livestock transport**

Animals being transported by road and rail are potentially subject to a number of stress factors throughout the journey, including handling, loading, transporting, mixing with unfamiliar animals, climate, unloading and time without water or food. As stated in the introductory pages of the proposed standards and guidelines document (Appendix 9), the risk of adverse animal welfare outcomes is related to:

- competency of personnel involved in any phase of livestock transport.
- selection and preparation of the livestock for the journey
- journey duration

<sup>27</sup> Barnett, J.L., and Hemsworth, P.H, (October 2003).

<sup>28</sup> Broom D.M., 2005.

<sup>29</sup> Broom D.M. and Johnson K.G., 1993.

<sup>30</sup> Tarrant & Grandin, 2000.

<sup>31</sup> Ewbank, 1986; Kent and Ewbank, 1983.

<sup>32</sup> Smith et al, 2004.

<sup>33</sup> Speer et al, 2001.

- food and water deprivation time
- timing of water, feed and rest before transport and at unloading
- species and class of the livestock being transported
- road conditions and terrain
- weather conditions
- vehicle and facility design and maintenance
- space allowance on the vehicle, and
- ability to observe the livestock en route and take action to remedy any problem.

These risk factors can be cumulative and apply across all stages of land transport as defined in the standards, from assembly and loading before the journey to unloading at the destination. From an animal welfare perspective, land transport of livestock is a process that begins before the physical journey on either road or rail and only ends some time after this physical journey is complete.

### **Defining responsibilities**

The welfare of animals during transport is the responsibility of all people involved, including owners and managers of animals, business agents or buying/selling agents, transporters and other animal handlers. For example, the consigner and the transporter have the responsibility to determine whether livestock are fit to load; transporters, processors, agents and buyers all have responsibility in certain instances for the feeding and watering of livestock.

The importance of defining responsibilities for animal welfare is particularly important in transportation, which often coincides with a change in ownership of the animals.

The responsibility for transport is shared amongst livestock owners, producers, agents, buyers, transport operators and people at destinations including saleyard, feedlot and processing personnel. Communication between relevant parties is essential to ensure the welfare of the livestock throughout transport.

### **Stock handling competency**

There is a wide range of attitudes to animals and these have major consequences for animal welfare. During handling and transport, these attitudes may result in one person causing high levels of stress in the animals whilst another person doing the same job may cause little or no stress.

Training of staff can substantially alter attitudes to, and treatment of, animals. If an untrained person is driving a vehicle and in sole charge of tens or hundreds of animals on a transport vehicle, this can easily result in poor welfare outcomes.<sup>34</sup> For example, a competent stock handler would know that different species respond in different ways to stress. Some species like pigs vocalise their distress whilst others like sheep or cattle may show relatively little response or may 'freeze'.<sup>35</sup>

### **Loading and unloading**

Loading and unloading have been shown to be the procedure most likely to be the cause of stress in transported animals. Inspection of animals prior to loading is also important to ensure that animals not fit for transport are not transported. Where an animal handler believes that there is a significant

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<sup>34</sup> Broom D.M., 2005.

<sup>35</sup> Scientific Panel on Animal Health and Welfare, 2004

risk of unfitness among the animals to be loaded, the animals should be inspected by a veterinarian.<sup>36</sup>

Grandin has concluded that the single most important transportation issue is having a physically fit animal for transport. The greatest welfare problems during transport were caused by death losses in stress susceptible pigs and old cows.<sup>37</sup> A practical example of this problem is given in Case Example 1 below.

#### **Case Example 1**

In May 2004, the manager of West Australian cattle station near Meekatharra was convicted of 10 charges of causing needless suffering to cattle that were not in a fit condition for transport. He arranged for more than 600 head to be transported by road on a 17 hour journey to Perth. On their arrival dozens of the animals were dead and many others were in poor condition. More than 50 cows and calves had to be put down.<sup>38</sup>

The setting of standards for the transport of pregnant animals is problematic, due to difficulties in determining the stage of pregnancy without a veterinary examination and the occasional need to allow the transport of animals in late pregnancy for livestock management reasons, including supervision of parturition.

The effects of efficient loading and unloading can vary considerably by species. For example, sheep tend not to be greatly affected, cattle are sometimes affected, pigs are always affected and poultry usually travel in containers to minimise human contact.<sup>39</sup>

It is important to avoid rough handling of livestock. It takes up to 30 minutes for an animal to calm down and have its heart rate return to normal after rough handling. Calm animals move more easily and are less likely to bunch together and be difficult to remove from a pen.<sup>40</sup>

As well as inducing fear, stress and even mortality in animals, poor handling can result in bruising and poor meat quality. For example, it was estimated in 2001 that bruising costs the US pork industry US\$6 to \$7 million annually. PSE (Pale Soft Exudative)<sup>41</sup> pork was estimated to cost US\$30 million annually. Losses due to mortality of pigs during transportation were estimated at a further US\$8 million annually.<sup>42</sup>

There is an optimum stocking density for each species on transport vehicles, which varies according to class, age, ambient temperature and humidity. Overcrowding presents the risk that animals that go down during transport may become trapped on the floor. Low stocking density renders animals more vulnerable to falling as a result of careless driving and sudden stops,<sup>43</sup> or winding roads.

Segregation of animals that could injure each other is also important. This need is already widely accepted for dominant animals such as stallions and in situations where there are large size differences between individuals. Any dogs used must be under control, not only for animal welfare reasons but to avoid bite marks on meat products.

<sup>36</sup> Broom D.M., 2005.

<sup>37</sup> Grandin, T., 2001.

<sup>38</sup> ABC News Online Tue May 11, 2004 8:20pm AEST

<sup>39</sup> Smith et al, 2004.

<sup>40</sup> Grandin, 2001.

<sup>41</sup> PSE is caused by a combination of factors which stress the animal and cause a rapid decline in meat pH.

<sup>42</sup> Speer et al, 2001.

<sup>43</sup> Watts, undated

### **Calves for slaughter ('bobby calves')**

Bobby calves are predominantly young unweaned male dairy calves.<sup>44</sup> As they are surplus to the herd replacement needs of dairy producers, they are usually transported to slaughter for human consumption in their fifth day of life. (The age of transport is a controversial issue addressed later as an option in this RIS).

Bobby calves are physiologically immature with no fat reserves, poorly developed thermo-regulatory mechanisms and a lack of responsiveness to external stimuli. These factors predispose them to difficulties in coping with transport and handling. Anecdotal observations of bobby calves suggest that those over one week of age are more robust and able to withstand the stresses of transportation.<sup>45</sup> However, there is a lack of scientific evidence on this issue and further research is needed.

A recent review commissioned by Dairy Australia found no evidence of a welfare benefit from changing the minimum age; but that calves would be at greater risk of enteric disease and that antibiotic residues would be more difficult to manage if the minimum age was increased to 8 or 10 days.<sup>46</sup>

The mortality of bobby calves during transport is a concern. A study in 2005 by veterinary officers of the Victorian Department of Primary Industries found that the mortality of calves for slaughter increased exponentially with distance of transportation to the processing establishment.<sup>47</sup> This problem is exacerbated by calves for slaughter sometimes not being slaughtered at the nearest processing establishment for various market-related or seasonal reasons.

### **Water deprivation**

During livestock transport, particularly over long durations (greater than 24 hours), it is the physiological states of dehydration and fatigue that are of most concern from an animal welfare perspective. In the Australian transport context, these factors are more important than time off food for most species and classes.

Species vary in their ability to cope with water deprivation. For example, a recent CSIRO study showed that healthy mature sheep with no pre-transport feed or water curfew and transported in accordance with accepted good practice under normal climatic conditions generally coped with transport durations up to 48 hours. Whilst those on the longer journeys (especially 30 and 48 hours), were initially more thirsty on arrival, the physiological and behavioural data indicates that they were not clinically compromised.<sup>48</sup>

There is also variation in the ability to cope with water deprivation for classes of animals within species. Special care needs to be taken with young stock, and with lactating animals or those in late pregnancy to avoid excessive water deprivation.

### **Transport vehicles and facilities**

The construction of transport vehicles and loading facilities can have a significant impact on animal welfare. A minimum requirement for all species is non-slip flooring, adequate airflow, vertical

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<sup>44</sup> For the purpose of the proposed standards, bobby calves are defined as being less than one month of age (30 days) and weighing less than 80 kilograms live weight.

<sup>45</sup> Shiel and Cave, undated.

<sup>46</sup> Davis, 2008.

<sup>47</sup> Cave, Callinan and Woonton, 2005.

<sup>48</sup> Ferguson and Fisher et al, 2007.



clearance and freedom from internal protrusions or other objects that could cause injury. Careful, quiet handling becomes impossible if animals slip or fall.<sup>49</sup>

### **Travel and spell periods**

With increasing duration of journey, the welfare of animals generally deteriorates because of travel fatigue.<sup>50</sup> Factors affecting travel fatigue include time travelled, the quality of the journey (whether the road is straight or winding;<sup>51</sup> the number of stops and starts encountered); temperature and humidity.

Nevertheless, rest stops or spell periods during transport can be problematic. The stress of unloading and reloading some species such as pigs and extensively raised cattle can outweigh the benefits of spell periods,<sup>52</sup> particularly on shorter journeys. If animals are unloaded en route, they should have a minimum spell period of 4 hours before reloading. Spell periods should include access to water, food and the opportunity to rest before commencing another journey.

### **Humane destruction**

Destruction of animals is an emergency procedure that is rarely necessary during transport, as long as fit animals are selected for loading. Where it is necessary, for example because of injury caused by a traffic accident, it is important that destruction be done promptly, safely and humanely. Humane destruction methods for newborn stock are relevant for those unexpected births during transport that cannot be cared for adequately.

## **1.2.3 Relevant legislation, standards and guidelines**

### 1.2.3.1 States and territories

Under constitutional arrangements, the primary responsibility for animal welfare within Australia rests with individual states and territories, which exercise legislative control through 'prevention of cruelty to animals Acts' and other legislation (refer to Table 6).

Each state or territory has a bureau or office that deals with animal welfare. In many cases designated officers of the Royal Society for the Prevention of Cruelty to Animals (RSPCA) also have authority under state or territory legislation to prosecute offenders for cruelty offences. Animal welfare concerns arising in particular industries are often addressed in codes of practice developed jointly by government and the industry. Each State and Territory government has an Animal Welfare Advisory Committee (AWAC) that provides advice on animal welfare issues and on associated legislation and codes of practice.<sup>53</sup>

As shown in Table 6 below, all jurisdictions can make regulations to require compliance with the proposed standards, and all regulations except those in New South Wales and the Northern Territory can adopt the standards by reference. (New South Wales and the Northern Territory would have to make regulations using similar wordings as the standards). The Australian Capital Territory, South Australia and Western Australia can adopt standards as amended from time to time, whereas Queensland, Tasmania and Victoria can only adopt standards as at a particular date (that is, if the standards are amended, the regulations would have to be amended accordingly).

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<sup>49</sup> Grandin, 2001.

<sup>50</sup> Scientific Panel on Animal Health and Welfare, 2004

<sup>51</sup> Hall et al, 1998.

<sup>52</sup> Grandin, T. (2001).

<sup>53</sup> In Western Australia, specialist animal welfare advisory committees are established from time to time as the need arises.

It is not the role of this RIS to examine the extent to which state and territory legislation has adopted existing model codes. That is being considered as part of the AAWS National Implementation Plan.<sup>54</sup>

#### 1.2.3.2 Federal government

The Federal Government has limited animal welfare responsibility in the livestock sector, covering export processing establishments and the live animal export trade. The Federal Minister for Agriculture receives advice from the National Consultative Committee on Animal Welfare (NCCAW). NCCAW was established in 1989 to provide a forum for agricultural industry representatives, animal welfare interests and Commonwealth and State/Territory government agencies to develop balanced advice in animal welfare for the Commonwealth Government.<sup>55</sup> It advises on the implications of issues and developments affecting the welfare of animals, and on the relevance and effectiveness of existing and possible future Australian animal welfare arrangements including policies, regulation, codes of practice and guidelines. For example, the NCCAW has issued position statements on the humane road transport of animals, and the rail transport of animals.<sup>56</sup>

Another method of dealing with animal welfare issues of national significance has been through the development of model codes of practice in consultation with industry and other stakeholders, for endorsement by the Primary Industries Ministerial Council. These model codes have been used as a guide by the various state and territory governments in the development of their own legislation and codes of practice. As these model codes are developed primarily for government purposes, they are separate to the various voluntary codes of practice and quality assurance programs that may be developed from time to time by industry associations.

The Primary Industries Ministerial Council (PIMC) consists of the Australian/State/Territory and New Zealand government ministers responsible for agriculture, food, fibre, forestry, fisheries and aquaculture and rural adjustment policy. The Council is the peak government forum for consultation, coordination and, where appropriate, integration of action by governments on primary industries issues, including animal health and welfare.

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<sup>54</sup> Shiell, June 2006.

<sup>55</sup> The former Minister agreed to the recommendation of the 2006 NCCAW Review Report (Shiell, December 2006) that, as an interim measure, NCCAW be retained as an advisory committee with altered terms of reference and membership until the conclusion of the AAWS implementation period on 30 June 2009. The former Minister also agreed in principle to the NCCAW Review recommendation that an Australian Animal Welfare Council be established to replace NCCAW but decided that a final decision on this recommendation be taken nearer to that date. See <<http://www.daff.gov.au/animal-plant-health/welfare/nccaw#report>>

<sup>56</sup> <<http://www.daff.gov.au/animal-plant-health/welfare/nccaw/guidelines/transport>>

**Table 6 - Summary of relevant state and territory legislation**

<b>State or Territory</b>	<b>Act</b>	<b>Existing regulations</b>	<b>Adoption of standards by reference?</b>	<b>Compulsory compliance with adopted standards?</b>
<b>ACT</b>	<b>Animal Welfare Act 1992 .</b>	<i>Animal Welfare Regulation 2001</i>	Yes. Under s.112(4) of the Act, the regulations may incorporate (with or without modification) an approved code of practice as in force from time to time.	Yes, if adopted by regulations.
<b>NSW</b>	<b>Prevention of Cruelty to Animals Act 1979</b>	<i>Prevention of Cruelty to Animals Regulation, 2006.</i>	Yes, but regulations can adopt the standards as guidelines only.	Yes, but the wording of the standards would have to be reflected in the regulations themselves.
<b>NT</b>	<b>Animal Welfare Act</b>	<i>Animal Welfare Regulations<sup>57</sup></i>	Yes. Under s.24 of Act, Minister may by notice in gazette adopt codes of practice, but compliance with such codes cannot be made mandatory.	Yes, but the wording of the standards would have to be reflected in the regulations themselves.
<b>QLD</b>	<b>Animal Care and Protection Act 2001</b>	<i>Animal Care and Protection Regulation 2002</i>	Yes. Under s.15(1) of Act, a regulation may require a person to comply with the whole or a stated part of a code of practice.	Yes, if adopted by regulations.
<b>SA</b>	<b>Prevention of Cruelty to Animals Act 1985</b>	<i>Prevention of Cruelty to Animals Regulations 2000</i>	Yes. Under s.44(3) of Act, regulations can prescribe codes of practice with or without modification) or operate by reference to any code of practice relating to animals as in force at a particular time or as amended from time to time.	Yes, if adopted by regulations.
<b>TAS</b>	<b>Animal Welfare Act 1993</b>	<i>Animal Welfare Regulations 1993</i>	Yes. Under s.54(4) of Act regulations can adopt standards as in force at a particular date.	Yes, if adopted by regulations.
<b>VIC</b>	<b>Prevention of Cruelty to Animals Act 1986</b>	<i>Prevention of Cruelty to Animals Regulations 1997</i>	Yes. Under s.42(2)(d) of Act, regulations can adopt standards with or without modification as published at the time the regulations are made, or at any time before then.	Yes, if adopted by regulations.
<b>WA</b>	<b>Animal Welfare Act 2002</b>	<i>Animal Welfare (General) Regulations 2003</i>	Yes. Under s.94(2)(d) of the Act, the regulations can adopt codes of practice with or without modification, as they exist at a particular date; or as they are amended from time to time.	Yes, if adopted by regulations.

<sup>57</sup> Regulations are not needed in NT to adopt standards. This can be done by the Minister by notice in the gazette.

### 1.2.3.3 The Australian Animal Welfare Strategy

The Australian Animal Welfare Strategy (AAWS) was initiated by the Australian Government with the assistance of the NCCAW and is based on broad stakeholder and community consultation. It was endorsed by PIMC in May 2004 and provides a national framework to enhance animal welfare outcomes. The AAWS is aimed at all Australians and encompasses all uses of sentient animals.<sup>58</sup>

AAWS been developed to provide the national and international communities with an appreciation of animal welfare arrangements in Australia and to outline directions for future improvements in the welfare of animals.

A key objective of the AAWS is ‘to facilitate improved consistency of legislation across states and territories for improved and sustainable animal welfare outcomes.’ Two related AAWS activities are to:

- Facilitate the timely development, and revision of codes of practice, standards and guidelines and legislation for the welfare of animals where scientific, social and industry developments justify changes being made to existing practices, and
- Promote the adoption of a harmonised approach to the development and application of clear, contemporary, adequate and consistent animal welfare legislation and codes of practice across all state, territory and local government jurisdictions, for appropriate and agreed outcomes.<sup>59</sup>

The AAWS National Implementation Plan includes an Animal Health Australia (AHA) managed process to convert the existing model codes to Australian animal welfare standards that can be regulated. The proposed Australian Animal Welfare Standard for Land Transport of Livestock is the first Australian welfare standard to be developed. It incorporates elements in the existing species-specific codes plus new provisions that are not already covered by the existing land transport model codes of practices.<sup>60</sup>

### 1.2.3.4 International standards

Animal welfare considerations during land transport are the subject of increasing international focus. The World Organisation for Animal Health (OIE) has nominated transport of live animals as one of three welfare topics for which guidelines are currently being developed by OIE working groups (with a view to the possible development of international standards). The European Union is also revising standards on animal transport.

The OIE is an intergovernmental organisation created by the International Agreement of 25 January 1924, signed by 28 countries. In May 2006, the OIE totalled 167 member countries.

Australia has pushed strongly for the development of scientifically based OIE international animal welfare guidelines. This was not intended as a means to underpin non-tariff barriers to trade. The OIE has since:

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<sup>58</sup> Animal Health Australia, 2007.

<sup>59</sup> Primary Industries Standing Committee, 2005.

<sup>60</sup> Animal Health Australia, 2007.

- endorsed animal welfare guiding principles;
- developed welfare guidelines for land transport,<sup>61</sup> sea transport, humane slaughter and killing for disease control.

Scientifically based animal welfare standards are currently being developed by the OIE in line with the following agreed animal welfare guiding principles:

- There is a critical relationship between animal health and animal welfare;
- The internationally recognised ‘five freedoms’ (freedom from hunger, thirst and malnutrition; freedom from fear and distress; freedom from physical and thermal discomfort; freedom from pain, injury and disease; and freedom to express normal patterns of behaviour) provide valuable guidance in animal welfare;<sup>62</sup>

A comparison of the proposed standards with the relevant OIE guidelines for land transport is given in Part 3.3 and Appendix 4 to this RIS.

#### 1.2.3.5 Industry initiatives

Animal welfare is now recognised as a characteristic of product quality and in some instances is now a requirement for certain markets. There is increasing recognition by livestock industries that animal welfare is an integral part of good animal husbandry. In the past decade, food safety-based quality assurance schemes have been implemented within businesses and/or across industries. These schemes reassure retailers and consumers of the safety and quality of animal products. Some, but not all, of these quality assurance programmes include animal welfare. Quality assurance programs may also be the most appropriate vehicle to include systems to ensure environmental management, occupational health and safety, and animal welfare through a total production chain approach.

These developments illustrate how livestock industries have increased their capacity to define and demonstrate continuous improvement, leadership and best practice standards (e.g. in education and extension training programs for industry participants). To date, a number of auditable quality assurance programs in the pork, dairy, chicken meat, egg, red meat and livestock transport industries have been initiated.<sup>63</sup>

Several livestock industries have made significant progress in developing their own quality assurance programs that incorporate animal welfare requirements. These industries generally see such quality assurance programs as a mechanism to demonstrate compliance with legislation, codes of practice, standards or market requirements. Additional potential benefits include improvements in product quality, the benefits of a training aid focussing on practical welfare issues and improvements in work-related characteristics in stockpeople such as job satisfaction.

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<sup>61</sup> <[http://www.oie.int/eng/normes/mcode/en\\_chapitre\\_3.7.3.htm](http://www.oie.int/eng/normes/mcode/en_chapitre_3.7.3.htm)>

<sup>62</sup> Primary Industries Standing Committee, 2005.

<sup>63</sup> Animal Health Australia, 2007.

Within the livestock transport industry, animal welfare guidelines have already been developed as recommended good practice for the industry and are reflected in the recently revised quality assurance and accreditation program, TruckCare.

TruckCare is the Australian Livestock Transporters Association's independently-audited quality assurance program. The program is built around the quality assurance principles contained in international guidelines and also uses hazard analysis of critical control points (HACCP). TruckCare is designed to link with related quality programs including CattleCare, FlockCare, National Slaughter Quality Assurance and TruckSafe.<sup>64</sup> The program is designed to raise awareness and implement a quality management system which can be audited by customers, or by an externally qualified auditor and integrated with customers or road transport quality assurance programs. TruckCare has been developed with the assistance of animal welfare scientists from the Department of Primary Industries, Victoria, and in collaboration with industry and animal welfare organisations.<sup>65</sup>

Additionally, a national guide for selecting livestock for transport, *'Is it fit to load?'*, has been prepared by Meat & Livestock Australia (MLA) in collaboration with the RSPCA and relevant federal, state and territory departments. This guide was developed to help transporters determine if an animal is fit to be loaded for transport to saleyards, processing establishments, or any other destination.<sup>66</sup>

There are also some state-based industry codes of practice, such as the Codes of Practice for the Welfare of Animals prepared by the Livestock Transporters Association of Western Australia (Inc.).<sup>67</sup>

### **1.3 Consultation processes**

The preparation of an RIS provides for an informed process of consultation regarding the proposed standards, alternative options and the costs and benefits associated with each option. The publication of the consultation draft RIS is the final step in the consultation process, where the general community and consumers, as well as interested stakeholders have an opportunity to comment on both the proposed standards and the RIS.

As discussed in Part 1.2.3, extensive consultation has already taken place with government agencies, researchers, industry and animal welfare organisations in the development of the proposed standards and their predecessors.

Under the AAWS National Implementation Plan, AHA has been appointed as the project manager for the conversion of the existing model codes into standards that can be regulated. The method to develop the proposed standards was defined in the AHA business plan for the project, following extensive stakeholder consultation and consideration of a review of the existing codes of practice in 2005.<sup>68</sup>

The proposed standards were developed under the auspices of the Animal Welfare Working Group (AWWG), which is ultimately responsible to the Primary Industries Ministerial Council (PIMC). Membership of AWWG comprises representatives from each of the State Departments

<sup>64</sup> Australian Livestock Transporters Association, 2007.

<sup>65</sup> ALTA <<http://www.alta.org.au>>

<sup>66</sup> Meat & Livestock Australia et al, April 2006.

<sup>67</sup> Livestock Transporters Association of Western Australia, 2002.

<sup>68</sup> Neumann, 2005.

with responsibility for agriculture, CSIRO, and the Commonwealth Department of Agriculture, Fisheries and Forestry - Australia.

Some changes to the model proposed in the business plan were made during the development of the proposed standards, partly due to the scale and number of different industries and industry sectors involved and partly due to the process being new and previously untested. For instance, in order to achieve a consistent set of standards, with consensus from stakeholders that could provide for a whole of chain approach, widening the consultation and involvement of several key sectors was required.

### 1.3.1 Development of proposed standards

The development process was initially undertaken by a small writing group comprising research, government and industry representatives; supported by a widely representative Standards Reference Group (SRG). Further drafts of the standards were developed by AHA in consultation with the SRG and smaller working groups covering each species or issue. Further, several species-specific working groups were established to provide insight into specific issues that may impact on a particular animal industry.

The SRG was comprised of representatives of commercial transport operations, representatives from the production, saleyard, transport, feedlot and processing sectors of industry for all the animal species involved, animal welfare groups, state and federal regulators, policy representatives and other experts from the veterinary, teaching and research fields, as follows:

**Animals Australia Inc. (AA)** is a federation representing some 40 member societies and thousands of individual supporters throughout Australia.<sup>69</sup>

The **Australian Alpaca Association Ltd. (AAA)** represents alpaca owners at all levels and is the collective voice of over 2100 members in all states.

The **Australian Chicken Meat Federation Inc (ACMF)** is the peak coordinating body for participants in the chicken meat industry in Australia, including growers and processing companies. Its members are the various State Chicken Meat Councils (QLD, NSW, VIC, SA and WA), APIA (which represents the major chicken meat processors), and the ACGC (Australian Chicken Growers Council).

**Australian Dairy Farmers Limited (ADF)** is a not-for-profit company representing the interests of Australian dairy farmers.<sup>70</sup>

The **Deer Industry Association of Australia (DIAA)** is a national organisation representing farmers, processors, transporters, breed organisations and any other party involved in the deer industry.<sup>71</sup>

The **Australian Veterinary Association (AVA)** is the professional organisation for veterinarians. The core objective of the AVA is to advance veterinary science.<sup>72</sup>

The **Australian Egg Corporation (AECL)** is a producer owned company which integrates marketing, research and development and policy services for the benefit of all stakeholders. AECL is mainly funded through statutory levies collected under the Egg Industry Service

<sup>69</sup> <<http://www.animalsaustralia.org/about/>>

<sup>70</sup> <<http://www.australiandairyfarmers.com.au/>>

<sup>71</sup> <<http://www.diaa.org>>

<sup>72</sup> <<http://www.ava.com.au/>>

Provision Act 2002 and Australian government funds for the purposes of research & development.<sup>73</sup>

The **Australian Horse Industry Council** (AHIC) represents the interests of all persons and the health and welfare of all horses in the Australian horse industry.<sup>74</sup>

The **Australian Livestock Exporters Council** (ALEC) is the national policy body representing the livestock export industry. ALEC is made up of livestock exporters and state chapters whose members are directly involved in the export of cattle, sheep and goats.<sup>75</sup>

The **Australian Livestock & Property Agents Association** (ALPA) is the national peak industry body representing livestock and property agents. The Association represents more than 1,200 agency businesses across Australia.<sup>76</sup>

The **Australian Livestock Transporters Association** (ALTA) represents almost 800 road transport companies across rural Australia. The great majority are livestock carriers. ALTA is the national industry body and is made up of State-level associations from every State of Australia.<sup>77</sup>

The **Australian Lot Feeders' Association** is the peak national body for the feedlot industry in Australia.<sup>78</sup>

The **Australian Meat Industry Council** (AMIC) is the peak council that represents retailers, processors, exporters and smallgoods manufacturers in the post-farm-gate meat industry.<sup>79</sup>

**Australian Pork Limited** (APL) is the national representative body for Australian pig producers. It is a producer-owned not-for-profit company combining marketing, export development, research, innovation and strategic policy development 'to assist in securing a profitable and sustainable future for the Australian pork industry'.<sup>80</sup>

The **Cattle Council of Australia's** (CCA) charter is to represent and promote the interests of Australian beef cattle producers. This is achieved through wide and regular consultation with, and policy advice to, key industry organisations, Federal Government Departments and other bodies regarding issues of national and international importance. The CCA membership comprises all of Australia's major state farming organisations. The collective membership base is more than 22,000 beef cattle producers and over 15 million cattle and the CCA is required by legislation to provide representation for the entire Australian beef cattle industry.<sup>81</sup>

The **Central Australian Camel Industry Association Inc** (CACIA) is made up of members from the pastoral industry, meat industry, Aboriginal communities, tourism operators, transport operators, contractors and Government agencies. The role of CACIA is to promote the

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<sup>73</sup> <<http://www.aecl.org/index.asp?pageid=360>>

<sup>74</sup> <<http://www.horsecouncil.org.au/content.asp?z=3>>

<sup>75</sup> <<http://www.livecorp.com.au>>

<sup>76</sup> <<http://www.alpa.net.au/>>

<sup>77</sup> <<http://www.alta.org.au/directory/site.asp?site=286>>

<sup>78</sup> <<http://www.feedlots.com.au/>>

<sup>79</sup> <<http://www.amic.org.au/>>

<sup>80</sup> <<http://www.apl.au.com/index.cfm>>

<sup>81</sup> <<http://www.cattlecouncil.com.au/AboutCCA.htm>>



sustainable development of the camel industry through the use, knowledge and well-being of camels in Australia.<sup>82</sup>

**Dairy Australia** is the industry's services provider; owned by the industry, limited by guarantee, whose members are farmers and industry bodies. The Company invests approximately \$30 million of dairy farmer levy payments and \$15 million of taxpayer funds in projects and services for the benefit of the Australian dairy industry.<sup>83</sup>

The **Goat Industry Council of Australia** (GICA) is the peak national body representing the interests of Australian goat meat, fibre and dairy producers.<sup>84</sup>

The **Livestock Saleyards Association of Australia** (LSAA) is a federation of the state saleyard associations of Victoria, South Australia, Queensland and Western Australia.

**Meat and Livestock Australia** is a producer-owned company that provides services to livestock producers, processors, exporters, foodservice operators and retailers. MLA has over 43,000 livestock producer 'members' who have stakeholder entitlements in the company.<sup>85</sup>

The **National Farmers' Federation** (NFF) is the peak national body representing farmers and, more broadly, agriculture across Australia.<sup>86</sup>

The **Northern Territory Cattlemen's Association Inc** (NTCA) is the peak primary industry lobby group in the Northern Territory. It represents over 90% of pastoral operations in the NT, from small family operations to the large corporate organisations.<sup>87</sup>

**RSPCA Australia** is the federal body of the eight autonomous state and territory RSPCAs in Australia. RSPCA Australia establishes national policies and positions on animal welfare, and liaises with government and industry on national animal welfare issues. RSPCA Australia policy statements regarding the transportation of animals are published on its national web site.<sup>88</sup>

The **Rural Research and Development Corporation** (RRDC) is a statutory Corporation formed in July 1990 under the Primary Industries and Energy Research and Development (PIERD) Act 1989. It was set up by the Commonwealth Government to work closely with Australian rural industries on the organisation and funding of their research and development needs.

The **Saleyard Operators of Australia** represents saleyard business and has members in all states and territories except the ACT.

The **Sheepmeat Council of Australia** (SCA) is the peak national body representing the interests of sheepmeat producers. The SCA is funded by voluntary membership subscriptions paid by state farming organisations and through the activities it performs on behalf of the Red Meat Advisory Council (RMAC).

**Australian Wool Innovation Limited** (AWI) invests funds in wool research, development and innovation (RDI) and marketing activities aimed at increasing the long-term profitability,

<sup>82</sup> <<http://www.camelsaust.com.au>>

<sup>83</sup> <<http://www.dairyaustralia.com.au/content/view/15/35/>>

<sup>84</sup> <<http://www.gica.com.au/>>

<sup>85</sup> <<http://www.mla.com.au/HeaderAndFooter/AboutMLA/Default.htm>>

<sup>86</sup> <<http://www.nff.org.au/aboutus.html>>

<sup>87</sup> <<http://www.ntca.org.au>>

<sup>88</sup> <<http://www.rspca.org.au/policy/f.asp>>

productivity and sustainability of Australian woolgrowers. Established in 2001, AWI is a not-for-profit company owned by 32,000 Australian farmers.<sup>89</sup>

**WoolProducers Australia** is the peak national body for the wool industry in Australia and represents over 14,000 farmers whose primary business is growing wool.<sup>90</sup>

Several key industry and animal welfare organisations were involved in a more detailed consultation process in relation to the proposed standards and the RIS.

In addition, a communication strategy was developed for the project which guided all participants in terms of the timing of communication and industry consultation. Templates and other communication material were also provided and coordinated through the Standards Reference Group across all the industries and industry sectors to ensure wider consultation and opportunity to comment.

### 1.3.2 Public consultation

Animal welfare stakeholders and the general public were invited to make submissions on the proposed standards and/or the RIS for a 60-day period between 27th of March and the 27th of May, 2008. The documents were made available from a dedicated web site,<sup>91</sup> and the stakeholder organisations listed in Part 1.3.1 of this RIS were asked to distribute copies amongst their members.

The following summary of the submissions was prepared by the consultants who managed the public consultation process, ENVision Environmental Consulting.<sup>92</sup>

A total of 116 submissions were received, most of which were sent from Victoria and NSW. Most of the submissions received were from the livestock sector (28%, 33), followed by individuals not specifying their occupation (26%, 30), and the animal rights (8%, 9) and animal welfare sectors (6%, 7). 61% (71) of the submissions were written and the remaining 39% (45) were structured submissions. All of the structured submissions were completed by individuals (as opposed to representatives of formal organisations).

For Part A of the LTS, SA5 (Loading, transporting, and unloading), SA1 (Responsibilities and planning), and SA2 (stock handling competency) were considered most frequently in the structured and written submissions. Generally, in the structured submissions slightly over half of the people indicated they were satisfied overall with the adequacy of the Standards and Guidelines. Suggested changes listed in the written submissions were often focused on:

- clarifying responsibilities for exercising a duty of care for livestock;
- clarifying appropriate type and levels of competency (including for humane destruction), appropriate 'training' and (practical, formal) evidence of competencies;
- clearer – and sometimes stricter requirements for airflow, vertical clearance, cleanliness, and injury risks;

<sup>89</sup> AWI Annual Report 2005/2006.

<sup>90</sup> <<http://www.woolproducers.com.au/>>

<sup>91</sup> <<http://www.animalwelfarestandards.net.au/>>

<sup>92</sup> Mazur and Bolton, 2008.

- clarifying appropriate assessment criteria and methods for determining fitness, injury, unconsciousness, and illness/disease;
- disallowing certain handling procedures (prodders, dogs, dragging);
- whether to place specific loading densities Guidelines into the Standards and provide additional factors;
- shortening the maximum time off water; and
- humane destruction: appropriate use of firearms, accessing expertise in remote areas, and OH&S issues.

For Part B of the LTS (the species-specific sections), cattle received the most attention in the submissions, followed by a relatively even amount of interest in pigs, poultry, and sheep. Generally, in the structured submissions more people indicated they were dissatisfied with the adequacy of the Standards and Guidelines – except for the Standards and Guidelines for horses. Suggested changes listed in the written submissions included (but were not limited to) a focus on:

- reducing travel times, time off water (across all species);
- disallowing use of electric prodders, use of blunt trauma for humane destruction (alpacas, deer, pigs, sheep);
- greater clarity re: transport of pregnant animals (e.g. alpacas, goats); and
- clearer – and sometimes stricter requirements for loading densities and travel in extreme temperatures.

Of those people choosing to rate the adequacy of the RIS in their structured submissions, most of them (77%, 23) felt that the RIS did demonstrate the overall need for the Draft Land Transport Standards. Two written submissions included a critique of the way that costs and benefits were identified in the RIS. Seventeen written submissions included specification of their preferred alternatives:

- nine submissions noted support for Option B as it is currently written, and one submission stated support for Option B if it was changed;
- two submissions noted the need for changes to Option B1;
- two submissions noting support for Options B1, E1, and/or E2
- one submission noting the need for changes to Options B1, E1, and E2; and
- one submissions noting a lack of support for and the need for changes generally to the range of alternatives.

A summary of the changes made to the proposed standards in response to the public submissions is given in Appendix 8. Changes made to the RIS since the public consultation period mainly reflect these changes to the proposed standards.

Following the public consultation process, the SRG at its meeting on Tuesday 16 September 2008 endorsed the revised documents being; *Australian Animal Welfare Standards and Guidelines for the Land Transport of Livestock, Regulatory Impact Statement and Public Consultation Response Action Plan*. It is noted that some issues do not represent complete

agreement of the Reference Group, in particular; bobby calves, time off water and stocking density.

## 2.0 The problems and policy objective

### 2.1 Identifying the problems

According to COAG guidelines, the RIS is required to demonstrate the need for the proposed standards. This is best achieved by identifying the problems that the proposed standards are endeavouring to address.

#### **The need for greater national consistency**

Economic studies have shown that the development of standards and technical rules by institutions given authority to do so by both the private and public sectors is an essential element of the technological and economic infrastructure of a nation. Industry-wide standards not only have a positive effect on the economy as a whole, but also provide benefits for individual businesses that use them as strategic market instruments. Standardisation can lead to lower transaction costs in the economy as a whole, as well to savings for individual businesses.<sup>93</sup>

As discussed in Part 1.2.2.3 of this RIS, a key objective of the AAWS is ‘to facilitate improved consistency of legislation across states and territories for improved and sustainable animal welfare outcomes.’ Australia’s animal welfare ministers agreed in April 2006 on the need for a nationally consistent approach for the development, implementation and enforcement of animal welfare standards. AAWS 2nd National Australian Animal Welfare Strategy Workshop participants reiterated the importance of having consistency of legislation across states and territories as a major objective of the AAWS. A review of all Australian animal welfare legislation is under way and will report on current jurisdictional laws and approaches. This review is being prepared in close consultation with AAWS working groups and state and territory animal welfare bureaus.

At present, the model codes of practice are referenced in uneven or different ways in the various state/territory animal welfare Acts and Regulations. This lack of consistency causes difficulties, especially for the livestock industries.<sup>94</sup> In a recent submission to the Productivity Commission, the Red Meat Industry said:

‘Animal health and welfare imperatives must balance what consumers expect and are willing to pay for products, with commercial viability of production. Much Australian food is destined for export markets, where Australia is viewed as a single nation that should have one logical set of rules. Yet, at operational level, there are significant variations across States in interpretation of animal welfare needs and circumstances.’<sup>95</sup>

There is also a lack of consistency between codes of practice for different species, which could lead to unequal treatment and different cost pressures on competing meat products, such as beef and lamb. Some differences in standards are required because of biological or behavioural variations between species, but other differences in standards are not necessary for these reasons. This problem is accentuated during the transport of livestock across state borders.

<sup>93</sup> TU Dresden and Fraunhofer Institute, 2000.

<sup>94</sup> Animal Health Australia, 2007.

<sup>95</sup> Meat & Livestock Australia et al, July 2007.

### **The need to ‘fill in gaps’**

Several deficiencies have been identified in the current model codes of practice relating to the land transport of livestock, including the lack of clear identification of the chain of responsibility for livestock during transport and in particular, exchange of ownership of livestock; lack of clear targets for areas such as water deprivation and spelling periods; and the need to provide more specific information relating to the fitness of livestock prior to loading. Other gaps in the existing codes include the need for clear standards on appropriate practices during loading, transport, unloading and the holding of livestock. These deficiencies could create risks to the welfare of transported livestock.

Some species and classes are not adequately covered by existing model codes of practice. For example, there are no species-specific existing codes of practice for the transport of alpacas, buffalo, camels, deer, ratites (such as ostriches or emus), goats or sheep. (The proposed model code of practice for the land transport of sheep is still only a draft). However, the 1983 *Model Code of Practice for the Welfare of Animals – 3, Road Transport of Livestock* applies to ruminants that do not have their own species-specific code of practice such as buffalo, deer, goats and sheep.

### **The need to update current model codes of practice**

Some of the current model codes of practice relating to the land transport of livestock have been in place since 1983. Since that time there have been some significant advances in the understanding of animal physiology and behaviour, and technological changes in animal husbandry together with changes in industry practices regarding livestock welfare.

Since the development of some of these codes, such as those for cattle and horses, there have also been significant changes in technology and practice employed by the livestock transport industry. Further, the increase in the development of industry based standards and quality assurance programs has resulted in recommended practices higher than those in the existing codes in some instances. For example, the transport industry now has requirements for livestock loading schemes, mandated in each State (with the exception of NSW); compulsory consignment sheets; records that are required for driver and driving hours legislation; and increasing recognition of the importance of other practices due to customer and supplier requirements.

In addition, changes have occurred in the welfare standards of other countries, with the development and publication of the new international OIE guidelines on the transport of animals by land (refer to Part 1.2.3.4 of this RIS).

### **The need to minimise risks to livestock welfare**

As discussed in Part 1.2.2 of this RIS, livestock being transported by road and rail are subject to a number of stress factors throughout the journey, including handling, loading, vehicle design, stocking density, mixing with unfamiliar animals, changes in climate, unloading, journey duration and time without water or food. Many of these risk factors are not adequately addressed in the existing model codes.

These risk factors can be cumulative and apply across all stages of land transport as defined in the standards, from assembly before the journey to unloading at the destination. It is therefore essential that effective management practices are in place to minimise any risks to livestock welfare.

**The need for clear and verifiable standards**

Several deficiencies of the current model codes have been identified, for example, a lack of consistency; ambiguity or lack of clarity; failure to address some chronic stress issues; and the inability of the existing codes to assist in prosecutions due to the lack of defined standards or targets.

The lack of industry compliance with the current model code of practices is often due to there being no regulatory requirements to comply with the code, and therefore no enforcement and penalties for breach of the code. If compliance with the proposed standards is to be made compulsory, legislation or regulations will be required in each participating state or territory, together with appropriate enforcement regimes.

Underpinning the above is the lack of verifiability of much of the current codes of practice, which often makes them unsuitable for adoption as regulations. In addition, the recent increase in the adoption of industry quality assurance programs that include livestock welfare is linked to the inability to integrate the contents of the codes into business practices for operational purposes. By providing clear and verifiable standards, alongside supporting guidelines, their integration into industry programs should be much easier.

**The need to ensure that the benefits justify the costs of standards**

As indicated in the introduction to this RIS, it is a COAG requirement that the benefits of introducing the proposed standards outweigh the costs. This requirement is demonstrated in Part 5.0 of the RIS. The current uncertainty as to whether the benefits of the existing codes outweigh their costs acts as a disincentive towards their adoption in regulations.

**The need for standards to be considered within an international context**

One of the requirements of the COAG guidelines is to demonstrate that proposed standards are consistent with relevant international standards (or to justify the extent of inconsistency).

For example, if the proposed standards were significantly more costly than equivalent international standards, Australian exports of livestock products could be adversely affected.

On the other hand, if the standards were to result in increased imports of livestock products from countries with lower livestock welfare standards, there could be a net cost to livestock welfare, as well as adverse effects on Australian industries.

There is also a need for clear statements of Australia's livestock welfare standards to the international community, especially our customers and trading partners.

**The need to meet community expectations**

Finally, there is an important need for the proposed standards to meet the expectations of the Australian community, including producers, transporters, consumers and other interested parties.

Community confidence in the proposed standards is essential for their endorsement by PIMC, their adoption by state and territory legislation and subsequent implementation by industry. The transparency of the public consultation process will help to demonstrate that community expectations have been met.

## 2.2 Policy objective

In relation to the proposed standards and possible alternatives, the following overarching policy objective is identified:

*To ensure that the conditions under which livestock are transported on land are consistent with reasonable animal welfare outcomes.*

The main criterion for assessing the proposed standards against the practicable alternatives in the RIS is their relative cost-effectiveness in achieving this policy objective, compared to the benefits of each alternative.

The word ‘reasonable’ embraces the need for standards to be soundly based on science, industry knowledge and community expectations, with their overall benefits outweighing their costs. The policy objective is also consistent with the AAWS vision statement:

‘The welfare of all animals in Australia is promoted and protected by the development and adoption of sound animal welfare standards and practices.’

## 2.3 A case for intervention

Having identified the nature and extent of the problem (that is, the need for better standards) and the identified policy objective, the ‘threshold’ or preliminary question to be addressed in an RIS is: *Is there a sufficient case for further government intervention to assist in solving the problem?*

The proposed form of government intervention is the adoption of the standards by PIMC with the intent of these standards being implemented by legislation in each participating jurisdiction.

### Economic grounds for intervention

There is a clear economic case for government intervention in markets where some form of **market failure** is taking place. Government can justify this by saying that intervention is in the public interest. Basically market failure occurs when markets fail to deliver an efficient allocation of resources (economic efficiency). The result is a loss of economic and social welfare. The relevant sources of market failure addressed by the proposed standards (assuming they will become regulations) are associated with those of **externalities** and **public goods** including a **lack of information**. In other words, market forces alone would not be expected to solve the problems identified in Part 2.1 of this RIS and intervention in the form of regulated standards is necessary.

**Externalities** arise where private decision makers do not incur all the costs or receive all the benefits of their decisions. Negative externalities in the livestock transport market arise where transporters do not incur all the costs of their decisions.

With **public goods** it is considered that the livestock transport market will of its own accord fail to supply ‘adequate’ animal welfare because there is a lack of revealed preferences by consumers regarding the true benefit of animal welfare. In other words, there remains no effective market demand for ‘animal welfare’ as such. Consumers of animal products will not demand animal welfare, hoping that others will pay for it. The result may be a lack of public goods in the form of animal welfare, if left to market forces.

A **lack of information** regarding the nature of animal products (particularly its origin or method of production) is another reason why market forces will not deliver adequate animal welfare outcomes.



Animal welfare legislation provides a balance between the competing views in the community about the use of animals. The successful pursuit of many industries involving animals is dependent on community confidence in the regulation of animal welfare.<sup>96</sup>

Whether market failure arises from externalities, public goods or lack of information, the role of government intervention is to strike the socially optimal balance between economic activity resulting from the production and consumption of products obtained from animals, on one hand, and risks to animal welfare, on the other.

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<sup>96</sup> Bureau of Animal Welfare, 1997.

### 3.0 Nature and impacts of proposed standards

This Part of the RIS provides an overview of the proposed standards. It also identifies cost impacts and stakeholders affected by the proposed standards (chiefly the livestock land transport industry, including producers, transporters and consumers of livestock products).

#### 3.1 Overview of proposed standards

Because compliance with the guidelines is voluntary, costs are imposed by the proposed standards rather than by the guidelines. An overview description of the proposed standards is given in Appendix 1.

Most of the proposed standards are consistent with the requirements of existing national model codes of practice, as listed in Part 5.2 of this RIS. Where a proposed standard is relevant to only one or two states, such as the proposed standard SB4.6 banning the transport of calves for slaughter across Bass Strait, it is consistent with the relevant state standards. Such standards are assumed for the purpose of this RIS to be part of the base case and therefore impose no incremental cost impacts.

A summary of the proposed material changes from the relevant current model codes, together with reasons for those changes is given in Appendix 2. The main overall difference is that standards are not explicitly stated in the existing model codes. The proposed standards make more verifiable the requirements of the existing model codes, to facilitate their incorporation into state and territory regulations and the auditing of compliance with such regulations. In many cases, the proposed standards increase the coverage of livestock species, minimise risks to livestock welfare and reduce unnecessary costs to industry.

The proposed standards have been drafted to maximise ease of understanding and implementation by those responsible for compliance with them. Where possible, they are outcomes-based, so that individuals can determine for themselves how best to comply, but where necessary prescriptive standards have been included so that risks to livestock welfare are minimised. For these reasons, the proposed standards are considered to be an appropriate balance of outcome-based and prescriptive standards.

The standards seek to achieve **uniformity** of key requirements across the species as much as possible, taking into account the inherent physiological and behavioural differences between species. Part A details standards that apply to all livestock species. Standards in Part B chapters detail individual species requirements in addition to, or by exception to, the Part A standards.

Transport usually involves the process of ‘change in ownership’ and the ‘transfer of **responsibility**’; so the chain of responsibility is integral to making sure that outcomes are consistent with livestock welfare. The central idea is that the person in charge is responsible for the welfare of livestock at each stage of the journey and has a duty of care to ensure the welfare of livestock under their control and to communicate vital information (see SA1.1, SA1.2).

**Stock-handling competency** is required by SA2.1, and means that any person must be competent in the task that they are performing for livestock transport. These tasks include: handling, inspecting, assessing, loading, transporting and unloading, and humane destruction.

People must also understand their responsibilities, maintain records, and be able to plan transport and contingency procedures.

**Livestock must be assessed** by a competent stockperson to be fit for the intended journey before every loading according to various visible criteria (SA4.1) that are either general or specific. Any livestock judged as not fit for the intended journey must only be transported under specific veterinary advice (SA4.2). Any stock not transported must be cared for, treated or humanely destroyed at the first opportunity (SA4.4).

**Pregnancy** is a complex issue with a series of species-based, overlapping standards that assume ascendancy based on the increasing risk associated with advancing pregnancy, culminating in SA4.1(vi). This standard permits the transport of livestock for up to 4 hours during the last two weeks of pregnancy, to allow them to be moved to better circumstances for livestock welfare, including closer supervision of parturition.

Livestock must be **inspected** before loading, within the first hour of the journey and then every 3 hours and at unloading (SA5.11). Vehicles and facilities must also be inspected before use (SA5.11). The driver must provide assistance if a distressed animal is identified at the first available opportunity (SA5.13). The person receiving the livestock must provide an appropriate response to deal with weak, ill or injured livestock (SA5.14).

**Journey times** are restricted by the times that livestock may be permitted off water and the ability to provide water and other requirements on the vehicle. **Water provision** is therefore a key factor in the welfare of livestock that extends across all persons in charge at various times during the transport process. For many species it is impractical to provide water on the vehicle during transport.

The term **spelling** includes the notion of rest. Livestock can travel for a time period up to the limits specified in the species chapters, and then they must be given a spell with access to water, food and space to all lie down. This is known as a mandatory spell and it may be performed either on a stationary vehicle or off a vehicle. A spell is a mandatory requirement when maximum time off-water is reached before starting a further journey, as defined by standards for each species. There are no mandatory spells for water deprivation of less than 12 hours.

A spell may occur voluntarily before loading, mid-journey or at the completion of a journey.

During a voluntary spell, water and space to lie down must be provided to all livestock, on a stationary vehicle or off a vehicle. Handling of animals should be kept to a minimum. Where animals are unloaded, a spell starts from the time all animals are unloaded and ends when animals are handled for reloading.

**Unloading *en route*** can be counterproductive to livestock welfare, due to the extra handling, unfamiliar surroundings and new social interactions between livestock. To reinforce this fact, four hours is the minimum time for a non-mandatory spell. This time is necessary to permit livestock to drink and rest. As a contingency measure, spells longer than 4 hours can be deducted from the total time off-water up to a spell time of 24 hours, after which a new period (journey) can commence. A spell less than 4 hours duration is not recommended or recognised for water deprivation time calculation, but can be undertaken as necessary.

**Food provision** is a lesser consideration than water for the relatively short times involved in transport, especially for ruminants which can go without food for longer than single-stomached species.

**Vehicles and facilities** are covered by the standard SA3.1 which requires construction, maintenance and operation to be conducted in a way that minimises risk welfare of livestock.

**Heat and cold stress** are addressed directly by standard SA5.15 and as components of time off water (SA5.2) and loading density (SA5.4). The actions and arrangements by the driver can include temporary structures or actions to manage hot and cold conditions.

**Bobby calves and poultry chicks** are the only category of young livestock that are transported in large numbers without the protection of their mothers. Additional standards are in place for feeding of calves (SB4.4, SB4.5), poultry chicks (SB 10.3) and also ratite chicks (SB6.3) and foals (SB8.7).

The standard (SA5.4) for **loading density** is a non-prescriptive standard directed to the management of the number of animals that can be loaded for a journey. Material from existing model codes is contained in the guidelines of the species chapters.

The standard for **segregation** or penning of livestock (SA5.4) is also non-prescriptive, to enable decisions to be made on an individual transport consignment basis. For example, livestock observed to be behaving aggressively must be segregated, or smaller livestock may be segregated from larger livestock. However, this may not be necessary for each journey, and will depend on the species, age, class and condition of livestock to be transported.

**Electric prodders** are restricted by SA5.8, which prohibits use on genital, anal or facial areas; on livestock under 3 months old; on livestock that are clearly unable to move away, or excessively on an animal. In the species chapters in Part B, the use of prodders is prohibited on alpacas, horses, pigs, poultry and ratites; consistent with current industry practice. Prodder use is not really a relevant issue for emus, ostriches and poultry. Use on buffalo, camels and deer is an option of last resort.

**Dog use** on livestock is considered in the context of mustering from home ranges and in livestock handling facilities. Dogs must be under control at all times during loading, transport and unloading of livestock, and must not be transported in the same pen as livestock (SA5.9). Dogs must not be used on alpacas, buffalo, camels and horses in livestock handling facilities. Dogs that habitually bite deer, goats, pigs, poultry, sheep, and ratites are not permitted by industry and must be muzzled or not used.

**Humane destruction** in the context of transport is an emergency procedure that is not needed for the great majority of journeys. However it is an important issue that must be done effectively when required. The standards in Chapter 6 detail the important requirements that must be met when humane destruction is necessary and these are self explanatory. Each species chapter has guidelines on recommended methods for humane destruction for each species.

To illustrate how the proposed standards would work in practice, *Case Example 2* below is a description of a typical long journey of 2,220 kilometres for a typical consignment of 800 head which complies with the proposed standards from a hypothetical large, extensive Northern Territory cattle property to a hypothetical feedlot in southern Queensland.

### Case Example 2

**Day 1:** 420 kg live weight (LWT) steers (about 2 years old) are mustered from a paddock into a holding yard where they are held on water over night.

**Day 2:** Drafted, subject to primary fitness to travel inspection, and returned to a holding paddock or tailed out on feed and water overnight and most of the next day (>24 hours).

**Day 3:** On feed and water during day and yarded in evening (7 pm), and fed hay but kept off water.

**Day 4:** Loading at 5am next day (10 hour curfew). All animals re-inspected in yard and during loading for fitness. Loading takes 30 to 40 minutes per vehicle, and the last truck in a 936 head consignment (26 head per deck) would leave at about 8 am. Property to Winton depot yards in Queensland is 1,050 km or about 15 hours driving in a 6 deck unit. Cattle would arrive at about 11pm. Cattle unloaded on feed and water at end of day 4 (takes 20 minutes).

**Day 5:** Cattle remain on feed and water until next loading.

**Day 6:** Overnight on food and water, load at first light at 5 am (overall 29.7 hours break on feed and water with no curfew). All animals inspected for fitness before and during loading. Loading would be onto a different truck and livestock details must include time off water as the anticipated journey length will be over 24 hours.<sup>97</sup> The last truck would depart at 8 am from Winton to Mitchell in southern Queensland which is 800 km and takes 11 to 12 hours.<sup>98</sup> Need to re-hitch last trailer of 6 type two road trains to make 9 type one road trains to comply with Roads and Traffic Authority (RTA) rules which takes 30 minutes. Transfer of livestock details to new trucks which proceed to destination. The six original drivers have a mandatory 10 hours break whilst cattle remain on truck.

**Day 7:** Journey recommences for six original drivers at approximately 6.30 am for last 370 km to feedlot which takes 5 hours for a daylight unload at approximately 11.30 am which takes 20 minutes.

Using the outer estimates for the last truck of cattle for the total transport process:

- Total time in transport process with water management implications (starts with water curfew on day 3) = 88.3 hours (day 3 1900 - day 7 11.30 hours).
- Total time off water during journey process = 59.6 hours (10 curfew + 0.3 load + 15 drive + 0.3 unload + 0.3 load + 12 drive + 1 trailer re-hitch + 10 rest + 5 drive + 0.3 unload). (48 hours permitted in the draft standards, therefore a 24 hour mid journey spell required).
- Total spell times with water (and feed in this case) during journey process = 29.7
- Water deprivation times = 28.3 (10 + 3 + 15 + 0.3) and 30.8 (3 + 12 + 0.5 + 10 + 5 + 0.3) hours
- Times on trucks and off feed = 18.3 (3 + 15 + 0.3) and 30.8 hours (3 + 12 + 0.5 + 10 + 5 + 0.3).

Full compliance with the proposed 'Australian Standards and Guidelines for the Welfare of Animals – Land Transport of Livestock'

<sup>97</sup> With no curfew and the mid-journey spell over 24 hours or longer on feed and water, the subsequent journey would be considered as a new journey and not a continuing journey. Access to feed does not have to be recorded. Spells exceeding 4 hours to be counted.

<sup>98</sup> Drivers have 16 hours of working hours under Livestock Transporters Association of Queensland (LTAQ) rules for Advanced Fatigue Management (AFM) on day one, 12 hours work on day two, and must meet the weekly limit for driving hours. Time spent by livestock on a stationary truck during a driver rest stop, with no access to water, does not count as a spell. This journey is only possible if AFM accreditation has been achieved by all drivers.

### **3.2 Likely impacts of proposed standards**

An assessment of the expected costs and benefits of the proposed standards is given in Part 5.3.2 of the RIS.

In summary, the proposed standards would impose minimal to minor costs per journey in the following areas:

- transport costs and savings
- training costs
- veterinary/pathology costs
- verification/auditing/enforcement costs

No costs to livestock welfare have been identified. In other words, no species or class of animal is likely to incur a reduction in its welfare, compared to the existing codes of practice. On the contrary, there is likely to be a net benefit to livestock welfare as a result of the implementation of the proposed standards.

Veterinary and pathology costs will be directly incurred by the relevant livestock owners. The transport costs/savings and the training costs will be initially incurred by livestock transporters, but costs are likely in most cases to be passed on to livestock owners and possibly meat consumers, depending on whether or not stock are auctioned and on consumer price sensitivities.

Verification, auditing and enforcement costs will be incurred by the relevant government agencies if and when the proposed standards are adopted by regulations. However, most states and territories have advised that the proposed standards are unlikely to impose any significant enforcement costs relative to the base case. Some industry associations may choose to develop their own quality assurance programs or other documentation to encourage compliance with the proposed standards. Whilst the cost of such programs may be significant, they would be voluntarily incurred rather than imposed by the proposed standards.

### **3.3 Comparison with international standards**

A comparison of the proposed standards with the relevant World Organisation for Animal Health (OIE) guidelines<sup>99</sup> is given in Appendix 4 to this RIS.

This comparison shows that there are no significant differences between the proposed Australian standards and the relevant equivalent international standards, except in relation to the following proposed standards:

- SA1.2 (documentation to accompany livestock);
- SA2.1 (competency requirements);
- SA4.1 (livestock to be assessed as fit for intended journey);
- SA5.8 (use of electric prodders on animals under 3 months old); and
- SA6.7 (humane destruction of newborns by blunt trauma to head).

OIE Article 3.7.3.3 spells out the actual responsibilities of different persons at each stage of the journey, whereas proposed Australian standard SA1.1 requires the responsibilities for livestock

<sup>99</sup> Refer to Part 1.2.3.4 of this RIS for background information on the OIE guidelines..

welfare at each stage of journey to be documented. It is considered more important that the responsibilities be recognised by those involved and documented as evidence of compliance, than to spell these out prescriptively in the standards. There are differences in the detail but not in the overall approach.

OIE Article 3.7.3.4 spells out more formal competency requirements than proposed Australian standard SA2.1. Less formal training is considered sufficient in the usually more remote Australian context. For example, most driver training occurs on the job under the supervision of an experienced competent driver.

OIE Article 3.7.3.7.3c specifies generic ‘fitness for travel’ standards, whereas SA4.1 details standards suitable for Australian conditions, relying more on visual observations than tests. Notable differences in them are: newborn are permitted to travel with their mothers with conditions; pregnant animals are permitted to travel up to specified periods depending on the stage of pregnancy; and females that have recently given birth are permitted to travel. Also, the OIE Article does not specify dehydration as a condition.

Proposed standard SA5.8 is a higher welfare standard than OIE Article 3.7.3.7.3 in that it bans the use of electric prodders on animals under 3 months old, on the grounds that young animals have not yet learnt to move away from painful stimuli.

Proposed standard SA6.7 permits the humane destruction by blunt trauma to the head of some newborns only where there is no other alternative, such as where other methods would be unsafe. There is no equivalent OIE Article to this standard.

These few differences between the proposed standards and equivalent international standards are considered reasonable in the circumstances, and unlikely to adversely affect Australia’s international reputation.

## 4.0 Alternatives to proposed standards

In accordance with the COAG guidelines, an RIS is required to identify practicable alternatives to the proposed standards. Conversely, an RIS is not required to identify alternatives which are not practicable, or where there are no significant cost burdens being imposed.

Public education campaigns using television, radio and newspapers are sometimes a feasible alternative to regulations or codes of practice where the behaviour of a wide section of the community can be influenced by simple clear messages such as *'Don't drink and drive'* or *'Don't waste water'*. However in the case of the proposed standards which involve only a limited section of the community and more complex messages, such public education campaigns are likely to be ineffective and therefore not a practicable alternative.

In the case of national standards, practical alternatives are limited to alternative national standards. Having no standards at all is not a practical alternative, because the 'base case' or the 'do nothing' option is that the existing model codes will remain in place, and can be adopted by states and territories as standards, as some already have (refer to Part 5.2 of this RIS). The 'base case' is also needed as the point of reference for comparison of the proposed standards and the practical alternatives, and therefore cannot itself be an alternative.

A self-regulatory option would be to simply encourage the relevant industry associations to develop their own voluntary codes of practice and/or quality assurance (QA) programs in an endeavour to 'fill in the gaps' in existing model codes of practice. Because such industry codes would not be developed as part of the PIMC system, they would not be adopted as regulations by the various states and territories.

Other practical alternatives for the purposes of this RIS are limited to alternative sets of standards, such as more outcome-based and less prescriptive standards, less expensive standards or more expensive standards. Two variations of these alternatives (Options B1 and E1) are also listed below, to assess some specific issues that emerged during the SRG consultation process.

The practicable alternatives together with the proposed standards will from here on be referred to as 'options'. The options to be assessed in terms of costs and benefits are:

- **Option A:** Encourage the development of industry codes, QA programs etc (i.e. a self-regulatory option);
- **Option B:** the proposed standards;
- **Option B1:** the proposed standards with a variation to standard SB4.5 changing the minimum age for transport of calves for slaughter (other than to a calf-rearing facility) to 8 days rather than 5 days;
- **Option C:** more outcome-based and less prescriptive standards leading to possibly greater choice in ways to satisfy the standards;
- **Option D:** less expensive standards i.e. the most costly standards to become voluntary guidelines;
- **Option E:** more effective standards for livestock welfare that will incur a higher cost to livestock industries i.e. higher standards relating to maximum time off water for



particular species/class of species and a minimum voluntary spell of 6 hours to allow recognition of the spell period as a credit in the total water deprivation time calculation; and

- **Option E1:** more effective standards for livestock welfare that will incur a higher cost to livestock industries i.e. higher standards relating to maximum time off water for particular species/class of species and a minimum voluntary spell of 12 hours to allow recognition of the spell period as a credit in the total water deprivation time calculation.

## 5.0 Assessment of Costs and Benefits

### 5.1 Introduction

The purpose of this Part of the RIS is to-

- assess the relative costs and benefits of the proposed standards for the welfare of animals and the community; and
- compare and contrast the costs and benefits of the proposed standards with the ‘base case’ and with the options identified in Part 4.0 of this RIS.

The assessment of the relative benefits and costs for the proposed standards and the other identified options has been conducted in relation to how well the policy objective identified in Part 2.2 of this RIS is likely to be achieved. Where data exists, quantitative estimates of costs and benefits are made, using stated reasonable assumptions to fill in any essential data gaps. However, where sufficient cost and benefit data is not available, the assessment is made using qualitative criteria regarding the achievement of the policy objective.

The summary of cost benefit analysis in Part 5.4 compares the relative merits of the various options with each other, using a weighted criteria decision analysis.

### 5.2 The base case

#### 5.2.1 Definition of the base case

The term ‘base case’ means the situation that would exist if the proposed standards were not adopted. The base case provides the benchmark for measuring the incremental costs and benefits of the proposed standards and the other options.

The base case includes the relevant state and territory animal welfare legislation (see Part 1.2.3.1 of this RIS). It also includes all relevant existing model codes of practice, including the following:

<ul style="list-style-type: none"> <li>• Livestock, Road Transport of (1983)</li> <li>• Livestock, Rail Transport of (1983)</li> <li>• Cattle, Land Transport of (1999)</li> <li>• Horses, Land transport of (2003)</li> <li>• Pigs, Land Transport of (2003)</li> <li>• Poultry, Land Transport of (2006)</li> <li>• The Camel (2006);</li> <li>• The Sheep (2006);</li> <li>• Animals at Saleyards (1991)</li> <li>• Cattle in Beef Feedlots (1997)</li> </ul>	<ul style="list-style-type: none"> <li>• Domestic Poultry (2002);</li> <li>• Farmed Buffalo (1995);</li> <li>• Farming of Ostriches (2003);</li> <li>• Feral Livestock Animals (1992);</li> <li>• Husbandry of Captive-Bred Emus (2006);</li> <li>• Livestock at Slaughtering Establishments (2001);</li> <li>• Pigs (2007);</li> <li>• The Farming of Deer (1991);</li> <li>• The Goat (1991).</li> <li>• Export of Livestock, (2006)</li> </ul>
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(Note: The Land Transport of Sheep code is not included here because at the time of writing it is only a draft document).

It is open to states and territories at any time to adopt the existing model codes as standards, and indeed some have already done so. Similarly, it is open to these jurisdictions to adopt or not adopt the proposed standards as state or territory standards. If and when the proposed standards are submitted to PIMC for endorsement, the decision to be made by PIMC will be whether to replace the existing model codes with the proposed standards. For this reason, it is necessary for this RIS to assess the costs and benefits of the proposed changes in **standards**, rather than changes in practices. In other words, the RIS needs to ‘compare like with like’.

Comparisons between the existing model codes and the proposed standards have not always been easy. In some cases, the wording of the existing model codes is unclear, ambiguous or even inconsistent. In contrast, the proposed standards are more clearly worded and more verifiable, which will assist their adoption and implementation by regulations.

There is a perception by some industry associations that the RIS does not assess the full cost to industry of the adoption of the proposed standards by regulations. It could be argued that because the proposed standards are more verifiable and enjoy more industry and government confidence than the existing model codes, they are more likely to be adopted by the various states and territories in regulations than the existing codes, resulting in higher total costs to industry than reflected in the RIS. Nevertheless, for the reasons given above, the RIS must assess the incremental costs and benefits of the proposed standards in comparison to the base case.

The base case also includes other documents such as relevant and industry or professional codes such as:

- the MLA ‘fit to load’ guide(refer to Part 1.2.3.5);
- TruckCare (refer to Part 1.2.3);
- legislated livestock loading schemes and driver regulations e.g. Livestock training for B-double driving licences (except for NSW and NT); and
- NCCAW position statements on the humane road transport of animals, and the rail transport of animals.<sup>100</sup>

### **5.2.2 Likely consequences of the base case**

The continuation of the ‘base case’ including existing species specific standards and guidelines, driver regulations and NCCAW position statements is likely to result in the following consequences.

Firstly, there would be a lack of national consistency regarding animal welfare standards for the livestock transport industry and a failure to minimise transaction costs for individual livestock businesses, especially for journeys across state or territory boundaries. The base case would also fail to address the need to standardise welfare requirements across species and classes of species leading to an unfair cost advantage/disadvantage between competing meat producers.

<sup>100</sup> <<http://www.daff.gov.au/animal-plant-health/welfare/nccaw/guidelines/transport>>

Secondly, the ‘base case’ would fail to address several deficiencies, as identified in Part 2.1 of the RIS under current model codes of practice for the land transport of livestock, including the lack of:

- clear identification for responsibility of livestock during transport and in particular, exchange of ownership of livestock;
- clear targets for areas such as water deprivation, stocking density for some species and classes;
- specific information provision relating to the fitness of livestock prior to loading;
- information regarding areas such as planning and contingencies during delay, breakdown or other emergency;
- clear standards on practices to be undertaken by personnel involved in transport, loading, unloading or holding of livestock;
- existing codes for land transport of particular species (e.g. sheep);
- ability to address some chronic stress issues;
- ability of existing codes to assist in prosecutions because of the unverifiability of some standards; and
- ability to effectively integrate code of practice guidelines into business practices and systems of operation.

Thirdly, the ‘base case’ would fall short in capturing advances in the understanding of animal physiology and behaviour and technological changes in animal husbandry. Also, the base case would not include changes which have occurred in the welfare standards of other countries, with the development and publication of the new international OIE guidelines on the transport of animals by land (refer to Part 1.2.3.4 of this RIS). In this way the ‘base case’ would possibly fail to meet the expectations of the Australian community, including producers, transporters, consumers and other interested parties. Over time, a decline in community confidence regarding the welfare of animals (particularly internationally) could undermine Australia’s ability to compete in the international market for meat and livestock.

### **5.3 Assessment of each of the options relative to the base case**

This Part discusses the expected costs versus expected benefits with reference to the policy objective identified in Part 2.2 of the RIS. Costs and benefits are analysed in comparison with the ‘base case’ in terms of economic criteria where relevant, and compared to the relative merits of each of the options. The relevant costs of the various options relative to the base case are summarised in a single table in Part 5.4.

The data used in this analysis and the assumptions and qualifications to the data on which the costs and benefits have been estimated are provided in Appendices 5, 6 and 7.

#### **5.3.1 Option A: Encourage industry codes, QA programs etc to ‘fill in the gaps’ in existing model codes of practice**

Option A is the ‘minimum intervention’ option and would entail encouraging the relevant industry associations to develop their own individual codes of practice and/or quality assurance (QA) programs as an alternative to the proposed standards.<sup>101</sup> However, it is important to note that the existing model codes of practice and other elements of the base case, as discussed in Part

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<sup>101</sup> It is assumed that these codes would be reviewed after 5 years – the same period as the proposed standards.

5.2 of this RIS, would remain in place. Because such industry codes would not be developed as part of the PIMC system, or otherwise endorsed by government, they would not be adopted as regulations by the various states and territories, and therefore compliance with them would not be mandatory.

#### Expected costs

There are about 25 industry associations represented on the SRG. It is understood that about seven of these associations already have their own codes of practice<sup>102</sup> or similar documents covering the land transport of animals.

Assuming that the estimated cost of developing each code of practice is about \$50,000 (including the consultation that would be required), the total one-off additional cost of preparing the remaining 18 codes of practice would be around \$0.9 million, compared to the base case.

#### Expected benefits

Option A would be an improvement on the base case, in that it would go part of the way towards achieving the policy objective identified in Part 2.2 of the RIS, but not far enough.

The main drawback would be that compliance with industry codes of practice would remain voluntary. If members were to breach the industry code, the sanction available to industry associations would be limited to reprimands or possible expulsion from the association for repeated breaches. These sanctions are unlikely to be anywhere near as effective deterrents as infringement notices or prosecutions for breaches of regulations, as would be available for the proposed standards or variations of them as discussed in other options (B to E1).

Other significant drawbacks of Option A are that it would not adequately address the problems identified in Part 2.1 of the RIS, including the need:

- for greater national consistency in the setting of standards;
- for clear standards, differentiated from guidelines, that are capable of being incorporated into regulations;
- to ‘fill in gaps’ that exist in the current model codes of practice, including coverage of all livestock transported by land;
- to update current model codes of practice, in the light of new knowledge and circumstances, including industry best practice;
- to review standards to ensure that their benefits justify their costs, and that they meet the expectations of the Australian community.

### **5.3.2 Option B: the proposed standards**

#### Expected net cost

Table 7 categorises each of the proposed standards into quantifiable and unquantifiable costs or savings.

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<sup>102</sup> These are industry documents, not government endorsed codes of practice or model codes.

Table 7 - cost categorisation of proposed standards

Standard no.	Cost estimated (Table 8)	Cost not able to be quantified (Table 9)	Cost neutral	Standard no.	Cost estimated (Table 8)	Cost not able to be quantified (Table 9)	Cost neutral
SA1.1	✓			SB4.2	✓		
SA1.2	✓			SB4.3	✓		
SA2.1		✓		SB4.4		✓	
SA3.1			✓	SB4.5		✓	
SA4.1		✓		SB4.6			✓
SA4.2	✓			SB4.7		✓	
SA4.3			✓	SB4.8	✓		
SA4.4			✓	SB4.9		✓	
SA 5.1		✓		SB5.1	✓		
SA5.2			✓	SB5.2	✓		
SA5.3			✓	SB5.3	✓		
SA5.4			✓	SB5.4		✓	
SA5.5				SB5.5			
SA5.6			✓	SB5.6			
SA5.7			✓	SB6.1	✓		
SA5.8			✓	SB6.2		✓	
SA5.9			✓	SB6.3		✓	
SA5.10			✓	SB6.4		✓	
SA5.11	✓			SB6.5			✓
SA5.12			✓	SB6.6		✓	
SA5.13			✓	SB6.7		✓	
SA5.14			✓	SB6.8		✓	
SA5.15	✓			SB7.1	✓		
SA6.1			✓	SB7.2	✓		
SA6.3		✓		SB8.1	✓		
SA6.4		✓		SB8.2	✓		
SA6.5			✓	SB8.3	✓		
SA6.6			✓	SB8.4	✓		
SA6.7		✓		SB8.5			✓
SA6.8			✓	SB8.6			✓
SB1.1	✓			SB8.7			✓
SB1.2	✓			SB8.8	✓		
SB1.3	✓			SB8.9			✓
SB1.4	✓			SB8.10	✓		
SB1.5		✓		SB8.11	✓		
SB1.6			✓	SB8.12		✓	
SB1.7			✓	SB8.13			✓
SB2.1	✓			SB8.14		✓	
SB2.2	✓			SB9.1	✓		
SB2.3	✓			SB9.2	✓		
SB2.4		✓		SB9.3	✓		
SB2.5			✓	SB9.4		✓	
SB2.6	✓			SB10.1			✓
SB3.1	✓			SB10.2		✓	
SB3.2			✓	SB10.3			✓
SB3.3	✓			SB10.4			✓
SB3.4	✓			SB10.5			✓

Standard no.	Cost estimated (Table 8)	Cost not able to be quantified (Table 9)	Cost neutral	Standard no.	Cost estimated (Table 8)	Cost not able to be quantified (Table 9)	Cost neutral
SB3.5			✓	SB10.6			✓
SB3.6		✓		SB10.7			✓
SB3.7			✓	SB10.8			✓
SB3.8		✓		SB11.1	✓		
SB4.1	✓			SB11.2	✓		

As shown in Table 8, the proposed standards would result in a *net increase in cost* to the livestock industry, relative to the base case, estimated to be between approximately **\$31.4m** and **\$33.5m** per annum or approximately **\$146.8m** and **\$158.3m** over 5 years, in present value terms (2007 dollars)<sup>103</sup>. The expected net incremental quantifiable costs/cost savings of each of the proposed standards are summarised in Table 8. The basis of the cost estimates in Table 8 are provided in Appendix 6 of this RIS. All unquantifiable costs/cost savings are summarised in Table 9.

**Table 8 – List of estimated quantifiable net incremental costs/cost savings of the proposed standards -Option B**

Standard No.	Costs imposed on/cost savings for	Reference Appendix 6	Annual \$ net cost or saving <sup>104</sup>	Discounted 5-year \$ net cost <sup>105</sup> or saving (2008 dollars)
<b>Responsibilities and planning</b>				
SA1.1	Owners, operators or staff at properties, feedlots, saleyards, depots, processing plants, transporters <sup>106</sup>	Table A6.6	+\$364,317	+\$1,702,482
SA1.2	Owners, operators or staff at properties, feedlots, saleyards, depots, processing plants, transporters <sup>107</sup>	Table A6.11	Between +\$1,466,294 and + \$1,691,068	Between +\$6,852,109 and +\$7,902,494
<b>Pre-transport preparation</b>				
SA4.2	Livestock owners <sup>108</sup>	Table A6.17	+\$1,353,865	+\$6,326,717
<b>Loading, transport and unloading</b>				
SA5.11(ii) + (iii)	Transporters <sup>109</sup>	Section A6.8.3(a) + A6.8.3(b)	Between +\$14,925,303 and +\$16,178,767	Between +\$69,747,127 and +\$75,604,663
SA5.15	Transporters <sup>110</sup>	Section A6.9.3 + rail estimates	Between +\$10,348,088 and +\$11,128,645	Between +\$48,361,110 and +\$52,005,041
<b>B1: Alpacas</b>				

<sup>103</sup> Present value is calculated using a real discount rate of 3.5%.

<sup>104</sup> All figures are rounded to the nearest dollar.

<sup>105</sup> All figures are rounded to the nearest dollar.

<sup>106</sup> Does not include cattle, horses, pigs, poultry, or rail transport.

<sup>107</sup> Does not include cattle, horses, pigs, poultry, or rail transport.

<sup>108</sup> Does not include horses, pigs and poultry.

<sup>109</sup> Does not include horses and pigs.

<sup>110</sup> Does not include cattle, calves for rearing, horses for sale and major events and pigs.

Standard No.	Costs imposed on/cost savings for	Reference Appendix 6	Annual \$ net cost or saving <sup>104</sup>	Discounted 5-year \$ net cost <sup>105</sup> or saving (2008 dollars)
SB1.1 & SB1.3 <sup>111</sup>	Transporters	Section A6.12	+\$12,469	+\$57,761
SB1.2	Transporters	Section A6.13	-\$11,046	-\$51,619
SB1.4	Livestock owners	Section A6.14	+\$65,838	+\$307,665
<b>B2: Buffalo</b>				
SB2.1 & SB2.2	Transporters	Section A6.17	Between +\$33,157 and +\$34,858	Between +\$154,945 and +\$162,896
SB2.3	Livestock owners	Section A6.18	+\$3,767	+\$17,605
SB2.6	Transporters	Section A6.20	Between +\$375 and +\$395	Between +\$1,754 and +\$1,844
<b>B3: Camels</b>				
SB3.1 & SB3.3	Transporters	Section A6.21	+\$31,120	+\$145,426
SB3.4	Livestock owners	Section A6.22	+\$1,031	+\$4,819
<b>B4: Cattle</b>				
SB4.1 & SB4.2	Transporters	Section A6.25	Between +\$2,818,324 and +\$3,222,692	Between +\$13,170,250 and +\$15,059,894
SB4.3	Livestock owners	Section A6.26	+\$1,280,906	+\$5,985,775
SB4.8(b)	Livestock transporters	Section A6.30	Between +\$344,995 and +\$369,700	Between +\$1,612,187 and +\$1,727,635
<b>B5: Deer</b>				
SB5.1 & SB5.2	Transporters	Section A6.32	Between +\$15,329 and +\$15,603	Between +\$71,634 and +\$72,914
SB5.3	Transporters	Section A6.33	+\$50,280	+\$234,963
<b>B6: Ratites</b>				
SB6.1 & SB6.5	Transporters	Section A6.36	+\$34,984	+\$163,484
<b>B7: Goats</b>				
SB7.1 & SB7.2	Transporters	Section A6.42	Between +\$42,164 and +\$48,655	Between +\$197,037 and +\$227,367
<b>B8: Horses</b>				
SB8.1 & SB8.3	Transporters	Section A6.46	-\$507,703	-\$2,372,534
SB8.2	Transporters	Section A6.47	+\$13,808	+\$64,527
SB8.4	Livestock owners	Section A6.48	+\$847	+\$3,958
SB8.8	Transporters	Section A6.49	+\$8,398	+\$39,242
SB8.10	Livestock owners	Section A6.50	+\$6,042	+\$28,234
SB8.11	Transporters	Section A6.51	+\$84,875	+\$396,628
<b>B9: Pigs</b>				
SB9.1 & SB9.3	Transporters	Section A6.54	Between +\$1,075 and +\$1,248	Between +\$5,025 and +\$5,831
SB9.2	Transporters	Section A6.55	Between -\$107,531 and -\$124,787	Between -\$502,501 and -\$583,140
<b>B11: Sheep</b>				
SB11.1 & SB11.2	Transporters	Section A6.58	Between -\$1,275,766 and -\$1,483,872	Between -\$5,961,754 and -\$6,934,249
<b>Total net incremental cost of general and specific standards under Option B</b>			<b>Between +\$31,413,692 and +\$33,884,215</b>	<b>Between +\$146,798,673 and +\$158,343,620</b>

<sup>111</sup> Standards relating to maximum time off water and spelling periods are treated together as one standard always works in conjunction with the other.



The quantifiable cost over 5 years (in present value terms) represents between 5.04% and 5.18% of the total cost of livestock transport of approximately \$2.84b and \$3.14b.<sup>112</sup> The estimated change in retail meat prices (if a proportion of costs are passed on to consumers) would be approximately an increase of 1% for beef, an increase of 2% for lamb, a reduction of 0.3% for pork and an increase of 4.8% for chicken, (see Appendix 6, section A6.61).

**Table 9 – List of proposed standards where costs/cost savings are not able to be quantified**

Standard No.	Costs imposed on	Nature of cost
<b>Stock handling competency</b>		
SA2.1	Livestock owners and transport operators	Cost of familiarisation of standards by stock handlers of around 1hour per person.
<b>Pre-transport preparation</b>		
SA4.1	Transporters and livestock owners	Cost of additional training in regards to recognising disease conditions as part of the need to assess fitness of livestock for transport for intended journey at every loading. It is unknown how many livestock transporters or owner drivers would require additional training in this regard as either part of induction training or a short course.
<b>Loading, transport and unloading</b>		
SA5.1	Commercial transporters, processing establishment operators	See water deprivation standards for individual species. Costs would include cost of food and any delay in slaughter.
<b>Humane destruction</b>		
SA6.3	Transporters	Very minor cost of contact and engaging competent person.
SA6.4	Transporters	Minor training cost for acquiring skills to undertake reasonable action to confirm death (Rarely necessary on road). Either part of induction training or another short course.
SA6.7	Transporters	Minor training cost for acquiring skills to effective killing method if blunt trauma to head is used (Rarely necessary on road). Part of induction training/or short course.
<b>B1: Alpacas</b>		
SB1.5	Transporters	Minor cost in protecting newly shorn alpacas (8-10 days of shears) from heat, cold stress or sunburn
<b>B2: Buffalo</b>		
SB2.4	Transporters	Minimal additional time costs in terms of loading for transport by restricting the use of electric prodders for buffalo.
<b>B3: Camels</b>		
SB3.6	Transporters	Minimal additional time costs in terms of loading for transport by restricting the use of electric prodders for camels.
SB3.8	Transporters	Minor cost of segregating camel bulls in rut during transport.
<b>B4: Cattle</b>		
SB4.4	Transporters and livestock owners	Minor costs in meeting conditions when transporting calves under 5 days old without their mothers – partially already required by NVDs (These are usually short trips to another property)

<sup>112</sup> See Appendix 6, section A6.2.5 for derivation of these cost figures

SB4.5(iv)	Transporters and livestock owners	Cost savings due to increased flexibility/availability of processing facilities for livestock owners and ability to aggregate calves for transporters arising from an extension of journey times of 10 hrs for calves.
SB4.5(v)	Transporters	Minimal cost in terms of requiring an auditable and accessible record that identifies the date and time that calves were last fed (cost of recording)
SB4.7	Transporters and livestock owners	Minor cost of not being able to transport some bobby calves born earlier than normal i.e. additional feeding or humane destruction on farm.
SB4.9	Transporters	Minimal cost in terms of additional time for loading slaughter calves due to requirement of prohibiting the use of dogs.
<b>B5: Deer</b>		
SB5.4	Transporters	Minimal additional time costs in terms of loading for transport by restricting the use of electric prodders for deer.
<b>B6: Ratites</b>		
SB6.3	Transporters	Minor costs in feeding chicks and young birds every 12 hours.
SB6.4	Transporters	Minor transport costs of providing food water and shelter to ratite chicks held in containers greater than 12 hours.
SB6.6	Transporters	Cost of providing suitable containers and securing containers to the vehicle, as well as, ensuring that containers are handled according to the requirements of SB6.5.
SB6.7	Transporters and livestock owners	Cost of not tying legs of ratites together (in terms of additional effort required to handle ratites).
SB6.8	Transporters	Minimal additional time costs in terms of loading for transport by restricting the use of electric prodders for ratites.
<b>B8: Horses</b>		
SB8.12	Transporters	Minimal additional time cost in terms of loading for horse transport (most likely relevant to the slaughter category) by forbidding the use of electric prodders.
SB8.14	Transporters	Minor additional costs of space for horses travelling across Bass Strait. Specifically horses would have to be individually stalled - except for mares with foals at foot which would have to be stalled together. Most of current movements across Bass Strait comply with this requirement as part of existing local requirements not in the MCOP.
<b>B9: Pigs</b>		
SB9.4	Transporters	Minimal additional time costs in terms of loading for transport by restricting the use of electric prodders on pigs
<b>B10: Poultry</b>		
SB10.2	Livestock owners	Minimal cost in terms of the reduction of water the time within which poultry need to have access to food before assembly for transport from 24 hours under the 'base case' to 12 hours. Current compliance with the 12hrs feed curfew is 99.95%.
<b>B11: Sheep</b>		
<b>General</b>		
All standards	Governments	Verification, auditing and enforcement costs will be incurred by the relevant government agencies and industry

		associations, depending upon the mix of compliance mechanisms eventually selected. However, most states and territories have advised that the proposed standards are unlikely to impose any significant enforcement costs relative to the base case. <sup>113</sup>
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No costs to livestock welfare (i.e. reductions of livestock welfare) have been identified relative to the base case. The proposed standards are either neutral or a likely improvement to livestock welfare in each case, in terms of minimising risks to livestock welfare.

#### Expected benefits

The proposed standards are expected to result in the following benefits:

- improved livestock welfare outcomes – no species or class will be worse off and risks to welfare will be minimised;
- greater national consistency in the setting of standards;
- clear standards, differentiated from guidelines, that are capable of being incorporated into regulations;
- the gaps that exist in the current model codes of practice will be filled in, including coverage of all livestock transported by land;
- updates to current model codes of practice, in the light of new knowledge and circumstances, including industry best practice;
- standards have been reviewed to ensure that their benefits justify their costs, and that they meet the expectations of the Australian community, which is likely to improve community confidence and implementation of the standards; and
- enhanced international reputation (from providing clear statements of Australia's livestock welfare standards to the international community, especially our trading partners).

#### **5.3.3 Option B1: the proposed standards and guidelines with a variation on the minimum age of calves for slaughter**

The expected costs/cost savings (quantifiable and unquantifiable) and benefits of Option B1 are the same as the proposed standards and guidelines (Option B),<sup>114</sup> except in relation to standard SB4.4 where the minimum age for transport of calves for slaughter would be changed to 8 days rather than 5 days.

#### Expected net cost

The estimated average number of slaughter calves slaughtered in Australia per year is 860,000. The estimated running cost of keeping a calf for slaughter for an extra 3 days, in terms of feed,

<sup>113</sup> Some industry associations may choose to develop their own quality assurance programs to encourage compliance with the proposed standards. However, any such costs would be voluntarily incurred, rather than imposed by the proposed standards.

<sup>114</sup> Including a minimum voluntary spell of 4 hours to earn an equivalent time-off-water credit.

and labour is \$14.79.<sup>115</sup> The total estimated running cost to the Australian dairy industry of keeping calves for slaughter an additional 3 days is  $860,000 \times \$14.79 = \$12,719,400$  per annum. There may also be some additional capital costs from the need to house calves for a longer period, but this cost is not quantifiable. Over 5 years and in present value terms (2008 dollars) this additional quantifiable cost would equal approximately **\$59.4m**<sup>116</sup>. The net cost of Option B1 is calculated by taking the costs under Option B as discussed in Table 8 and adding back the incremental cost of \$12.7m per annum or \$59.4m over 5 years. This would make the annual net quantifiable cost of Option B1 equal to between **\$44.1m** and **\$46.6m** per annum or between **\$206.2m** and **\$217.8m**<sup>117</sup> over 5 years in present value terms, as compared to the 'base case'.

The quantifiable cost (in present value terms), over 5 years, represents between 6.93% and 7.27% of the total cost of livestock transport of \$2.84b and \$3.14b.<sup>118</sup> The estimated change in retail meat prices (if costs are passed on to consumers) would be approximately an increase of 1% for beef, an increase in the price of veal<sup>119</sup>, a reduction of 12% for lamb, a reduction of 0.3% for pork and an increase of 4.8% for chicken, (see discussion in Appendix 7.1.4).

#### Expected benefits

Anecdotal observations of calves for slaughter suggest that those over one week of age are more robust and able to withstand the stresses of transportation.<sup>120</sup> On the other hand, a recent review commissioned by Dairy Australia found no evidence of a welfare benefit from changing the minimum age but that calves would be at greater risk of enteric disease and that antibiotic residues would be more difficult to manage if the minimum age was increased to 8 or 10 days.<sup>121</sup>

However, there is a lack of scientific evidence on this issue and further research is needed before the expenditure of \$12.7m per annum or \$59.4m (in present value terms) over five years could be justified. (The increase in carcass value from three days additional feeding is assumed to be negligible).

### **5.3.4 Option C: more outcome-based and less prescriptive standards**

This Option would entail rewording most, if not all, of the proposed standards in a more outcome-based and less prescriptive form. For example, the proposed standards regarding water deprivation times<sup>122</sup> would be expressed in terms of ensuring that livestock do not arrive at their destination in a dehydrated state.

#### Expected costs

While outcome-based standards specify the desired outcome, they are not suitable in all circumstances. They are most suitable where flexibility and choice in compliance strategies is possible, but such choices are not always appropriate in animal welfare matters. By their nature, outcome-based standards focus on the resulting impact of an activity, rather than on taking action necessary to avoid or prevent such impacts. The failure to take appropriate preventative action

<sup>115</sup> This is calculated as \$4.39 which is the per-day feed and labour cost per calf x 3 days.

<sup>116</sup> See section A7.1 of Appendix 7 of this RIS for a more detailed discussion and derivation of costs.

<sup>117</sup> See section A7.1.3 of Appendix 7 for source of figures

<sup>118</sup> See Appendix 6, section A6.2.5 for derivation of these cost figures

<sup>119</sup> Magnitude of price increase is unknown due to lack of data on the price sensitivity regarding supply or demand of veal.

<sup>120</sup> Shiel and Cave, unpublished.

<sup>121</sup> David, 2008.

<sup>122</sup> Refer to SA5.1 and the various specific requirements for different species and classes of livestock.

can have serious consequences, resulting in injury, suffering or death of animals. Outcome-based standards can also sometimes be more difficult to verify and thus more difficult or expensive to enforce than prescriptive standards.

Using the above water deprivation example, the verification of an outcome-based standard regarding dehydration of animals would require veterinary examination of at least a representative sample of the livestock consignment, possibly including expensive pathological tests. Such a standard would be likely to be much more expensive to enforce than a standard prescribing water deprivation times. The costs of Option C are not quantifiable but are likely to be higher than for Option B (the proposed standards).

#### Expected benefits

Outcome-based standards have the advantage of allowing more flexibility, innovation and efficiency in compliance than prescriptive standards. However, they also have disadvantages as discussed above. If effective, outcome-based standards are likely to achieve similar animal welfare benefits as prescriptive standards, but at a higher cost. There is a need to strike the right balance of outcome-based versus prescriptive standards, depending upon the circumstances of each case.

#### **5.3.5 Option D: less expensive standards e.g. the most costly standards to become guidelines**

Option D would result in the same additional unquantifiable costs as shown in Table 9 under Option B and B1, as compared to the 'base case'. However, the most expensive of the quantifiable costs, as shown in Table 8 under Option B, would be removed by replacing the associated high-cost standards with guidelines. The criteria for removal under Option D, is simply those standards which impose an annual incremental cost of close to \$1m or more. These include general standards SA1.2 (relating to responsibilities and planning), SA4.2 (relating to pre-transport preparation) SA5.11 and SA5.15 (relating to loading, transport and unloading) and specific standards SB4.1 in conjunction with SB4.2 and SB4.3 (relating to cattle).

#### Expected net cost

As shown in Table 10, the proposed standards would result in an incremental cost savings to the livestock industry, relative to the base case, of between approximately **\$0.8m** and **\$1m** per annum or approximately **\$3.7m** and **\$4.6m** over 5 years, in present value terms (2008 dollars).<sup>123</sup> The expected net incremental quantifiable costs of each of the proposed standards are summarised in Table 10. The basis of the cost estimates in Table 10, are all provided for in Appendix 6 of this RIS.

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<sup>123</sup> Present value is calculated using a real discount rate of 3.5%.

**Table 10 – Calculation of estimated quantifiable net incremental costs of Option D**

Standard No.	Costs imposed on/benefits for	Reference Appendix 6	Annual \$ net cost or saving <sup>124</sup>	Discounted 5-year \$ net cost <sup>125</sup> or saving (2008 dollars)
<b>Total net incremental cost of general and specific standards under Option B</b>			<i>Between +\$31,024,354 and +\$33,464,818</i>	<i>Between +\$144,979,263 and +\$156,383,745</i>
<b>Responsibilities and planning</b>				
SA1.2	Transporters <sup>126</sup>	Table A6.11	Between +\$1,466,294 and + \$1,691,068	Between +\$6,852,109 and +\$7,902,494
<b>Pre-transport preparation</b>				
SA4.2	Transporters	Table A6.17	+\$1,353,865	+\$6,326,717
<b>Loading, transport and unloading</b>				
SA5.11(ii) + (iii)	Transporters <sup>127</sup>	Section A6.8.3(a) + A6.8.3(b)	Between +\$14,932,389 and +\$16,186,213	Between +\$69,780,237 and +\$75,639,453
SA5.15	Transporters <sup>128</sup>	Section A6.9.3 + rail estimates	Between +\$10,349,088 and +\$11,128,645	Between +\$48,362,110 and +\$52,005,041
<b>B4: Cattle</b>				
SB4.1&SB4.2	Livestock owners	Section A6.25	Between +\$2,818,324 and +\$3,222,692	Between +\$13,170,250 and +\$15,059,894
SB4.3	Transporters	Section A6.26	Between +\$2,818,324 and +\$3,222,692	Between +\$13,170,250 and +\$15,059,894
<b>Total net incremental cost of general and specific standards being removed under Option D</b>			<b>Between +\$32,200,866 and +\$34,863,389</b>	<b>Between +\$150,477,198 and +\$162,919,374</b>
<i>Total net incremental cost of general and specific standards under Option B less total net incremental cost of general and specific standards being removed under Option D</i>			<i>Between -\$786,256 and -\$978,256</i>	<i>Between -\$3,674,239 And -\$4,571,467</i>

The quantifiable net cost savings over 5 years (in present value terms) represents between 0.13% and 0.15% of the total cost of livestock transport of \$2.84b and \$3.14b.<sup>129</sup> The estimated change in retail meat prices (if costs/cost savings are passed on to consumers) would be approximately an increase of 0.03% for beef, a reduction of 0.2% for lamb, a reduction of 0.3% for pork and no change in the price of chicken, (see Table A7.3 of Appendix 7).

<sup>124</sup> All figures are rounded to the nearest dollar.

<sup>125</sup> All figures are rounded to the nearest dollar.

<sup>126</sup> Does not include cattle, calves, horses, pigs, poultry and ratites.

<sup>127</sup> Does not include horses and pigs.

<sup>128</sup> Does not include cattle, calves for rearing, horses for sale and major events and pigs.

<sup>129</sup> See Appendix 6, section A6.2.5 for derivation of these cost figures.

### Expected benefits

Option D is expected to result in the same incremental benefits as Option B or B1, as compared to the base case, except for the following:

- the replacement of standard SA1.2 with guidelines would mean that in regards to roughly 5%<sup>130</sup> of journeys exceeding 24 hours – transporters would only need to carry documentation accompanying livestock on a voluntary basis. Under this circumstance ensuring that information regarding emergency contacts; last access to food or water; or welfare concerns/risks to welfare – would not be enforceable as guidelines cannot be incorporated into regulations. Therefore, it is expected that the benefits to livestock welfare as compared to the ‘base case’, would be lower than under Option B or B1 in this regard.
- the replacement of standard SA4.2 with guidelines would mean that in regards to roughly 0.01%<sup>131</sup> of livestock (excluding horses, pigs and poultry) where livestock are assessed to be unfit for the intended journey before loading – consignors would only need to make effective arrangements for the care, appropriate treatment of or humane destruction of weak, ill or injured livestock on a voluntary basis. Under this circumstance, ensuring any effective arrangements for exceptional movement under veterinary approval – would not be enforceable as guidelines cannot be incorporated into regulations. Therefore, it is expected that the benefits to livestock welfare as compared to the ‘base case’, would be lower than under Option B or B1 in this regard as animals could not be moved for treatment and would need to be treated or humanely destroyed at the origin.
- the replacement of standard SA5.11 with guidelines would mean that prior inspection of facilities by drivers prior to loading or inspection of receiving yard before unloading - would only be voluntarily<sup>132</sup> adhered to for horses and pigs whether under current codes of practice or guidelines. Moreover, although there may be some additional adherence to this as a ‘guideline’ for other species/classes of livestock, as compared to the base case, it would not be enforceable<sup>133</sup> and the additional benefits to livestock welfare would not be expected to be as large as under Option B or B1;
- the replacement of standard SA5.15 with guidelines would mean that drivers would only ‘voluntarily’ choose to take action during extreme hot or cold conditions to minimise the risk to the welfare of livestock. Although the guidelines would be deemed to be of a higher status than those under the base case (e.g. Truckcare) – the incremental benefit for the welfare of livestock would be less than under Option B or B1;
- the replacement of standard SA4.1 in conjunction with SA4.2 with guidelines would mean that cattle over 6 months, in having reached their voluntary maximum time off water of 48 hours, would only be spelled for 24 hours on a voluntary basis. By recommending a maximum time off water of 48hrs and increasing the spelling period recommended by the guideline from 18 hours (as is under the current code) to 24 hours it

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<sup>130</sup> Proposed by AHA.

<sup>131</sup> Proposed by AHA.

<sup>132</sup> Voluntary codes of practice would mean only limited reprimands or possible expulsion from the association for repeated breaches of a particular code.

<sup>133</sup> Guidelines will not be incorporated into regulations.

is envisaged that there would be some incremental benefit as compared to the base case. However, such an improvement would be less than under Option B or B1. Also it would mean that pregnant cows (in their 3<sup>rd</sup> trimester), lactating cows and calves, in having reached their voluntary maximum time off water of 24 hours, would only be spelled for 12 hours on a voluntary basis. By recommending a maximum time off water and associated spelling period, the guideline would provide some incremental benefit as compared to the base case, depending on the level of adherence. However, this would not be similar to a clear standard which is capable of being incorporated into regulations and therefore any improvement to welfare would be less than under Option B or B1;

- the replacement of standard SB4.3 with guidelines would mean that for journey over 4 hours, cattle known to be in the last 4 weeks of pregnancy would only be transported under veterinary advice on a voluntary basis by transporters and livestock owners. Depending on the degree of voluntary compliance it is expected that there would be some improvement of welfare outcomes as compared to the 'base case'. However, the degree of 'voluntary' compliance would not be expected to be as large as in the case of Option B or B1 where compliance is 'mandatory'. As such, any improvement in the welfare of pregnant cattle in transport is likely to be smaller than under Option B or B1;
- the overall level of welfare standards would not be expected to meet the expectations of the Australian community as fully as under Option B or B1 and therefore would not be expected to improve community confidence and implementation of standards by as much;
- the level of enhancement of Australia's international reputation regarding livestock welfare standards to the international community, especially to our trading partners, as compared to the base case, would be mitigated by replacing the aforementioned standards with guidelines.

#### **5.3.6 Option E: the proposed standards and guidelines with higher standards relating to maximum time off water for particular species/class of species - and a minimum voluntary spell of 6 hours to earn an equivalent time-off-water credit**

Under **Option E** the maximum water deprivation times for a group of species/class of species would be reduced in comparison with the Option B (the proposed standards), as shown in Table 11. Moreover the voluntary spell is increased from 4 hours (under Option B) to 6 hours in order to allow recognition of the spell period as a credit in the total water deprivation time calculation. This would apply to all species except commercial poultry that are transported in small cages and for whom spelling during transport is not relevant. The categories of species selected were those where an intermediate water deprivation threshold was identified in a MCOP.



**Table 11 – Comparison of maximum time-off-water under Option B and Option E**

Species/class of species	Relevant standard	Maximum time off water Option B	Maximum time off water Option E
Alpaca wether	SB1.1	36 hours	24 hours
Buffalo	SB2.1	36 hours	24 hours
Cattle older than 6 months	SB4.1	48 hours	36 hours
Calves 5 to 30 day old travelling without their mothers	SB4.1	24 hours	12 hours
Deer	SB5.1	48 hours	36 hours
Goats	SB7.1	48 hours	36 hours
Goats in their 3 <sup>rd</sup> trimester of pregnancy	SB7.1	24 hours	12 hours
Lactating mares	SB8.1	12 hours	8 hours
Sheep	SB11.1	48 hours	36 hours
Sheep in their 3 <sup>rd</sup> trimester of pregnancy	SB11.1	24 hours	12 hours

Due to the higher requirements for voluntary spelling, the costs incurred when trucks are idle would be 13.5 hours (or 25.5 hours)<sup>134</sup> 50% of the time and 7.5 hours for 50% of the time (i.e. the time when voluntary spelling is undertaken). Equally the cost savings would be 13.5 hours (or 25.5 hours) 50% of the time and 7.5 hours for 50% of the time (i.e. the time when voluntary spelling is avoided). Given that the number of journeys with costs is greater than the number of journeys with cost savings, the net result would be an increase in costs under this option.

#### Expected net cost

Option E would result in the same additional unquantifiable costs/cost savings as shown in Table 9 under Option B, B1 and D – as compared to the ‘base case’. Moreover, the costs of the *general standards* are identical to Option B and B1, as shown in Table 12. However, some of the quantifiable costs/cost savings relating to *specific standards* would be affected by both the reduction in the maximum time-off-water and the increase in the minimum voluntary spelling period of 6 hours associated with Option E.

The expected net incremental quantifiable costs/cost savings of each of Option E are summarised in Table 12. The basis of the cost estimates in Table 12, are all provided for in Appendix 6 and 7 of this RIS. As shown in Table 12, the proposed higher standards would result in an incremental cost saving to the livestock industry, relative to the base case, of between approximately **\$117.8m** and **\$131.9m** per annum or approximately **\$550.7m** and **\$616.5m** over 5 years, in present value terms (2008 dollars)<sup>135</sup>.

<sup>134</sup> Depending on whether the mandatory spell period is 12 or 24 hours

<sup>135</sup> Present value is calculated using a real discount rate of 3.5%.

Table 12 – List of estimated quantifiable net incremental costs/cost savings under Option E

Standard No.	Costs imposed on/cost savings for	Reference Appendices 6 and 7	Annual \$ net cost or saving <sup>136</sup>	Discounted 5-year \$ net cost <sup>137</sup> or saving (2008 dollars)
<b>Responsibilities and planning</b>				
SA1.1	Transporters <sup>138</sup>	Table A6.6	+\$364,317	+\$1,702,482
SA1.2	Transporters <sup>139</sup>	Table A6.11	Between +\$1,466,294 and + \$1,691,068	Between +\$6,852,109 and +\$7,902,494
<b>Pre-transport preparation</b>				
SA4.2	Livestock owners <sup>140</sup>	Table A6.17	+\$1,353,865	+\$6,326,717
<b>Loading, transport and unloading</b>				
SA5.11(ii)+(iii)	Transporters <sup>141</sup>	Section A6.8.3(a) + A6.8.3(b)	Between +\$14,932,389 and +\$16,186,213	Between +\$69,780,237 and +\$75,639,453
SA5.15	Transporters <sup>142</sup>	Section A6.9.3 + rail estimates	Between +\$10,349,088 and +\$11,128,645	Between +\$48,362,110 and +\$52,005,041
<b>B1: Alpacas</b>				
SB1.1 & SB1.3 <sup>143</sup>	Transporters	Section A7.3.1	+\$13,287	+\$62,093
SB1.2	Transporters	Section A7.3.2	-\$11,973	-\$55,950
SB1.4	Livestock owners	Section A7.3.3	+\$65,838	+\$307,665
<b>B2: Buffalo</b>				
SB2.1 & SB2.2	Transporters	Section A7.3.6	Between +\$73,162 and +\$76,916	Between +\$341,890 and +\$359,433
SB2.3	Livestock owners	Section A7.3.7	+\$3,767	+ \$17,605
SB2.6	Transporters	Section A7.3.9	Between + \$375 and +\$395	Between +\$1,754 and +\$1,844
<b>B3: Camels</b>				
SB3.1 & SB3.3	Transporters	Section A7.3.10	+\$34,334	+\$160,443
SB3.4	Livestock owners	Section A7.3.11	+\$1,031	+\$4,819
<b>B4: Cattle</b>				
SB4.1 & SB4.2	Transporters	Section A7.3.14	Between +\$48,571,255 and +\$54,759,868	Between +\$226,997,321 and +\$255,897,200
SB4.3	Livestock owners	Section A7.3.15	+\$1,280,906	+\$5,985,775
SB4.8(b)	Transporters	Section A7.3.19	Between +\$325,300 and +\$348,655	Between +\$1,520,152 and +\$1,629,293
<b>B5: Deer</b>				
SB5.1 & SB5.2	Transporters	Section A7.3.21	Between +\$30,062 and +\$30,600	Between +\$140,482 and +\$142,994
SB5.3	Transporters	Section A7.3.22	+\$50,280	+\$234,963
<b>B6: Ratites</b>				
SB6.1 & SB6.5	Transporters	Section A7.3.25	+\$38,576	+\$180,269
<b>B7: Goats</b>				

<sup>136</sup> All figures are rounded to the nearest dollar.<sup>137</sup> All figures are rounded to the nearest dollar.<sup>138</sup> Does not include cattle, horses, pigs, poultry, or rail transport<sup>139</sup> Does not include cattle, calves, horses, pigs, poultry and ratites<sup>140</sup> Does not include horses, pigs and poultry<sup>141</sup> Does not include horses and pigs<sup>142</sup> Does not include cattle, calves for rearing, horses for sale and major events and pigs<sup>143</sup> Standards relating to maximum time off water and spelling periods are treated together as one standard always works in conjunction with the other.

Standard No.	Costs imposed on/cost savings for	Reference Appendices 6 and 7	Annual \$ net cost or saving <sup>136</sup>	Discounted 5-year \$ net cost <sup>137</sup> or saving (2008 dollars)
SB7.1 & SB7.2	Transporters	Section A7.3.27	Between +\$3,769,151 and +\$4,349,345	Between +\$17,613,540 and +\$20,324,831
<b>B8: Horses</b>				
SB8.1 & SB8.3	Transporters	Section A7.3.30	+\$44,690	+\$208,840
SB8.2	Transporters	Section A7.3.31	+\$23,982	+\$112,071
SB8.4	Livestock owners	Section A7.3.32	+\$847	+\$3,958
SB8.8	Transporters	Section A7.3.33	+\$8,398	+\$39,242
SB8.10	Livestock owners	Section A7.3.34	+\$6,042	+\$28,234
SB8.11	Transporters	Section A7.3.35	+\$84,875	+\$396,628
<b>B9: Pigs</b>				
SB9.1 & SB9.3	Transporters	Section A7.3.38	Between +\$1,210 and +\$1,404	Between +\$5,653 and +\$6,560
SB9.2	Transporters	Section A7.3.39	Between -\$120,972 and -\$140,385	Between -\$565,313 and -\$656,032
<b>B11: Sheep</b>				
SB11.1 & SB11.2	Transporters	Section A7.3.42	Between +\$35,084,473 and +\$40,121,638	Between +\$163,952,521 and +\$187,491,591
<b>Total net incremental cost of general and specific standards under Option B</b>			<b>Between +\$117,844,848 and +\$131,917,421</b>	<b>Between +\$550,698,309 and +\$616,460,556</b>

The quantifiable net cost over 5 years (in present value terms) represents between 19.42% and 19.61% of the total cost of livestock transport of \$2.84b and \$3.14b<sup>144</sup>. The estimated change in retail meat prices (if costs are passed on to consumers) would be approximately an increase of 5.1% for beef, an increase of 9.9% for lamb, a reduction of 0.32% for pork and a 4.8% increase in the price of chicken, (see Table A7.6 of Appendix 7).

#### Expected benefits

Option E is expected to result in slightly higher incremental benefits as Option B or B1 - as compared to the base case. There remains no scientific evidence to date to suggest that the particular reduction in water deprivation times under Option E would provide specifically higher livestock welfare benefits than Options B or B1. For example, a study by MLA has shown that mature healthy sheep can tolerate journeys of up to 48 hours without any major compromise to their welfare.<sup>145</sup> However, it is acknowledged that any reduction in maximum time off water would reduce risk to the welfare of livestock in general terms.

#### **5.3.7 Option E1: the proposed standards and guidelines with higher standards relating to maximum time off water for particular species/class of species - and a minimum voluntary spell of 12 hours to earn an equivalent time-off-water credit**

Under **Option E1** the maximum water deprivation times for a group of species/class of species is identical to Option E (see Table 11). However, the voluntary spell is increased from 4 hours (under the proposed standards under Option B) to 12 hours in order to allow recognition of the spell period as a credit in the total water deprivation time calculation. This would apply to all species except commercial poultry that are transported in small cages and for whom spelling during transport is not relevant. Under Option E1, any increase in voluntary spelling to 12 hours

<sup>144</sup> See Appendix 6, section A6.2.5 for derivation of these cost figures

<sup>145</sup> Ferguson and Fisher, 2007.

would increase the additional costs of voluntary spelling as compared to the minimums of 4 hours under Option B and 6 hours under Option E. However, by the same token, this would also increase the level of cost savings that transporters have to gain.<sup>146</sup>

Due to the higher voluntary spelling requirements under Option E1, the costs incurred when trucks are idle would be 13.5 hours (or 25.5 hours)<sup>147</sup> for 50% of the time and 13.5 hours for the remaining 50% of the time (the time when voluntary spelling would be undertaken). Equally, the cost savings would be 13.5 hours (or 25.5 hours) 50% of the time and 13.5 hours for 50% of the time (the time when voluntary spelling would be avoided). Consequently, the cost/cost savings under Option E1 would be larger than the cost/cost savings under Option E due to the higher amount of voluntary spelling involved. Because the frequency and volume of journeys where costs are incurred under both E and E1 is greater than the frequency and volume of any savings, this implies that the net cost under Option E1 would be greater than the net cost under Option E.

#### Expected net cost

Option E1 would result in the same additional unquantifiable costs/cost savings as shown in Table 9 under Option B, B1, D and E – as compared to the ‘base case’. Moreover, the costs of the *general standards* are identical to Option B and B1, as shown in Table 13. However, some of the quantifiable costs/cost savings relating to *specific standards* would be affected by both the reduction in the maximum time-off-water and the increase in the minimum voluntary spelling period of 12 hours associated with Option E1. The expected net incremental quantifiable costs/cost savings of each standard under Option E1 are summarised in Table 13. The basis of the cost estimates in Table 13, are all provided for in Appendix 6 and 7 of this RIS. As shown in Table 13, the proposed higher standards would result in an incremental cost to the livestock industry, relative to the base case, of between approximately **\$133.9m** and **\$150.2m** per annum or approximately **\$625.8m** and **\$701.8m** over 5 years, in present value terms (2008 dollars)<sup>148</sup>.

**Table 13 – List of estimated quantifiable net incremental costs/cost savings under Option E1**

Standard No.	Costs imposed on/cost savings for	Reference Appendices 6 and 7	Annual \$ net cost or saving <sup>149</sup>	Discounted 5-year \$ net cost <sup>150</sup> or saving (2008 dollars)
<b>Responsibilities and planning</b>				
SA1.1	Transporters <sup>151</sup>	Table A6.6	+\$364,317	+\$1,702,482
SA1.2	Transporters <sup>152</sup>	Table A6.11	Between +\$1,466,294 and + \$1,691,068	Between +\$6,852,109 and +\$7,902,494
<b>Pre-transport preparation</b>				
SA4.2	Livestock owners <sup>153</sup>	Table A6.17	+\$1,353,865	+\$6,326,717
<b>Loading, transport and unloading</b>				

<sup>146</sup> This is because the opportunity cost of spelling in terms of time *which is being avoided* has increased – leading to greater cost savings.

<sup>147</sup> Depending on whether the mandatory spell period is 12 or 24 hours.

<sup>148</sup> Present value is calculated using a real discount rate of 3.5%.

<sup>149</sup> All figures are rounded to the nearest dollar.

<sup>150</sup> All figures are rounded to the nearest dollar.

<sup>151</sup> Does not include cattle, horses, pigs, poultry, or rail transport.

<sup>152</sup> Does not include cattle, calves, horses, pigs, poultry and ratites.

<sup>153</sup> Does not include horses, pigs and poultry.

Standard No.	Costs imposed on/cost savings for	Reference Appendices 6 and 7	Annual \$ net cost or saving <sup>149</sup>	Discounted 5-year \$ net cost <sup>150</sup> or saving (2008 dollars)
SA5.11(ii) + (iii)	Transporters <sup>154</sup>	Section A6.8.3(a) + A6.8.3(b)	Between +\$14,932,389 and +\$16,186,213	Between +\$69,780,237 and +\$75,639,453
SA5.15	Transporters <sup>155</sup>	Section A6.9.3 + rail estimates	Between +\$10,349,088 and +\$11,128,645	Between +\$48,362,110 and +\$52,005,041
<b>B1: Alpacas</b>				
SB1.1 & SB1.3 <sup>156</sup>	Transporters	Section A7.4.1	+\$16,068	+\$75,085
SB1.2	Transporters	Section A7.4.2	-\$14,753	-\$68,943
SB1.4	Livestock owners	Section A7.4.3	+\$65,838	+\$307,665
<b>B2: Buffalo</b>				
SB2.1 & SB2.2	Transporters	Section A7.4.6	Between +\$93,704 and +\$98,513	Between +\$437,889 and +\$460,358
SB2.3	Livestock owners	Section A7.4.7	+\$3,767	+\$17,605
SB2.6	Transporters	Section A7.4.9	Between + \$375 and +\$395	Between +\$1,754 and +\$1,844
<b>B3: Camels</b>				
SB3.1 & SB3.3	Transporters	Section A7.4.10	+\$43,974	+\$205,493
SB3.4	Livestock owners	Section A7.4.11	+\$1,031	+\$4,819
<b>B4: Cattle</b>				
SB4.1 & SB4.2	Transporters	Section A7.4.14	Between +\$57,618,861 and +\$64,965,302	Between +\$269,257,502 and +\$303,588,001
SB4.3	Livestock owners	Section A7.4.15	+\$1,280,906	+\$5,985,775
SB4.8(b)	Transporters	Section A7.4.19	Between +\$266,216 and +\$285,522	Between +\$1,244,047 and +\$1,334,266
<b>B5: Deer</b>				
SB5.1 & SB5.2	Transporters	Section A7.4.21	Between +\$34,811 and +\$35,426	Between +\$162,673 and +\$165,548
SB5.3	Transporters	Section A7.4.22	+\$50,280	+\$234,963
<b>B6: Ratites</b>				
SB6.1 & SB6.5	Transporters	Section A7.4.25	+\$49,352	+\$230,626
<b>B7: Goats</b>				
SB7.1 & SB7.2	Transporters	Section A7.4.27	Between +\$4,396,951 and +\$5,073,784	Between +\$20,547,302 and +\$23,710,195
<b>B8: Horses</b>				
SB8.1 & SB8.3	Transporters	Section A7.4.30	+\$52,148	+\$243,690
SB8.2	Transporters	Section A7.4.31	+\$28,342	+\$132,447
SB8.4	Livestock owners	Section A7.4.32	+\$847	+\$3,958
SB8.8	Transporters	Section A7.4.33	+\$8,398	+\$39,242
SB8.10	Livestock owners	Section A7.4.34	+\$6,042	+\$28,234
SB8.11	Transporters	Section A7.4.35	+\$84,875	+\$396,628
<b>B9: Pigs</b>				
SB9.1 & SB9.3	Transporters	Section A7.4.38	Between +\$1,613 and +\$1,872	Between +\$7,538 and +\$8,747
SB9.2	Transporters	Section A7.4.39	Between -\$161,296 and -\$187,181	Between -\$753,751 and -\$874,709
<b>B11: Sheep</b>				

<sup>154</sup> Does not include horses and pigs.

<sup>155</sup> Does not include cattle, calves for rearing, horses for sale and major events and pigs.

<sup>156</sup> Standards relating to maximum time off water and spelling periods are treated together as one standard always works in conjunction with the other.

Standard No.	Costs imposed on/cost savings for	Reference Appendices 6 and 7	Annual \$ net cost or saving <sup>149</sup>	Discounted 5-year \$ net cost <sup>150</sup> or saving (2008 dollars)
SB11.1 & SB11.2	Transporters	Section A7.4.42	Between +\$40,984,891 and +\$46,930,320	Between +\$191,525,640 and +\$219,309,102
<b>Total net incremental cost of general and specific standards under Option B</b>			<b>Between +\$133,379,193 and +\$149,605,173</b>	<b>Between +\$623,291,535 and +\$699,116,826</b>

The quantifiable net costs over 5 years (in present value terms) represents between 21.98% and 22.24% of the total cost of livestock transport of \$2.84b and \$3.14b<sup>157</sup>. The estimated change in retail meat prices (if costs are passed on to consumers) would be approximately an increase of 6% for beef, an increase of 11.2% for lamb, a reduction of 0.4% for pork and an increase of 4.8% for chicken, (see Table A7.9 of Appendix 7).

#### Expected benefits

Again, as with Option E, Option E1 is expected to result in slightly higher incremental benefits as Option B or B1 - as compared to the base case. There remains no scientific evidence to date to show that the particular reduction in water deprivation times under Option E1 would provide specifically higher livestock welfare benefits than Options B or B1, but it would be likely to reduce risks to the welfare of livestock in general terms. Moreover, the higher mandatory time for voluntary spells under Option E1 in order to get time-off-water credits (as compared to Option E) is likely to further reduce the risk to the welfare of livestock.

### **5.4 Selection of preferred option**

The purpose of this part of the RIS is to select a preferred option, on the basis of the preceding assessment of the various options in Part 5.3. To do this, we need a method of ranking the costs and benefits of the options, so as to identify the optimum combination of costs and benefits.

Table 14 summarises the net costs (+) or savings (-) for each of the options discussed in section 5.3 in this RIS.

**Table 14 – A comparison of annual and 5 year incremental costs or savings for all options**

Option	Annual value min	Annual value max	Present value over 5 years min	Present value over 5 years max
A	+\$0.9m	+\$0.9m	+\$0.9m	+\$0.9m
B	+\$31.4m	+\$33.9m	+\$146.8m	+\$158.3m
B1	+\$44.1m	+\$46.6m	+\$206.2m	+\$217.8m
C	Not quantifiable but likely more costly than Option B	Not quantifiable but likely more costly than Option B	Not quantifiable but likely more costly than Option B	Not quantifiable but likely more costly than Option B
D	-\$0.8m	-\$1m	-\$3.7m	-\$4.6m
E	+\$117.8m	+\$131.9m	+\$550.7m	+\$616.5m
E1	+\$133.4m	+\$149.6m	+\$623.8m	+\$699.1m

Table 15 summarises the impact of all options on beef, lamb, pork and chicken prices, except for Option A, where no price impact would be expected, and Option C, where costs are unquantifiable.

<sup>157</sup> See Appendix 6, section A6.2.5 for derivation of these cost figures.



**Table 15 - Comparison of the % change in meat prices and demand for Options B, D, E and E1**

Option	%Change in Beef		%Change in lamb		%Change in Pork		%Change in Chicken	
	Price	Demand	Price	Demand	Price	Demand	Price	Demand
<b>B</b>	1% to 1.02%	-1.2% to -1.22%	1.99% to 2.04%	-2.79% to -2.85%	-0.29%	0.45%	4.76%	-1.43%
<b>B1</b>	As with B + unknown increase in veal prices	As with B + unknown reduction in veal demand	1,99% to 2.04%	-2.79% to -2.85%	-0.29%	0.45%	4.76%	-1.43%
<b>D</b>	0.03% to 0.032%	-0.04%	-0.19% to -0.2%	0.27% to 0.28%	-0.29%	0.46%	0%	0%
<b>E</b>	5.13% to 5.14%	-6.15% to -6.17%	9.84% to 9.95%	-13.77% to -13.92%	-0.32%	0.51%	4.76%	-1.43%
<b>E1</b>	5.94% to 5.95%	-7.13% to -7.14%	11.12% to 11.23%	-15.57% to -15.72%	-0.43%	0.68%	4.764%	-1.43%

Whilst the expected costs of all options except Option C can largely be quantified, the benefits cannot. However, both the costs and the benefits of the various options can be ranked against each other. Table 16 ranks the various options in terms of both costs and benefits using a weighted decision criteria analysis. This is an accepted technique for ranking options and selecting a preferred option in an RIS.<sup>158</sup>

The three evaluation criteria used in this analysis are:

1. Livestock welfare benefits;
2. Net compliance costs to industry and government; and
3. Promotion of national consistency.

The relative weightings of these criteria are 40%, 40% and 20% respectively. Having regard to the main purpose of the animal welfare legislation being to prevent cruelty to animals and the importance the community places on animal welfare (see Part 1.2.2 of this RIS), a relatively high weighting (40%) should be given to the livestock welfare benefits each option. An equal weighting has been to the net costs of the proposed standards. For reasons discussed in Part 2.1 of the RIS, the promotion of national consistency is a third criterion, although of a lower weighting than the costs and benefits.

The rationale for the different scores in Table 16 may be summarised as follows. For each of the aforementioned criteria, scores are assigned to each option on an ordinal scale of -5 to + 5, based on the assessments of costs, benefits and equity given in the preceding Part 5.3 of the RIS, relative to the 'base case'. The 'base case' is assigned a score of zero for each of the criteria. If the option is superior to the 'base case' for a particular criterion, it is assigned a positive score, and if it is inferior to the base case, it is assigned a negative score. It is emphasised that the different scores are assigned on an ordinal rather than a linear scale, as the purpose of the exercise is simply to rank the options. In other words, an option with a score of + 3 is not necessarily 3 times better than an option with a score

<sup>158</sup> State Government of Victoria, 2007.



of + 1. The method simply means that an option with a score of + 3 is superior to an option with a score of + 2, which in turn is superior to one with a score of + 1.

For example, the options that would be likely to promote the highest level of livestock welfare benefits relative to the ‘base case’ (**Options E and E1**) are assigned a score of + 4 and + 4.5, respectively. Those that would be likely to promote lower levels of livestock welfare benefits are assigned lower scores accordingly. The assigned scores are then multiplied by the relevant weightings for each criterion, as discussed above, to calculate the weighted score for each option.

Similarly, the option that would impose the greatest incremental cost relative to the ‘base case’ (**Option E1**) is assigned a score of -4.5. Those that would impose lesser incremental cost are assigned higher scores accordingly (refer to Table 14).

**Table 16 – Weighted criteria decision analysis**

Criteria	Type of score	Livestock welfare benefits	Net cost to industry and government	National consistency	Total score
<b>Weighting</b>	%	40	40	20	100
<b>Base case</b>	Assigned <sup>159</sup>	0	0	0	0
	<b>Weighted</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Option A</b>	Assigned	+0.5	-0.5	+1	
	<b>Weighted</b>	<b>+0.2</b>	<b>-0.2</b>	<b>+0.2</b>	<b>+0.2</b>
<b>Option B</b>	Assigned	+3	-2	+5	
	<b>Weighted</b>	<b>+1.2</b>	<b>-0.8</b>	<b>+1.0</b>	<b>+1.4</b>
<b>Option B1</b>	Assigned	+3	-3	+5	
	<b>Weighted</b>	<b>+1.2</b>	<b>-1.2</b>	<b>+1</b>	<b>+1.0</b>
<b>Option C</b>	Assigned	+1	-3	+2	
	<b>Weighted</b>	<b>+0.4</b>	<b>-1.2</b>	<b>+0.4</b>	<b>-0.4</b>
<b>Option D</b>	Assigned	+1	+0.5	+1	
	<b>Weighted</b>	<b>+0.4</b>	<b>+0.2</b>	<b>+0.2</b>	<b>+0.8</b>
<b>Option E</b>	Assigned	+4	-4	+5	
	<b>Weighted</b>	<b>+1.6</b>	<b>-1.6</b>	<b>+1.0</b>	<b>+1.0</b>
<b>Option E1</b>	Assigned	+4.5	-4.5	+5	
	<b>Weighted</b>	<b>+1.8</b>	<b>-1.8</b>	<b>+1.0</b>	<b>+1.0</b>

Based on Table 16, Option B (the proposed standards) provides the highest weighted score of **+1.4** with Option C (more outcome-based and less prescriptive standards) providing the lowest weighted score of **-0.4**. **The proposed standards are therefore the preferred option, in which the expected costs are considered to be outweighed by the expected benefits.**

<sup>159</sup> (-5 to +5)

## 6.0 National Competition Policy tests

### 6.1 Competition principles and guidelines

At the Council of Australian Governments (COAG) meeting in April 1995, all Australian governments agreed to implement the National Competition Policy (NCP). As part of the *Competition Principles Agreement*, all governments, including Victoria, agreed to review all legislation containing restrictions on competition under the following principle:

*‘Legislation should not restrict competition unless it can be demonstrated that:*

- *the benefits of the restriction to the community as a whole outweigh the costs; and*
- *the objectives of the legislation can only be achieved by restricting competition.*<sup>160</sup>

To successfully pass the competition and cost-benefit tests, for each proposed regulation it is necessary to:

- Step 1: Identify the restriction on competition, if any;
- Step 2: Show that the restriction, if any exists, is necessary to achieve the objective;
- Step 3: Assess the costs to the community caused by the restriction;
- Step 4: Assess the community benefits; and
- Step 5: Assess whether benefits outweigh the costs.

If no restriction on competition is found in the course of Step 1, it is not necessary to complete the remaining steps (i.e. Steps 2 to 5). Issues to be discussed in the NCP assessment relate to whether or not the proposed regulations restrict competition in the relevant market by one or more of various means such as:

- allowing only one company or person to supply a good or service (monopoly);
- requiring producers to sell to a single company or person (monophony);
- limiting the number of producers of goods and services to less than four (duopoly or oligopoly );
- limiting the output of an industry or individual producers; or
- limiting the number of persons engaged in an occupation.<sup>161</sup>

### 6.2 NCP assessment

The market affected by the proposed standards is the market for land transport of livestock.

NCP applies to businesses rather than to individuals engaging in non-business activities.

To the extent that they impact on businesses, namely livestock transporters, such businesses would be equally affected by the same regulatory environment. The likely costs

<sup>160</sup> State Government of Victoria, 2005

<sup>161</sup> *Ibid.*

of the proposed standards are not so high as to constitute a barrier to entry for such businesses. Thus the proposed regulations are unlikely to restrict competition.

## **7.0 Evaluation and review strategy**

The effectiveness of the proposed standards in achieving the policy objective (refer Part 2.2) and any unintended consequences will be evaluated over time by using indicators which will include the extent to which the standards have been:

- officially adopted by the various government jurisdictions;
- implemented by the livestock transport industry;
- accepted by the Australian community.

The proposed standards will be reviewed after five years from the agreed implementation date; however there could be an earlier review if considered necessary within the five year period.

## 8.0 Conclusions

The main conclusions and findings of the RIS are as follows:

1. Transportation is potentially a major stressor for livestock and might have deleterious effects on health, well-being, productivity and ultimately, product quality.
2. Animals being transported by road and rail are subject to a number of stress factors throughout the journey, including handling, loading, transporting, mixing of unfamiliar animals, unloading and total time without water. These risk factors can be cumulative and apply across all phases of land transport, from assembly and handling before the journey, to unloading at the destination.
3. Animal welfare is now recognised as a characteristic of product quality and customer requirements in some industry sectors. There is increasing recognition by livestock industries that animal welfare is an integral part of good animal husbandry. In the past few years, several food safety-based quality assurance schemes have been implemented either within companies or within industries.
4. Extensive consultation has taken place with government agencies, researchers, industry and animal welfare organisations in the development of the proposed standards and their predecessors.
5. The problems that the proposed standards are endeavouring to address include the needs:
  - for greater national consistency in livestock welfare standards
  - to ‘fill in gaps’ in current standards;
  - to update current model codes of practice;
  - for clear and verifiable standards;
  - to minimise risks to livestock welfare;
  - to ensure that the benefits justify the costs of standards;
  - for standards to be considered within an international context; and
  - to meet community expectations.
6. Market forces alone would not be expected to solve these problems and intervention in the form of regulated standards is necessary.
7. In relation to the proposed standards and possible alternatives, the following overarching policy objective is identified:
 

*To ensure that the conditions under which livestock are transported on land are consistent with reasonable animal welfare outcomes.*
8. Because compliance with the guidelines is voluntary, costs are imposed by the proposed standards rather than by the guidelines. Most of the proposed standards are consistent with existing standards in national model codes of practice, as listed under the base case in Part 5.2 of the RIS. The main overall difference is that proposed standards are not

explicitly stated in the existing model codes. In many cases they make more verifiable the unverifiable guidelines in the existing model codes, to facilitate incorporation into state and territory regulations and the auditing of compliance with such regulations.

9. The proposed standards would impose minimal to minor costs per journey in the following areas:
  - transport costs and savings
  - training costs
  - veterinary/pathology costs
  - verification/auditing/enforcement costs
10. No costs to livestock welfare have been identified. In other words, no species or class of animal is likely to incur a reduction in its welfare, compared to the existing codes of practice. On the contrary, there is likely to be a net benefit to livestock welfare as a result of the implementation of the proposed standards.
11. Veterinary and pathology costs will be directly incurred by the relevant livestock owners. The transport costs/savings and the training costs will be initially incurred by livestock transporters, but costs are likely in most cases to be passed on to livestock owners and possibly meat consumers, depending on whether or not stock are auctioned and on consumer price sensitivities.
12. Verification, auditing and enforcement costs will be incurred by the relevant government agencies. However, most state and territory departments advise that there is unlikely to be any significant increase in enforcement costs of the proposed standards relative to the base case.
13. A comparison of the proposed standards with the relevant World Organisation for Animal Health (OIE) guidelines shows that there are no significant differences between the proposed Australian standards and the relevant equivalent international standards, except in relation to only a few proposed standards as discussed in Part 3.3 of the RIS. These differences are considered reasonable and justified.
14. The estimated total annual cost of transporting livestock for slaughter, export/import and other purposes<sup>162</sup> by road (excluding the cost of horse transport for recreational purposes) is between approximately **\$606.8m** and **\$672.7m** (refer to Part A6.2 of Appendix 6).
15. As shown in Table 8, the proposed standards would result in a *net incremental cost* to the livestock industry, relative to the base case, estimated to be between approximately **\$31.4m** and **\$33.9m** per annum or approximately **\$146.8m** and **\$158.3m** over 5 years, in present value terms (2008 dollars). The expected net incremental quantifiable costs/cost savings of each of the proposed standards are summarised in Table 8. The basis of the cost estimates in Table 8 are provided in Appendix 6 of this RIS. All unquantifiable costs/cost savings are summarised in Table 9.
16. The quantifiable cost over 5 years (in present value terms) represents between 5.04% and

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<sup>162</sup> Other purposes include: mustering; management; companionship; non-event recreation; breeding/breeder replacement; growing out or finishing; racing; show/exhibition and sale.

5.18% of the total cost of livestock transport of approximately \$2.84b and \$3.14b.<sup>163</sup> The estimated change in retail meat prices (if costs are passed on to consumers) would be approximately an increase of 1% for beef, an increase of 2% for lamb, a reduction of 0.3% for pork and an increase of 4.8% for chicken, (see Appendix 6, section A6.61).

17. A comparison of the quantifiable annual and 5 year incremental costs or savings for all options is shown in the following table.

Option	Annual value min	Annual value max	Present value over 5 years min	Present value over 5 years max
A	+\$0.9m	+\$0.9m	+\$0.9m	+\$0.9m
B	+\$31.4m	+\$33.9m	+\$146.8m	+\$158.3m
B1	+\$44.1m	+\$46.6m	+\$206.2m	+\$217.8m
C	Not quantifiable but likely more costly than Option B	Not quantifiable but likely more costly than Option B	Not quantifiable but likely more costly than Option B	Not quantifiable but likely more costly than Option B
D	-\$0.8m	-\$1m	-\$3.7m	-\$4.6m
E	+\$117.8m	+\$131.9m	+\$550.7m	+\$616.5m
E1	+\$133.4m	+\$149.6m	+\$623.8m	+\$699.1m

18. The proposed standards are expected to result in the following benefits:

- improved livestock welfare outcomes – no species or class will be worse off and risks to welfare will be minimised;
- greater national consistency in the setting of standards;
- clear standards, differentiated from guidelines, that are capable of being incorporated into regulations;
- the gaps that exist in the current model codes of practice will be filled in, including coverage of all livestock transported by land;
- updates to current model codes of practice, in the light of new knowledge and circumstances, including industry best practice;
- standards have been reviewed to ensure that their benefits justify their costs, and that they meet the expectations of the Australian community, which is likely to improve community confidence and implementation of the standards, and
- enhanced international reputation (from providing clear statements of Australia's livestock welfare standards to the international community, especially our trading partners).

19. A weighted criteria decision analysis was used to compare the relative costs of various options. Option B (the proposed standards) provides the highest weighted score of +1.4 with Option C (more outcome-based and less prescriptive standards) providing the lowest weighted score of only -0.4. The proposed standards are therefore the preferred option, in which the expected costs are considered to be outweighed by the expected benefits. .

<sup>163</sup> See Appendix 6 section A6.2.5 for derivation of these cost figures.

20. To the extent that they impact on livestock transporters and other businesses, such businesses would be equally affected by the same regulatory environment. The likely costs of the proposed standards are not so high as to constitute a barrier to entry for such businesses. Thus the proposed regulations are unlikely to restrict competition.
21. All jurisdictions can make regulations to require compliance with the proposed standards, and all regulations except those in New South Wales and the Northern Territory can adopt the standards by reference. (New South Wales and the Northern Territory would have to make regulations using similar wordings as the standards).

## Glossary of terms and acronyms

<b>ABS:</b>	Australian Bureau of Statistics
<b>ABARE:</b>	Australian Bureau of Agricultural and Resource Economics
<b>access to water:</b>	a reasonable opportunity for livestock to be able to drink water of a suitable quality and quantity to maintain their hydration.
<b>agent:</b>	means a person involved in the buying and selling of livestock for production, sale or slaughter. A person who acts on behalf of someone else. Includes a livestock buyer.
<b>animal:</b>	synonymous with livestock. Specifically for this standard all classes of; cattle, sheep, goats, pig, horses, poultry, emus, ostrich, alpaca, deer, camel, and buffalo
<b>AFFA:</b>	Australian Government Department of Agriculture, Fisheries and Forestry
<b>AHA:</b>	Animal Health Australia
<b>ALTA:</b>	Australian Livestock Transporters Association
<b>ARMCANZ:</b>	the former Agriculture and Resource Management Council of Australia and New Zealand (since replaced by PIMC- the Primary Industries Ministerial Council)
<b>AVA:</b>	Australian Veterinary Association.
<b>AWWG:</b>	Animal Welfare Working Group
<b>assembly:</b>	the process of drawing livestock together in a yard or cage prior to loading for transport. It includes mustering or capture, handling, drafting or selection, restraint and all procedures on livestock that might take place in preparation for transport
<b>at the first opportunity:</b>	means that an appropriate action for livestock is undertaken without delay except where a reasonable delay is caused by a significant reason relating to; resources, skills, safety or the immediate welfare of other livestock.
<b>base case:</b>	means the situation that would exist if the proposed standards were not adopted.
<b>blunt trauma:</b>	a single blow to the forehead causing immediate loss of consciousness.



<b>bobby calf:</b>	A calf not accompanied by its mother, less than 30 days old, weighing less than 80 kg liveweight, and usually a dairy breed or cross.
<b>calf:</b>	cattle less than 6 months old.
<b>category:</b>	in relation to livestock, means the same as ‘class’.
<b>buck</b>	a mature, entire male goat
<b>captive bolt:</b>	a captive-bolt pistol is an alternative to firearms. It fires a bolt into the skull of an animal to rapidly render the animal unconscious and to allow the animal to be killed before regaining consciousness.
<b>carrier:</b>	means an individual that is contracted to transport livestock for another operator (operator may be primary production, feedlot or processor)
<b>chicks:</b>	poultry under 72 hours of age, commonly known as ‘day old chicks’
<b>class:</b>	a group of a livestock species defined by age, size or sex. Lactating livestock with young at foot are considered as a single class.
<b>COAG</b>	Council of Australian Governments
<b>competent:</b>	persons are deemed competent when they can demonstrate an ability to comply with the provisions specified in these standards.
<b>consignors:</b>	consignors of livestock are usually the owners of the livestock but may also include; agents, drivers and transport companies, poultry pick-up crews and personnel from properties, saleyards, feedlots, depots and livestock-processing plants, who handle livestock to be transported.
<b>container(s)</b>	means crates, boxes or cages for transporting poultry
<b>cria:</b>	young alpaca under 6 months old.
<b>CSIRO:</b>	Commonwealth Scientific and Industrial Research Organisation
<b>curfew:</b>	prevention of livestock access to water prior to another procedure such as weighing, sale, or transport. Will form part of the total water deprivation time unless stock are given adequate access to water prior to further deprivation.
<b>DAFF:</b>	Department of Agriculture, Fisheries and Forestry

<b>document:</b>	<p>A document for livestock movements is any written record. It may be, but is not restricted to:</p> <ul style="list-style-type: none"> <li>• an existing document, such as a consignment sheet, health certificate, national vendor declaration or equivalent, an invoice, a waybill, a diary entry or other documentation</li> <li>• another record that shows the person(s) in charge responsible for livestock during transport.</li> </ul>
<b>driver:</b>	a person who transports livestock on a vehicle and is self employed, employed by a livestock transport company or another business including a livestock business. Any operator of a livestock transport vehicle.
<b>economic efficiency:</b>	when an output of goods and services is produced making the most efficient use of scarce resources and when that output best meets the needs and wants and consumers and is priced at a price that fairly reflects the value of resources used up in production
<b>exsanguination:</b>	bleeding out
<b>externality:</b>	means the cost or benefit related to a good or service that accrues to persons other than the buyer or the seller of that good or service.
<b>fawn:</b>	young deer under 6 months of age, also known as a calf.
<b>foal:</b>	a young unweaned horse under the age of 6 months.
<b>FOB:</b>	Free On Board
<b>Free On Board:</b>	a shipping term which indicates that the supplier pays the shipping costs (and usually also the insurance costs) from the point of manufacture to a specified destination (e.g. on board the ship) at which point the buyer takes responsibility.
<b>guidelines:</b>	<p>the recommended practices to achieve desirable animal welfare outcomes. The guidelines complement the standards. They should be used as guidance. Guidelines use the word ‘should’. Non-compliance with one or more guidelines will not in itself constitute an offence under law.</p> <p>Compare with <i>Standards</i>.</p>
<b>EU:</b>	European Union
<b>heat stress:</b>	When the response by animals to hot conditions above their thermo-neutral limit exceeds the ability of their

	behavioural, physiological or psychological coping mechanisms
<b>humane destruction:</b>	the activity that results in immediate loss of consciousness and then death of the animal. The primary consideration is to prevent the animal from suffering further pain or distress.
<b>husbandry:</b>	care and management practices in animal keeping.
<b>journey:</b>	the movement of livestock from loading to unloading at a destination.
<b>journey time:</b>	The time that animals are loaded in a container or on a vehicle, until they are unloaded
<b>kid:</b>	young, unweaned goat under 6 months old.
<b>lairage:</b>	processing establishment holding yard and facilities.
<b>lamb:</b>	young sheep under 4 months old.
<b>lethal injection:</b>	an overdose of a recognised anaesthetic or analgesic agent delivered by a veterinarian or a person approved to do so, leading to a loss of consciousness and or death. An injection of an agent to cause death in an unconscious animal.
<b>livestock:</b>	means species as defined in scope.
<b>market:</b>	means an area of close competition between firms, or the field of rivalry in which firms operate.
<b>market failure:</b>	means the situation which occurs when freely functioning markets, operating without government intervention, fail to deliver an efficient or optimal allocation of resources.
<b>MCOP:</b>	model code of practice
<b>merit goods</b>	underprovided goods/services in a market economy which are determined by government to be good for society whether or not consumers desire them.
<b>MLA:</b>	Meat & Livestock Australia.
<b>monopoly:</b>	means a market structure such that only one firm supplies the entire market.
<b>moribund</b>	means an animal that is unable to stand, exhibits signs of distress or insensibility, such as panting, or glassy eye, and with little chance of recovery.
<b>NAWAC</b>	National Animal Welfare Advisory Committee
<b>NCCAW:</b>	National Consultative Committee on Animal Welfare.

<b>over the hooks:</b>	refers to the marketing of cattle/sheep/lambs directly from the farm to an processing establishment where a producer is paid for the value of the carcass based on a sliding grid.
<b>OIE:</b>	World Organisation for Animal Health
<b>owner:</b>	a person or company who owns livestock.
<b>person in charge:</b>	the person who is responsible for the welfare of the livestock at the times they are in charge for each stage of each journey, including before loading and after unloading. Responsibility for duty of care for livestock welfare may extend to the person's employer.
<b>piglet:</b>	young unweaned pig.
<b>PIMC:</b>	Primary Industries Ministerial Council
<b>pithing:</b>	the process of destroying nervous tissue in and around the brainstem to ensure death by either inserting a rod into the hole created by a projectile or transecting the spinal cord at the foramen magnum.
<b>poultry:</b>	domestic fowls, turkeys, geese, ducks, guinea fowls, quails, pigeons and pheasants and partridges reared or kept in captivity for breeding; and the production of meat or eggs for consumption or for restocking supplies of game park enterprises.
<b>prescribed:</b>	specified by regulations made under an Act.
<b>producer:</b>	a farmer of livestock
<b>PSE:</b>	Pale Soft Exudative Pork, caused by a combination of factors which stress the animal and cause a rapid decline in meat pH.
<b>public good:</b>	a good or service that will not be produced in private markets because there is no way for the producer to keep those who do not pay for the good or service from using it.
<b>ratite:</b>	any bird species that cannot fly because its smooth or raftlike sternum (breastbone) lacks a keel to which flight muscles can be anchored. In these standards, ratites refer to the emu and ostrich.
<b>record:</b>	a written document or an accessible electronic record
<b>rest:</b>	refer to 'spell'.

<b>restriction of competition:</b>	means something that prevents firms in a market or potential entrants to a market from undertaking the process of economic rivalry.
<b>RIRDC</b>	Rural Industries Research and Development Corporation
<b>RIS:</b>	regulatory impact statement.
<b>QA:</b>	Quality Assurance.
<b>RSPCA:</b>	Royal Society for the Prevention of Cruelty to Animals.
<b>sale yard</b>	means premises where livestock are gathered and ownership of livestock is exchanged; livestock are bought and sold
<b>SCARM:</b>	Standing Committee of Agriculture and Resources Ministers
<b>social cost:</b>	the total of all costs of a particular economic activity borne by all economic agents in society, including consumers, producers and government.
<b>sow:</b>	an adult female pig which has had one or more litters.
<b>spell:</b>	<p>a spell is a mandatory requirement when maximum time off-water is reached before starting a further journey, as defined by standards for each species.</p> <p>A mandatory spell is where a standard requires an animal to be spelled. (See also <i>voluntary spell</i>).</p> <p>Water, food and space to lie down must be provided to all livestock, on a stationary vehicle or off a vehicle. Handling of animals should be kept to a minimum.</p> <p>Where animals are unloaded, a spell starts from the time all animals are unloaded and ends when animals are handled for reloading.</p>
<b>standards:</b>	the acceptable animal welfare requirements designated in the proposed standards document. The requirements that must be met under law for livestock welfare purposes. The standards are intended to be clear, essential and verifiable statements; however, not all issues are able to be well defined by scientific research or are able to be quantified. Standards use the word ‘must’.
<b>stock handler:</b>	a person who undertakes the immediate day-to-day husbandry tasks associated with looking after animals.
<b>stock handling:</b>	putting into practice the skills, knowledge, experience,

	attributes and empathy necessary to manage stock.
<b>stun:</b>	to make an animal unconscious.
<b>stress:</b>	means a response by animals that activates their behavioural, physiological or psychological coping mechanisms.
<b>supply chain:</b>	a group of businesses linked together for mutual benefit to supply products to customers.
<b>TSR:</b>	travelling stock reserve
<b>Time off water:</b>	When water is not reasonably accessible for livestock. Equivalent to <i>water deprivation time</i> . Time off water is cumulative from the last time the animals were provided with water. During the transport process this minimum reasonable access period is four hours
<b>UK:</b>	United Kingdom.
<b>voluntary spell:</b>	<p>A spell may occur voluntarily before loading, mid-journey or at the completion of a journey.</p> <p>During a voluntary spell, water and space to lie down must be provided to all livestock, on a stationary vehicle or off a vehicle. Handling of animals should be kept to a minimum. Where animals are unloaded, a spell starts from the time all animals are unloaded and ends when animals are handled for reloading.</p> <p>A mid-journey spell must be a minimum of 4 hours to be recognised for the provision of water and rest.</p> <p>The time used for spells of longer than 4 hours during the journey will not be included in the calculation of the total time off water. A spell less than 4 hours duration is not recommended or recognised for water deprivation time calculation, but can be undertaken as necessary.</p> <p>Where livestock are spelled for 24 hours with food, any subsequent journey can be considered as a new water deprivation period.</p>
<b>water deprivation time:</b>	The total time animals are deprived of water, including during mustering away from water, yarding and water curfew time before transport, loading, time on the vehicle whether moving or stationary unless reasonable access to water is provided, and time during unloading and holding at the destination until reasonable access to water is provided.

Where a voluntary spell exceeds four hours, the time that water is provided to livestock during the spell can be used to extend the total time of the trip within the permitted maximum time off water if the livestock meet the fitness requirements.

See Time off-water

**waybill**

a document issued by a transporter giving details and instructions relating to the transport of a consignment of animals. Typically it will show the names of the consignor and consignee, the point of origin of the consignment, its destination, route, and other details, together with the amount charged for carriage.

**weaner pig:**

a pig that has been weaned from the sow up to 30 kilograms liveweight.

**weaning:**

separating young animals from their mothers so that the offspring can no longer suckle.

**WTP:**

Willingness to Pay.

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## Appendices

1. Guide to the Australian Animal Welfare Standards for the Land Transport of Livestock.
2. Summary of proposed changes to relevant existing model codes of practice.
3. Comparison with relevant international animal welfare standards.
4. Summary of relevant state and territory legislation.
5. Livestock transportation data.
6. Calculations of estimated costs and benefits of the proposed standards (Option B).
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## **Appendix 1 - Guide to the Australian Animal Welfare Standards for the Land Transport of Livestock.<sup>164</sup>**

### **Scope**

The standards and guidelines cover the transport of livestock by road, rail and livestock transport vehicle aboard a ship. They apply to the major commercial livestock industries in Australia; that is, to alpacas, buffalo, camels, cattle, deer, emus, goats, horses, ostriches, pigs, poultry (broilers, ducks, geese, guinea fowl, layers, partridge, pheasants, pigeons, quail and turkeys) and sheep.

The document contains general standards that apply to all species (Part A), and standards for each industry (Part B).

The standards apply to all those responsible for the care and management of transported livestock. Those responsible include drivers; transport companies; owners; agents; and livestock handlers at farming enterprises, depots, saleyards, feedlots and livestock-processing plants.

Livestock transport begins when livestock is loaded into a container or onto a vehicle, and ends when the livestock is unloaded at the final destination. The chain of responsibility for the welfare of livestock begins with the owner or their agent, and extends to the final receiver of the livestock.

Water provision is an important consideration in livestock welfare. From a livestock welfare perspective, the whole process of moving livestock includes activities from the time that animals are first mustered and deprived of water before loading, until the time that livestock have access to water at the final completion of the journey. Activities important in the three phases of the movement process and those primarily responsible for livestock welfare include:

- mustering, assembly;
- handling and waiting periods before loading (consignor);
- loading, transport, and unloading including spelling periods (transporter)<sup>165</sup>; and
- holding time after unloading (receiver).

The standards attempt to cover most ordinary situations and contingencies. The standards and guidelines should be considered in conjunction with other requirements for the transport of livestock, and with related Commonwealth, state and territory legislation, including

- for transport — the *Australian Standards for the Export of Livestock*<sup>166</sup>, animal health and biosecurity requirements, regulated livestock loading schemes and driver regulations
- for other enterprises — model codes of practice or future standards and guidelines for livestock species, saleyards, livestock processing (slaughter) establishments and the *Australian Standards for the Export of Livestock*.

<sup>164</sup> Prepared by Dr. Kevin De Witte, Animal Health Australia.

<sup>165</sup> The term spell defines a period when livestock have access to water and space for all livestock to lie down, on or off the vehicle (SA5.1, SA5.2 and Part B standards) for their recovery

<sup>166</sup> <<http://www.daffa.gov.au/animal-plant-health/welfare/export-trade/v2-1>>

Where other legislation requires a higher standard than this standard, the higher standard will apply. Where there is a conflict with another standard in meeting the animal welfare standards, the welfare of animals must be the first consideration, unless there is an occupational health and safety requirement.

The standards document has two parts:

- *Part A* — six chapters of standards and guidelines that apply to all livestock species
- *Part B* — eleven chapters of standards and guidelines, each of which applies to a particular livestock industry (also referred to as the ‘species chapters’); the standards in Part B apply in addition to, or by exception to, the Part A standards.

The standards aim to make the key requirements consistent between species, where appropriate. For example, some key requirements that occur in both Parts A and B, and that have been made consistent between species are; water provision times, spelling (resting) arrangements or times, and pregnancy provisions. Definitions that are relied upon are defined in the glossary.

### **Comparison of standards and guidelines and intended use.**

Although often referred to as a single entity — ‘the standards’ — each chapter of the document contains both standards and guidelines. Both the standards and the guidelines are intended to achieve good outcomes for livestock welfare, but they have different functions:

From the scope section of the final version of the document:

***Standards* — The acceptable animal welfare requirements designated in this document. The requirements that must be met under law for livestock welfare purposes.**

**The standards are intended to be clear, essential and verifiable statements; however, not all issues are able to be well defined by scientific research or are able to be quantified. Standards use the word ‘must’.**

***Guidelines* — The recommended practices to achieve desirable animal welfare outcomes. The guidelines complement the standards. They should be used as guidance. Guidelines use the word ‘should’. Non-compliance with one or more guidelines will not in itself constitute an offence under law.**

The guidelines are not written to be underpinning, compliance guidelines that serve to explain the standards. The relative welfare position presented by the guidelines does vary and is not meant to be ‘best practice’. This relationship is open to debate but the guidelines are regarded to be a better welfare position than described by the standards. The standards represent the accepted minimum level of welfare to be provided. Compliance with the relevant guidelines will serve as a defence against a charge of non-compliance with a standard. Conversely, non-compliance with one or more guidelines will not in itself constitute an offence under law, remembering that the standards must be achieved. This concept in relation to regulation is an important principal in the document.

### **Types of standards**

Where possible, the standards are supported by scientific research or are based on industry-recommended practice. However, some issues are not well defined by scientific research, cannot be defined clearly or are not measurable. As a result, general standards that focus on broad

outcomes are necessary for some of the important livestock welfare issues in Part A. All standards seek to achieve an outcome.

Standards can be classified as follows:

- prescriptive or non-prescriptive
- proactive or reactive
- related to inputs or to outputs.

Each of these types of classification is discussed below. The classification of standards does not suggest anything about their intended use by governments — all standards are to be adopted. Thus all standards are considered equal, despite their different constructions and issues associated with interpretation. The land transport standards document does not make any distinction based on categories of standards. The standards are written in plain English, which is appropriate for contemporary legislative use, but have not been subjected to expert legal analysis.

### **Prescriptive or non-prescriptive standards**

#### *Prescriptive standards*

Prescriptive standards are narrowly focused on a specific issue, and meet the characteristics of being clear, essential and verifiable. Examples of these are almost all standards found in the species chapters of Part B.

#### *Non-prescriptive standards*

Non-prescriptive standards are more broadly focused on a wider issue, and are subject to interpretation in everyday use and by the regulatory legal system. They are more difficult than prescriptive standards to verify, they allow some flexibility and they require judgements to be made in everyday use by persons involved in livestock movement and by regulators. For example, the general standards that seek to “minimise the risk to the welfare of livestock” are non-prescriptive, and include those applying to stock handling competency, vehicles and facilities, fitness to load, time off-water, loading density and segregation. These general standards may contain some supporting elements under the standard, but the points are generally not defined in a prescriptive manner.

Risk to welfare of livestock is an important concept that is defined as the potential for a factor to affect the welfare of livestock in a way that causes pain, injury or distress to livestock. The outcome could include sunburn, hypothermia, heat stress, dehydration, exhaustion, abortion, injury, metabolic disease or death. These risks can be managed by undertaking reasonable actions to prevent or reduce the risk.

#### *Use of prescriptive and non-prescriptive standards*

Both prescriptive and non-prescriptive standards are expected to be used. There are 14 standards in Part A that are classified as wholly or partly non-prescriptive. The general standards may be difficult to regulate efficiently but are regarded as conveying an important welfare message that is difficult to prescribe in detail.



## **Proactive and reactive standards**

### Proactive standards

Proactive standards precede an event; they prevent harm by requiring preventative actions. They may use words such as ‘minimises the risk to the welfare of livestock’. This wording is part of non-prescriptive standards directed towards preventing a number of possible poor outcomes. In general, this type of standard is intended to manage the risk of poor outcomes before they happen.

### Reactive standards

Reactive standards follow an event; they address livestock welfare issues after they have occurred; for example, directing what must happen to an injured or distressed animal after it has been identified. They are necessary to prevent further suffering, and appear less frequently than lead standards. It is expected that further corrective action to address recognised problems that can be managed will take place as a part of normal good business practice.

## **Inputs and outputs**

### Input standards

Inputs (e.g. requirements) include factors such as water, feed, and inspection requirements. Most standards are directed towards inputs in a risk management, preventative sense.

### Output standards

Outputs (e.g. actions to deal with problems) include factors such as documentation and communication requirements (see Chapter 1) and humane destruction (see SA6.1). A further application could be to specify a minimum acceptable level of a problem produced by transportation, such as lameness or bruising. In general, this approach is not used for the land transport standards for livestock welfare, partly because of a lack of consensus about what constitutes an appropriate, measurable welfare measure.

## **Major topics covered by the standards**

### **Responsibility**

Transport usually involves the process of ‘change in ownership’ and the ‘transfer of responsibility’; the chain of responsibility is integral to making sure that outcomes are consistent with livestock welfare. The central idea is that the person in charge is responsible for the welfare of livestock at each stage of the journey and has a duty of care to ensure the welfare of livestock under their control and to communicate vital information (see SA1.1, SA1.2).

Three categories of people are defined as responsible for livestock welfare:

- consignors (most often the owner) at the origin;
- drivers or the transport company; and
- receivers at the destination.

Where the livestock owner or their direct employee is transporting their livestock between home properties, they are the person responsible in the three phases of transport (SA1.1). In most

cases the consignor will be the owner. Further discussion is in the sections on fitness assessment and provision of water.

*Responsibilities are defined for;*

- Person in charge / duty of care – SA1.1
- Documentation for journeys over 24 hours – SA1.2
- Competency – SA2.1
- Fit for the intended journey – SA1.1, SA4.2, SA4.3
- Care, treatment or humane destruction – SA4.4, SA5.13, SA5.14
- Loading density – SA5.4
- Ramp alignment – SA5.9
- Inspections – SA5.11, SA5.12
- Cold or hot weather contingency – SA5.15
- Humane destruction – SA6.2, SA6.4

Transport by rail takes place only in Queensland. There are few separate railroad standards for livestock welfare in the standards document because the proposed standards deal adequately with all of the issues for rail transport.

### **Stock-handling and competency**

Stock-handling competency is required by SA2.1, and means that any person must be competent in the task that they are performing for livestock transport. These tasks include handling; inspecting; assessing; loading; transporting and unloading; and humane destruction. People must also understand their responsibilities, maintain records, and be able to plan transport and contingency procedures.

People who are not yet competent must be supervised by a competent person. Competency standards are difficult to define at the present time. Like many agricultural sectors, the whole livestock transport industry relies on skills and knowledge gained on the job under appropriate supervision.

The standards detail specific requirements for handling (SA5.7); use of electric prodders (SA5.8); control when using working dogs (SA5.9); inspections (SA5.11, SA5.12); treatments (SA5.13, SA5.14); and humane destruction (Chapter 6). Further references to stock handling and use of dogs and electric prodders are contained in the species chapters. Handling standards (SA5.7 & SBs) are directed against; lifting, throwing, dropping and striking livestock. Dragging is considered to be of a lesser impact and is also covered. Handling of poultry and ratites is further covered by specific standards (SB6.5, SB6.6, SB10.4, & SB10.6).

Whilst mentioned, the competent operation of a vehicle is considered to be appropriately dealt with by transport arrangements. SA5.9 requires accurate alignment of the vehicle and the loading ramp.

### **Fitness including care and treatment**

Livestock must be assessed by a competent stockperson to be fit for the intended journey before every loading according to various visible criteria (SA4.1) that are either general or specific. This standard attempts to protect livestock welfare against all the common issues that may cause further risk to the welfare of the animal during transport and is based on the international OIE transport standards.

Any livestock judged as not fit for the intended journey must only be transported under specific veterinary advice (SA4.2). This standard permits a degree of flexibility relating to the ‘intended journey’ and the use of expert advice to manage livestock for the best welfare outcomes under a wide variety of circumstances. The primary responsibility for first selecting livestock to be ‘fit for the intended journey’ lies with the consignor, which will be the owner in most cases. The driver also has a responsibility for final selection. Additional specific fitness standards exist for horse lameness (SB8.7) and poultry (SB10.5).

Effective arrangements for the care, appropriate treatment or humane destruction of weak, ill or injured livestock must be made at the first opportunity by the person in charge before loading (SA4.4), by the driver during transport (SA5.13), and the receiver after unloading (SA5.14).

### **Pregnancy**

A major issue with managing pregnant animals for transport is knowing exactly at what stage of pregnancy livestock might be, especially for livestock from larger pastoral enterprises — hence the inclusion of the words ‘known to be’. It is difficult to match stage of pregnancy with appropriate management strategies. However, the use of the words ‘under specific veterinary advice’ allows appropriate management strategies to be used with a degree of flexibility based on factors such as local knowledge, veterinary competency and responsibility.

The pregnancy issue is complex with a series of species-based, overlapping standards that assume ascendancy based on the increasing risk associated with advancing pregnancy, culminating in SA4.1 vi). This standard permits the transport of livestock for up to four hours during the last two weeks of pregnancy, to allow them to be moved to better circumstances for livestock welfare, including closer supervision of parturition.

Pregnancy standards generally relate to the last trimester of pregnancy and include alpacas (SB1.1), buffalo (SB2.1, SB2.2), camels (SB3.1, SB3.3), cattle (SB4.1, SB4.2), deer (SB5.1, SB5.2), goats (SB7.1, SB7.2), horses (SB8.1, SB8.3) and sheep (SB11.1, SB11.2). Pigs are not included because pregnant sows are moved infrequently or only for short journeys that are less than four hours.

Species that are given a further risk category in addition to the last trimester, if they are known to be in the last month of pregnancy, are; alpacas (SB1.4), buffalo (SB2.3), camels (SB3.4), cattle (SB4.3), deer (SB5.3) and horses (SB8.4). Sheep, goats and pigs are not included due to the shorter gestation periods, as detailed in the relevant appendix. The deer chapter is based on the Sambar species of deer, recognising that there is a large variation among deer species. Pregnancy standards are not relevant for poultry, emus and ostriches.

### **Body condition score**

Body condition score (BCS) is only mentioned for horse guidelines. For all other livestock species, the use of BCS is less useful as an indicator of fitness for transport, especially as there are other fitness criteria in the standards that are to be used. In general it was felt that the use of

BCS did not help to minimise the risk to the welfare of livestock in transport, partly because of a lack of standardisation.

## **Inspections**

Livestock must be inspected before loading, within the first hour of the journey and then every 3 hours and at unloading (SA5.12). Vehicles and facilities must also be inspected before use (SA5.11). The driver must provide assistance at the first available opportunity if a distressed animal is identified (SA5.13). The person receiving the livestock must provide an appropriate response to deal with weak, ill or injured livestock (SA5.14). Caged poultry are an exception to the in-transit inspections, because it is usually better to keep travelling for reasons of airflow and temperature control. Documentation of inspections is required for journeys reasonably expected to exceed 24 hours (SA1.2).

## **Journey times**

Journey times are restricted by the times that livestock may be permitted off-water and by the ability to provide water and other requirements on the vehicle. Journey times are directly mentioned for:

- late stages of pregnancy (SA4.1, Part B standards)
- calves (SB4.4, 4.5)
- those species that are commonly catered for:
  - on a specialised, self-contained vehicle, including alpacas (SB1.2), camels (SB3.2), horses (SB8.2) and pigs (SB9.2);
  - in containers, including poultry (SB10.3) and emus or ostriches (SB6.2, SB6.3).

Specialised transports that are self contained and deliver a high standard of livestock welfare are not common, except in the commercial horse transport sector. All mammalian livestock species have a standard that permits a lengthy time off-water if conditions are met for the safe transport of the livestock. Documentation is required for journeys reasonably expected to exceed 24 hours (SA1.2).

Long-distance transport is not defined, but special mention is directed to additional assessments of livestock fitness and transport conditions when extended trips are undertaken (SA1.2, SA5.2, SA5.4, SA5.15). The standards for water provision permit long journeys for some livestock but most trips are far less than these limits. The person in charge (the driver) has a duty of care to assess the fitness of the livestock for the rest of the journey, within the first hour of the journey and then every three hours or at any stop (SA5.12). See the section on spells and rest below.

## **Water**

Water provision is a key determinant for the welfare of livestock — it extends across all persons in charge at various times during the movement process. For many livestock it is impractical to provide water on the vehicle during transport. The species that are often given access to water on a specialised vehicle during long trips includes; alpacas, camels, horses and pigs.

Livestock may be subjected to longer periods of water deprivation during transport than those permitted in normal management situations, where the livestock are capable of tolerating this stress. For certain species there are water provision standards that apply to special categories defined by age, lactation and pregnancy; these include standards in Part B that restrict travel

times, as well as a direct restriction for pregnancy (SA4.1 vi). The maximum permissible times that livestock are without water specified in Part B do not diminish the responsibility of the person in charge to assess livestock as being fit for the intended journey at various times (SA4.3, SA5.2 and SBs) and to provide a spell or access to water as considered appropriate to minimise the risk to the welfare of livestock.

Communication of times when water has been provided is an important management issue at all times, but especially for long-distance transport when records must accompany the livestock for journeys reasonable expected to exceed 24 hours (SA1.2). The responsibility for livestock water management begins with the consignor during preparation for transport.

### **Spells and rest.**

The standards refer to ‘spells’ for livestock. This term includes the notion of rest but also food and water. Livestock can travel for a time period up to the limits specified in the species chapters, and then they must be given a spell with access to water, food and sufficient space to all lie down. This is known as a mandatory spell and it may be performed on a stationary vehicle or off a vehicle. When maximum time off-water is reached, a spell is a mandatory requirement before starting a further journey, as defined by standards for each species. Where animals are unloaded, a spell starts from the time all animals are unloaded and ends when animals are handled for reloading. Water and space to lie down are the critical elements of rest that are provided for in a spell. There are no mandatory spells for water deprivation of less than 12 hours. The relationship between time off water and mandatory spell length is as presented in the table below.

**Table A1. Relationship between maximum permitted time off water and mandatory spell time**

<b>Maximum permitted time off water</b>	<b>Mandatory spell time</b>
Up to 12 hours	nil
12 hours	12 hours
24 hours	12 hours
36 hours	24 hours
48 hours	36 hours

The relationship between maximum permitted time off water and the requirement for a mandatory spell and the use of voluntary spelling in transit, governs how a multi sector journey is undertaken in relation to the welfare requirements for the livestock.

Spelling after journeys of less than 24 hours is generally required only for special categories such as the defined special categories of livestock, based on age, lactation status and pregnancy status for various species. . Emus, ostriches and poultry do not travel longer than 24 hours.

The species that are often given water access and space to lie down on a vehicle during long trips include alpacas, camels, horses and pigs. Space allowance must be made for all young stock travelling with their mothers, so that the animals have space to lie down. All other species are off loaded when a spell is required, which is usually at the end of a journey. Spells are necessary (mandatory) for livestock after they have undertaken long journeys and reached the maximum permitted time off-water.

A spell may occur voluntarily before loading, mid-journey or at the completion of a journey.

During a voluntary spell, water and space to lie down must be provided to all livestock, on a stationary vehicle or off a vehicle. Handling of animals should be kept to a minimum. Where animals are unloaded, a spell starts from the time all animals are unloaded and ends when animals are handled for reloading.

A mid-journey voluntary spell must be a minimum of 4 hours to be recognised for the provision of water and rest. The time used for spells of longer than 4 hours during the journey will not be included in the calculation of the total time off water. A spell less than 4 hours duration is not recommended or recognised for water deprivation time calculation, but can be undertaken as necessary.

Where livestock are spelled for 24 hours with food, any subsequent journey can be considered as a new water deprivation period.

Pre-transport spells are not mandated except for horses (SB8.5) but the consideration arises in the context of managing total time off-water and the fitness of all categories of livestock, particularly the weak, pregnant, recently given birth, lactating or immature (SA5.2iv).

During a driver rest stop, where the vehicle is stationary and animals usually remain on the vehicle, livestock are inspected on the vehicle but it is not recognised as a spell or rest for livestock.

There are no standards for curfews. Curfews are sometimes important for livestock welfare in transport, as indicated in the species guidelines. Time spent in curfew, or on a stationary vehicle when water is not provided, does not count as a spell.

## **Food**

Food provision is a lesser consideration than water for the relatively short times involved in transport. The standards for feeding that are proposed are those for:

- calves (SB4.4, SB4.5), emus and ostriches (SB6.2, SB6.3), and poultry (SB10.2, SB10.3).
- species that can be fed on the vehicle, including alpacas (SB1.2), camels (SB3.2), horses (SB8.2) and pigs (SB9.2).
- ratites (SB6.2, SB6.3), horses (SB8.5) and poultry (SB10.2, SB10.3).

When the maximum permitted time off-water is reached, all livestock must be spelled with access to food, water and space to lie down (SA5.1 and standards from Part B). Other arrangements from livestock welfare codes for saleyards, feedlots and livestock processing establishments also specify the provision of food before or after a journey on a daily basis. There is more discussion on feeding practice in the guidelines.

The issue of bobby calf transport, which is mostly to abattoirs, has received a lot of discussion and has been particularly difficult to write agreed standards for (SB4.5).

## **Planning**

Planning is an integral part of the transport of livestock that occurs in the ordinary course of activities and does not require a standard for livestock welfare. Similarly, vehicle maintenance and contingency matters are more appropriately covered by other processes in the ordinary

course of transport business. The standard for contingency planning (SA1.2) requires details of appropriate emergency contacts to be carried in the vehicle for journeys in excess of 24 hours.

There is a general guideline (GA5.46) that describes how an unexpected substantial delay should be managed for the best livestock welfare outcome possible and as a defence to a charge of cruelty or exceeding the water deprivation times under these standards.

### **Vehicles and facilities**

Vehicles and facilities are covered by the standard SA3.1, which requires construction, maintenance and operation to be conducted in a way that minimises the risk to the welfare of livestock. The non-prescriptive elements relating to containment, airflow, flooring, internal protrusions and vertical clearance are mentioned in the guidelines.

Additional requirements relating to some of these six elements are given in the species chapters for; camels, cattle (calves), emus, horses, ostriches and poultry. Other considerations relating to vehicle management and design considered to be issues of relevance to livestock welfare — such as container or crate cleaning, exhaust gas pollution, limb protrusion, bedding, partitioning, distractions and ramp design — are mentioned in the general and species guidelines.

The issue of height clearance and ‘normal’ or ‘natural’ positions for head carriage has received some discussion and has been addressed specifically in the standards for the taller species being; camels (SB3.5) and horses (SB8.10).

### **Heat and cold stress**

Heat and cold stress are addressed directly by standard SA5.15 and as components of time off-water (SA5.2) and loading density (SA5.4). The actions and arrangements by the driver can include temporary structures or actions to manage hot and cold conditions. Standards that specifically require protection are in place for calves (SB4.4, SB4.5) and chicks (SB6.3, SB10.3). There are also provisions for buffalo (SB2.6) in relation to heat stress. There are guideline provisions that suggest how an extension of time off-water or of journey times under emergency cold conditions for goats (GB7.11) and sheep (GB11.7) should be managed as a defence against prosecution.

### **Young livestock**

Bobby calves and poultry chicks are the only category of young livestock that are transported in large numbers without the protection of their mothers. Additional standards are in place for feeding of calves (SB4.4, SB4.5), poultry chicks (SB 10.3) and also ratite chicks (SB6.3) and foals (SB8.7).

### **Loading density**

The standard (SA5.4) for loading density is a non-prescriptive standard directed to the management of the number of animals that can be loaded for a journey. Material from existing model codes is contained in the guidelines of the species chapters. The difficulty of defining all the factors affecting loading density makes it difficult to construct a meaningful standard without multiple exemptions or variations. Loading rates may be raised or lowered in relation to the elements described in SA5.4. In general terms, overloading can be a more significant risk factor to livestock welfare than under loading, depending on journey length and conditions. The final decision on the loading density rests with the driver under SA5.4, except for poultry, where the decisions are made by the pick-up crew that loads the crates.



The standard for segregation or penning of livestock (SA5.4) is also non-prescriptive, to enable decisions to be made on an individual transport consignment basis. For example, livestock observed to be behaving aggressively must be segregated, or smaller livestock may be segregated from larger livestock. However, this may not be necessary for each journey, and will depend on the species, age, class and condition of livestock to be transported.

### **Electric prodders**

Electric prodders are restricted by SA5.8, which prohibits use on genital, anal or facial areas; on livestock under 3 months old; on livestock that are clearly unable to move away, or excessively on an animal. In the species chapters in Part B, the use of prodders is prohibited on alpacas, horses, pigs, poultry and ratites; consistent with current industry practice. Prodder use is not really a relevant issue for emus, ostriches and poultry. Use on buffalo, camels and deer is an option of last resort.

### **Dogs**

Dog use on livestock is considered in the context of mustering from home ranges and in livestock handling facilities. Dogs must be under control at all times during loading, transport and unloading of livestock, and must not be transported in the same pen as livestock (SA5.9). Dogs must not be used on alpacas, buffalo, camels and horses in livestock handling facilities. Dog that habitually bite deer, goats, pigs, poultry sheep, and ratites are not permitted by industry and must be muzzled or not used. The requirement to be ‘under control at all times’ is thought to achieve a positive result for dogs and livestock without the mandate for a muzzling requirement at all times.

### **Humane destruction**

Humane destruction in the context of transport is an emergency procedure that is not performed routinely for the great majority of journeys. The standards in Chapter Six detail the important requirements that must be met when humane destruction is necessary. However, it is an important issue that must be carried out effectively when required. It is recognised that not all persons will have the expertise or equipment for humane destruction. The standard (SA6.2) requires that a person is competent to conduct humane destruction or seeks the assistance of a competent person at the first available opportunity. Each species chapter has recommended methods for humane destruction for that species.

Humane destruction methods for newborn stock are relevant for unexpected births during transport that cannot be cared for adequately. Secondary techniques such as bleeding out are recommend to ensure death in stunned animals.

### **Firearms**

Despite restrictions, firearms are the best everyday option for humane destruction of large livestock in rural areas, with captive bolts being a suitable option where livestock can be handled closely. Many factors govern firearms safety and use. Shooting will generally be at close ranges and the only permitted target organ is the brain. There is a large choice of firearm calibres and ammunition, and it is not intended to mandate any particular combination, but a minimum recommendation is made in the guidelines.

**Appendix 2 - Summary of proposed material changes to relevant existing model codes of practice**  
(based upon the draft standards dated 22 September 2008)

Proposed Std. No.	Subject matter	Existing model codes of practice	Incremental cost impacts	Reasons for change
	<b>Responsibilities and planning</b>			
SA1.1	Responsibilities for livestock welfare at each stage of journey to be exercised	Road p.3,4, <sup>167</sup> Rail p.2, 4, <sup>168</sup> Cattle 2.2, Horses 2.2, Pigs 2.2, Poultry 1. New for other species.	<b>Nil</b> for cattle, horses, pigs and poultry. <b>Minimal</b> cost impact for other species – standard simply clarifies responsibilities	Requested by reference group members, especially ALTA and AWWG to better define where responsibilities for livestock welfare exist.
SA1.2	For journeys > 24 hours there must be a document that includes times without water, inspection times, other relevant information, and emergency contacts accompanying the livestock. Person transferring responsibility for livestock must communicate relevant information to the next person in charge	Cattle 9.2, 9.5, Horses 10, Pigs 9. New for other species. Poultry N/A.	Information already included in other documents such as waybills. <b>Minimal</b> additional costs recording times = <5 minutes. <b>Minor cost</b> of ticking boxes in the redesigned document. <b>Negligible</b> incremental cost to redesign document as they are reprinted from time to time anyway.	Requested by reference group members, especially, AWWG and RSPCA to protect livestock welfare on longer journeys. by ensuring that critical information for the management of livestock welfare is known and drivers possess the contact details for those who could assist with a contingency response.
	<b>Stock handling competency</b>			
SA2.1	All persons involved with livestock to be competent or supervised by a competent person	Cattle 1.4, Horses 2.7.2, 2.8.2, Pigs 2.7.2, Poultry 1.1.1, Road p.2, 7. Rail p.2, 8, 9.	Existing codes require ‘experienced stock handlers’. Possibly some <b>minor</b> training costs. Every state except NSW and NT require such training as part of B-double licence. Induction courses are 3 hours to 2 days, of which about 1/3 is livestock handling. <b>Nil</b> for QRail.	Requested by reference group members to generally specify that animal handlers must be competent and to ensure a basic level of competency in carrying out required tasks.

<sup>167</sup> Sub-Committee on Animal Welfare (1983) *Model Code of Practice for the Welfare of Animals 3. Road transport of Livestock*. Australian Bureau of Animal Health.

<sup>168</sup> Sub-Committee on Animal Welfare (1983) *Model Code of Practice for the Welfare of Animals 4. Rail transport of Livestock*. Australian Bureau of Animal Health.

Proposed Std. No.	Subject matter	Existing model codes of practice	Incremental cost impacts	Reasons for change
	<b>Transport vehicles and facilities</b>			
SA3.1	Vehicles and facilities constructed, maintained and operated to minimise risks.	Cattle 6.3, 7.1, 7.2.2, Horses 6.7.11, 7.2.1, 7.4.1, Pigs 5.4.6, 6.1.8, 6.2, Poultry 4.2, 5.2. Road p5, 6, Rail p.5, 7.	Nil – consistent with existing codes on the basis of current interpretation of MCOP.	N/A
	<b>Pre-transport preparation</b>			
SA4.1	Livestock to be assessed as fit for intended journey at every loading.	Cattle 2.5, 5.6.1, Horses 2.5, 5.6, Pigs 2.5, Road 2, Rail 2.	<b>Nil</b> – consistent with existing codes. Inclusion of criteria clarifies meaning of ‘unfit’ but does not impose additional costs on the basis of current interpretation of MCOP. <b>Minor</b> training cost possibly. Either part of induction training or another short course to recognise disease conditions.	Requested by reference group members. The standard is more detailed than most MCOP and excludes specific conditions of livestock that will cause further risk to welfare during transport. Necessary in the expert opinion of AWWG.
SA4.2	Unfit animals transported only on specific vet advice.	Cattle 5.4.6, Horses 5.4, Pigs 4.4, new sheep and other species.	Vet advice mandatory (cattle code allows experienced personnel if vet unavailable) = some <b>minor</b> incremental veterinary costs for cattle, sheep and other species (av. \$100 per consultation plus \$1.14/km travel 40km average) but not horses or pigs, or valuable animals. <sup>169</sup> Humane destruction is an alternative, but means loss of carcass.	Requested by reference group members to help define the ‘fit for the intended journey’ issue and appropriate actions for the welfare of livestock. Necessary in the expert opinion of AWWG.
SA4.3	Consigner to provide only animals that are fit to load	Cattle 5.6.1, Horses 2.5, 5.6, Pigs 2.5, Road 2, Rail 2.	<b>Nil</b> – consistent with existing codes. Clarifies responsibilities for SA4.1	N/A
SA4.4	Where livestock are unfit to load, person in charge must arrange for care, treatment or humane destruction.	New standard related to Road 2, Rail 2, Cattle 5.7.2, Horses 5.7, Pigs 4.5	<b>Nil</b> – clarifies responsibilities.	Requested by reference group members to clarify responsibilities.
	<b>Loading, transport and</b>			

<sup>169</sup> For valuable animals, vet advice would be obtained anyway.

Proposed Std. No.	Subject matter	Existing model codes of practice	Incremental cost impacts	Reasons for change
	<b>unloading</b>			
SA5.1	Water, food and rest to be provided if water deprivation times reached (mandatory spell).	See water deprivation standards for individual species chapters below.	Clarifies responsibilities for water deprivation standards for individual species. Plus cost of food and any delay in slaughter.	Requested by reference group members to alert to responsibilities in managing total time off water, food and rest after maximum water deprivation times reached. Necessary in the expert opinion of AWWG.
SA5.2	Time off water to be managed to minimise risks.	New standard related to Cattle 9.1.1 and 9.2.5.	<b>Nil</b> - a general standard which underpins the more prescriptive species water deprivation standards, and is consistent with some existing codes.	Requested by reference group members as a general standard that identifies management of time off water as a key aspect of livestock welfare. Detailed water deprivation limits are further defined in the species chapters. Necessary in the expert opinion of AWWG.
SA5.3	Livestock access to water or spelling facility after 24 hours	Cattle 9.5.4. Road p.8	<b>Nil</b> – consistent with existing codes.	N/A
SA5.4	Loading density to be managed to minimise risks	New standard related to Cattle 8.5 and 8.6, Pigs 7.3..	<b>Nil</b> – a general standard which underpins the need to manage loading density for the welfare of livestock.	Requested by reference group members as a general standard that defines the key factors that impact upon the welfare considerations of livestock for loading density..
SA5.5	Drivers (except trains and poultry) to have final decision on loading density	New standard	<b>Nil</b> – clarifies responsibilities.	Requested by reference group members to clarify responsibilities.
SA5.6	Segregation of livestock to minimise risks.	Road p.5,7,. Rail App. 3. Horses 6.9, Pigs 5.6, 7.2, Partial new standard for cattle.	<b>Nil</b> – consistent with existing codes. Possibly some cost savings, because not all species and classes will need to be segregated.	Requested by reference group members as a general standard that defines the key factors that impact upon the welfare considerations of livestock that

Proposed Std. No.	Subject matter	Existing model codes of practice	Incremental cost impacts	Reasons for change
				may need to be segregated.
SA5.7	Handling appropriate to species and without pain or injury. Specifically: - no lifting by head, ears, horns, neck, tail, wool or by single leg. - no throwing or dropping animals. - no punching, kicking or striking with instruments	Road p.7. Rail p.8	Already unlawful under cruelty legislation = <b>nil</b> extra cost	Requested by reference group members as a prescriptive standard that defines the unacceptable ways of handling livestock.
SA5.8	Restrictions on use of electric prodders on sensitive animal parts, under 3 months old, unable to move, or excessively on an animal.	Cattle 6.6.1, Pigs 5.7.2. New standard re; livestock under 3 months of age. <sup>170</sup>	Likely to be already unlawful under cruelty legislation = <b>nil</b> extra cost. No cost re; livestock under 3 months of age because prodders are ineffective.	Requested by reference group members as a prescriptive standard that defines the acceptable use of electric stock prodders.
SA5.9	Dogs must be under control at all times and must not travel in same pen as livestock. Dogs that habitually bite to be muzzled.	Road p.8, Cattle 6.6.5. New standard for some species.	Negligible – consistent with some existing codes. Habitual biters already muzzled, or not used.	Requested by reference group members to prevent inappropriate dog worry and biting. Necessary in the expert opinion of AWWG.
SA5.10	Alignment of ramp and vehicle	Cattle 6.3.7, Horses 6.7.11, Pigs 5.4.6, Road p.6. Rail p.7. N/A poultry	<b>Nil</b> – consistent with existing codes.	N/A.
SA5.11	Inspection of facilities by driver: - prior to loading - of receival yard before unloading	Horses 8.1, Pigs 5.3.1. Otherwise new standard.	<b>Minimal cost</b> of inspections by driver, and notification of arrival out of hours. .	Requested by reference group members to avoid mishaps to livestock arising from gates left open, obstructions, or insufficient space.
SA5.12	Inspection of animals (except poultry) by driver: - before departing - within first hour and every 3	Road p.8 Rail p.8 Cattle 9.6, Horses 9.4, Pigs 8.4	<b>Nil</b> – consistent with existing codes.	N/A.

<sup>170</sup> Young animals have generally not yet learnt how to avoid pain.

Proposed Std. No.	Subject matter	Existing model codes of practice	Incremental cost impacts	Reasons for change
	hours or rest stop - on unloading			
SA5.13	Driver to provide assistance to injured or distressed animals at first opportunity.	Road p.8. Rail p. 9. Cattle 9.1.4, Horses 9.1.3, Pigs 8.1.4, Poultry 5.3.2	Nil – consistent with existing codes.	N/A.
SA5.14	Person receiving the livestock to arrange treatment or destruction of weak, ill or injured animals and disposal of dead stock.	Road p.8. Rail p. 9. Cattle 10.7, Horses 9.1.3, Pigs 8.1.4, Poultry 5.3.2	Nil – consistent with existing codes.	N/A
SA5.15	Driver to take action during extreme hot or cold conditions to minimise the risk to the welfare of livestock.	Pigs 4.1.2, 4.1.3, 4.3.1, 7.4, 8.1.2, 8.2.1 New standard for others, but not applicable to cattle. (TruckCare not equivalent status to a model code).	Minor cost of driver installing or removing tarps or altering travel and rest times.	Requested by reference group members to ensure at risk livestock are appropriately protected by the driver during extreme hot or cold weather.
	<b>Humane destruction</b>			
SA6.1	Humane destruction to result in immediate loss of consciousness then death.	Road p.19, Rail p.20	Nil – consistent with existing codes.	N/A
SA6.2	Humane destruction by competent person using approved method at first opportunity	Cattle 11.2, Horses 12, Pigs 11, Poultry 7, Sheep 10 <sup>171</sup> , Road p.19, Rail p.20.	Nil – consistent with existing codes.	N/A
SA6.3	When competent person not available, must be contacted a.s.a.p.	Pigs 12. New standard for other species.	Very minor cost of contact and engaging competent person .	Requested by reference group members. Competency in humane destruction is not absolutely required by all persons in charge but where performed, the person must be competent or seek

<sup>171</sup> Primary Industries Ministerial Council (2006) *Model code of practice for the welfare of animals: the sheep*. 2<sup>nd</sup> ed. CSIRO Publishing, Collingwood. (The model code of practice for the land transport of sheep is still a draft).

Proposed Std. No.	Subject matter	Existing model codes of practice	Incremental cost impacts	Reasons for change
				assistance.
SA6.4	Reasonable action required to confirm death	Pigs 11.2. New standard for cattle, horses, sheep and other species. Not relevant to poultry.	<b>Minor</b> training cost. (Rarely necessary on road). Either part of induction training or another short course.	Requested by reference group members to ensure that people check their work to ensure success in humane destruction.
SA6.5	Firearm use to be in frontal or poll position, except for cattle and pigs.	Road Appendix 4. Cattle 11, Pigs 11.	<b>Nil</b> – consistent with existing codes. (Rarely necessary).	Requested by reference group members.
SA6.6	Captive bolt stunning to be followed by effective killing method	Road p.20, Rail p. 21 Pigs 11.7	<b>Nil</b> – consistent with existing codes. (Rarely necessary).	Requested by reference group members to ensure that a secondary procedure is carried out to ensure death after use of the captive bolt.
SA6.7	Blunt trauma to head to be used only on newborns <24 hours old or piglets <15kg followed by effective killing method	New standard	<b>Minor</b> training cost. (Rarely necessary on road). Either part of induction training or another short course.	Requested by reference group members to limit the practice to that category of livestock where it can be carried out effectively based on expert opinion..
SA6.8	Bleeding out (deer, sheep and goats only)	Road Appendix 4, new standard for deer.	<b>Nil</b> – consistent with existing codes. (Rarely necessary).	Requested by reference group members to ensure competence in the use of this procedure.
<b>B1</b>	<b>Specific Standards -Alpacas<sup>172</sup></b>			
SB1.1.	Water deprivation times	Road p.9. Rail p.10 (refer to Appendix 3 of RIS)	<b>Minor costs</b> in going from 24 hours to shorter hours for pregnant, lactating and crias. <sup>173</sup> However, current industry practice is that water is provided on vehicle for most journeys, avoiding the need for spells. Net costs likely to be minimal.	Standards did not exist other than the 1983 MCOP Road Transport of Livestock and these standards are required in line with other species. The limits proposed have come from expert industry knowledge of the Australian

<sup>172</sup> Alpacas are mainly transported farm to farm or to shows.

<sup>173</sup> Crias = camelids less than one year old.

Proposed Std. No.	Subject matter	Existing model codes of practice	Incremental cost impacts	Reasons for change
				Alpaca Association.
SB1.2	Extensions of water deprivation times (72 hours journey time) if conditions are met.	New standard	<b>Minor cost savings</b>	Requested by Australian Alpaca Association based on successful industry practice
SB1.3	Spell periods	New standard <sup>174</sup>	<b>Minor</b> transport costs	Standards did not exist other than the 1983 MCOP Road Transport of Livestock and in the opinion of AHA these standards are required in line with other species. Spells are not required for journeys causing water deprivation of less than 12 hours.
SB1.4	Transported in last month of pregnancy only on vet advice unless journey is less than 4 hours duration.	New standard	<b>Minor costs</b> of obtaining vet advice.	Necessary in the opinion of AHA, in line with other species with long gestations to prevent stress induced problems. Complements SA4.1 vi).
SB1.5	Protection of newly shorn alpacas in cold conditions	New standard	<b>Very minor unquantifiable cost.</b>	Requested in public comments.
SB1.6	Electric prodders not to be used.	New standard	<b>Nil</b> – assume prodders are not used.	Requested by reference group members to ensure that prodders are not used on alpacas.
SB1.7	Dogs not to be used to move alpacas	New standard	<b>Nil</b> – assume dogs are not used.	Requested by reference group members to ensure that dogs are not used on alpacas.
<b>B2</b>	<b>Specific Standards -Buffalo</b>			
SB2.1	Water deprivation times	1983 MCOP Road Transport of Livestock Road p.9. Rail p.10 for adults. (refer to Appendix 3 of RIS)	<b>Minor transport costs</b> in going from 48 hours to 36 hours for adults.	These standards are required in line with other species and the particular needs of buffalo which are regarded as similar to but

<sup>174</sup> Road and rail standards do not apply to spell periods because alpacas are not ruminants.



Proposed Std. No.	Subject matter	Existing model codes of practice	Incremental cost impacts	Reasons for change
				greater than cattle.
SB2.2	Spell periods	Road p.9. Rail p.10	<b>Minor transport costs</b> in going from 12 hours to 24 hours spell for adults.	Standards did not exist other than the 1983 MCOP Road Transport of Livestock and these standards are required in line with other species.
SB2.3	Transported in last 4 weeks of pregnancy only on vet advice unless journey is less than 4 hours.	New standard	<b>Minor costs</b> of obtaining vet advice.	Standards did not exist other than the 1983 MCOP Road Transport of Livestock and these standards are required in line with other species in the opinion of AHA for the last month of pregnancy.
SB2.4	Electric prodders only to be used after other actions have failed.	New standard	<b>Minimal unquantifiable cost</b> of possible increase in loading times.	Requested by reference group members to ensure that prodders are not used unnecessarily.
SB2.5	Dogs not to be used to move buffalo	New standard	<b>Nil</b> – assume dogs are not used	Derived from 2003 MCOP Farmed Buffalo.
SB2.6	Heat stress	New standard	<b>Minimal</b> costs of water spray at first opportunity	Derived from MCOP. Necessary in the opinion of AHA and industry.
<b>B3</b>	<b>Specific Standards -Camels</b>			
SB3.1	Water deprivation times – 24 hours	Camel <sup>175</sup> 10.2 (refer to Appendix 3 of RIS)	<b>Nil</b> – consistent with existing code.	Standards did not exist other than the 1983 MCOP Road Transport of Livestock and these standards are required in line with other species. 2006 Camel MCOP suggests 24 hours.
SB3.2	Extensions of water deprivation times if conditions are met.	Camel <sup>176</sup> 10.2	<b>Nil</b> – consistent with existing code.	N/A

<sup>175</sup> Primary Industries Ministerial Council (2003) *Model code of practice for the welfare of animals: The camel*. CSIRO Publishing, Collingwood.

<sup>176</sup> Primary Industries Ministerial Council (2003) *Model code of practice for the welfare of animals: The camel*. CSIRO Publishing, Collingwood.

Proposed Std. No.	Subject matter	Existing model codes of practice	Incremental cost impacts	Reasons for change
SB3.3	Spell periods	New standard <sup>177</sup>	<b>Minor</b> transport costs in spelling camels for 12 hours after 24 hours off water.	Standards did not exist other than the 1983 MCOP Road Transport of Livestock and these standards are required in line with other species in the expert opinion of AWWG.
SB3.4	Transported in last 4 weeks of pregnancy only on vet advice unless journey is less than 4 hours..	New standard	<b>Minor costs</b> of obtaining vet advice.	Standards did not exist other than the 1983 MCOP Road Transport of Livestock and these standards are required in line with other species in the expert opinion of AWWG..
SB3.5	100mm clearance above hump	Camel 10.1	<b>Nil</b> – consistent with existing codes (150mm clearance above head). <sup>178</sup>	Requested by camel industry members to define appropriate vertical clearance.
SB3.6	Electric prodders only to be used after other actions have failed.	New standard	<b>Minimal unquantifiable cost</b> of possible increase in loading times.	Requested by reference group members to ensure that prodders are not used unnecessarily.
SB3.7	Dogs not to be used to move camels	New standard	<b>Nil</b> – assume dogs are not used	Requested by camel industry members to prevent use of dogs on camels.
<b>B4</b>	<b>Specific Standards –Cattle</b>			
SB4.1	Water deprivation times. Notion of ‘normal’ and ‘extended’ times removed.	2002 MCOP Land Transport of Cattle 9.3 (refer to Appendix 3 of RIS)	<b>Minor</b> costs savings in: <ul style="list-style-type: none"> <li>- Pregnant cattle in 3<sup>rd</sup> trimester going from 8 hours to 24 hours. Relates mostly to months 6 and 7 of pregnancy. For month 8 excluding last 4 weeks. See SB4.3 and SA4.1 where the higher standards apply.</li> <li>- Gestation = 285 days</li> <li>- Trimester = 95 days<sup>179</sup></li> </ul>	Requested by reference group members to align with established production practices.

<sup>177</sup> Road and rail standards do not apply to spell periods because camels are not ruminants.

<sup>178</sup> On the understanding that for camels, the head is the same height as, or lower than the hump.

Proposed Std. No.	Subject matter	Existing model codes of practice	Incremental cost impacts	Reasons for change
SB4.2	Spell periods	2002 MCOP Land Transport of Cattle 9.5	<b>Nil</b> – consistent with existing code.	N/A
SB4.3	Transported if known to be in last 4 weeks of pregnancy only on vet advice, unless journey is less than 4 hours.	New standard derived from 2002 MCOP Land Transport of cattle 9.3. and 5.4.1	<b>Minor costs</b> of obtaining vet advice. (Note: could be a net benefit if transport is allowed beyond 8 hours duration). At same standard level of requirement as for SA4.1 for last 4 weeks of pregnancy.	Requested by reference group members to permit reasonable flexibility in the transport of cattle in advanced pregnancy. Standard in line with other species and being necessary in the expert opinion of AWWG. Aligns with SA4.1 for last 2 weeks of pregnancy.
SB4.4	Bobby calves less than 5 days old travelling without mothers can only be transported to a calf rearing facility and then only under specified conditions.	New standard for cattle	<b>Minor costs</b> – partially already required by NVDs. (These are usually short trips to another property).	Requested by reference group members to permit this type of calf transport. Sufficient for the welfare of calves less than 5 days old in the expert opinion of AWWG.
SB4.5	Calves 5-30 days old travelling without mothers must meet specified conditions.	2002 MCOP Land Transport of Cattle 5.4.5	<b>Minimal cost savings</b> by going from 10 hours to 18 hours, as very few calves would travel so far unless for slaughter and this will not significantly decrease processing establishment choice or returns. NVD for calves will require revision. <b>Negligible cost</b> of recording time since last feed.	Requested by reference group members to better regulate this type of calf transport. Derived from Land Transport Cattle MCOP as a simplification. Some previous provisions not required in the expert opinion of AWWG and other members..
SB4.6	Calves <30days not to be consigned across Bass Strait	New national standard, but consistent with relevant state standards	<b>Nil</b> – consistent with relevant existing state standards.	N/A.

<sup>179</sup> 35/95 % of last trimester covered by this old MCOP standard (8 months pregnant – 8 hours). Therefore WDT has reduced from 48-24 for 60/95% and decreased from 8 to 4 + vet advice for 30/95% - in SB4.3.

Proposed Std. No.	Subject matter	Existing model codes of practice	Incremental cost impacts	Reasons for change
SB4.7	Calves born earlier than normal must be at an equivalent stage of fitness.	New standard	<b>Minor unquantifiable cost</b> of not being able to transport calves with others i.e. cost of additional feeding or humane destruction on farm.	Response to public comments.
SB4.8	Bobby calves to have space to lie down on sternum.	New standard	<b>Minor cost</b> of additional space on transport.	Response to public comments.
SB4.9	Dogs not to be used to move bobby calves.	New standard	<b>Minimal unquantifiable cost</b> of possible increase in loading times.	Requested by reference group members
<b>B5</b>	<b>Specific Standards - Deer</b>			
SB5.1	Water deprivation times	1983 MCOP Road p.9. Rail p.10 (refer to Appendix 3 of RIS)	<b>Minor cost savings</b> in going from 24 hours to 28 hours for fawns.	Requested by industry members. Partially derived from Road Transport of Livestock MCOP and other sources. Standards did not exist and are required.
SB5.2	Spell periods	Road p.9. Rail p.10	Minor costs in spelling adults for .36 hours instead of 24 hours after 48 hours off water.	Requested by industry members. Partially derived from Road Transport of Livestock MCOP and other sources. Standards did not exist and are required in the expert opinion of AWWG.
SB5.3	Transported in last 4 weeks of pregnancy only on vet advice unless the journey is less than 4 hours	New standard	<b>Minor costs</b> of obtaining vet advice.	Requested by reference group members to permit reasonable flexibility in the transport of deer in advanced pregnancy. Standard in line with other species.
SB5.4	Electric prodders only to be used after other actions have failed.	New standard	<b>Minimal unquantifiable cost</b> of possible increase in loading times.	Requested by reference group members to ensure that prodders are not used unnecessarily.
SB5.5	Deer with antlers in velvet >4cm not to be transported	New standard	<b>Nil</b> - consistent with industry practice	Response to public comments.
SB5.6	Deer with hard antlers >4cm not transported unless segregated.	New standard	<b>Nil</b> - consistent with industry practice	Response to public comments.
<b>B6</b>	<b>Specific Standards – Ratites</b>			

Proposed Std. No.	Subject matter	Existing model codes of practice	Incremental cost impacts	Reasons for change
SB6.1	Water deprivation times	1983 MCOP Road p.9, Rail p.10 (refer to Appendix 3 of RIS)	Nil – consistent with existing codes	N/A
SB6.2	Provision of food	Road p.4, Rail p.4	Nil – consistent with existing codes	N/A
SB6.3	Young birds must be fed every 12 hours	New standard	<b>Minimal</b> unquantifiable costs	Requested by industry members. Partially derived from Land Transport of Poultry MCOP and other sources. Standards did not exist and are required in the expert opinion of AWWG..
SB6.4	Birds not held in containers >12 hours unless fed, watered and sheltered.	1983 MCOP Road p.9, Rail p.10	Nil – consistent with existing codes	N/A
SB6.5	Spell periods	New standard <sup>180</sup>	<b>Minor</b> transport costs (but not in practice since spells are rarely necessary).	Requested by industry members. Partially derived from Land Transport of Poultry MCOP and other sources. Standards did not exist and are required to be consistent with other species in the expert opinion of AWWG..
SB6.6	Positioning and handling of containers	New standard	<b>Minimal</b> unquantifiable costs	Requested by industry members. Partially derived from Land Transport of Poultry MCOP and other sources. Standards did not exist and are required in the expert opinion of AWWG..
SB6.7	Legs not tied together.	New standard	<b>Minimal cost</b> – not a common practice according to industry.	Requested by industry members. Partially derived from Land Transport of Poultry MCOP and other sources. Standards did not exist and are required, consistent

<sup>180</sup> The road and rail codes do not apply to spell periods because ratites are not ruminants

Proposed Std. No.	Subject matter	Existing model codes of practice	Incremental cost impacts	Reasons for change
				with poultry, in the expert opinion of AWWG.
SB6.8	Electric prodders not to be used.	New standard	<b>Minimal unquantifiable cost</b> of possible increase in loading times.	Requested by reference group members.
<b>B7</b>	<b>Specific Standards –Goats</b>			
SB7.1	Water deprivation times	1983 MCOP Road p.9. Rail p.10 (refer to Appendix 3 of RIS)	<b>Minor transport savings</b> in going from 24 hours to 28 hours for kids and from 8 hours to 24 hours beyond 14 weeks pregnant (3 <sup>rd</sup> trimester), excluding last 2 weeks of pregnancy. Gestation = 150 days Trimester = 50 days-.	Requested by industry members. Partially derived from Road Transport of Livestock MCOP and other sources. Standards did not exist and are required. Not detrimental to welfare in the expert opinion of AWWG.
SB7.2	Spell periods	Road p.9 Rail p.10	Minor costs in spelling adults for .36 hours instead of 24 hours after 48 hours off water.	Requested by industry members. Partially derived from Road Transport of Livestock MCOP and other sources. Standards did not exist and are required to be consistent with other species.
<b>B8</b>	<b>Specific Standards - Horses</b>			
SB8.1	Water deprivation times	2003 Land Transport of Horses 9.3.1 (refer to Appendix 3 of RIS)	<b>Minor transport savings</b> in going from 8 to 12 hours for lactating mares and foals <6months and <b>minor costs</b> of going from 36 hours to 24 hours for adults and to 12 hours for mares more than 7.5 months pregnant except last 4 weeks.	Partially derived from Land Transport of Horses MCOP. Standards did not exist and are required to be consistent with other species Not detrimental to welfare in the expert opinion of AWWG.
SB8.2	Extensions of journeys times to 36 hours if conditions are met.	Horses 10.5	Minor cost in 24 hour spell instead of 12 hours after 36 hours travel. <sup>181</sup>	Requested by equine group members based on successful industry practice and based on existing MCOP 10.5 .

<sup>181</sup> Horses are able to be fed and watered relatively easily on vehicles.

Proposed Std. No.	Subject matter	Existing model codes of practice	Incremental cost impacts	Reasons for change
SB8.3	Spell periods	Horses 10.5	<b>Nil</b> – consistent with existing code (refer to standard SB8.1).	N/A
SB8.4	Transported in last 4 weeks of pregnancy only on vet advice, unless the journey is less than 4 hours.	New standard, previous Land Transport of Horses MCOP limited journeys to 8 hours if over 10 months pregnant.	<b>Minor costs</b> of obtaining vet advice.	Requested by reference group members to permit reasonable flexibility in the transport of horses in advanced pregnancy. Standard in line with other species.
SB8.5	Food, water and space to lie down after 12 hours kept in yards before loading.	Horses 8.4 (foals) New standard for adults	<b>Minor food and labour costs.</b>	Requested by reference group members to protect horse welfare before long journeys.
SB8.6	Foals to have space for suckling and lying down after 5 hours	New standard developed from Horses 8.4	<b>Nil</b> – consistent with existing code.	N/A
SB8.7	Moderate to severely lame horses not transported without vet advice.	Horses 2.7.1	<b>Nil</b> – consistent with existing code. Owner has choice of obtaining vet advice or not loading.	N/A
SB8.8	Easy access to each horse and non-slip flooring	New standard for access. Horses 7.1.7	Possible <b>minor</b> opportunity costs in fewer horses carried per truck. Flooring consistent with existing code.	Requested equine group members based on successful industry practice.
SB8.9	Airflow in fully enclosed vehicles	Horses 7.4	<b>Nil</b> – consistent with existing code.	N/A
SB8.10	Minimum clearance 2.2m between decks.	Horses 7.6	<b>Minor transport cost.</b> Existing code specifies 150mm clearance from withers. 2.2m between decks is new and in effect means a ban on double-deck trucks for horses.	Requested by AWWG and equine group members to avoid injury issues seen with double deck transport.
SB8.11	Unbroken stallion to be segregated	New standard relates to Horses 6.9.1	<b>Minor transport cost</b> in segregating unbroken stallions.	Requested by reference group members (ALTA, AWWG, QR) to avoid injury issues based on experience.
SB8.12	Electric prodders not to be used.	New standard (see Horses 6.10.3)	<b>Nil</b> - assume electric prodders not required to be used on horses	Requested by reference group members. MCOP permits.
SB8.13	Dogs not to be used to move horses in livestock handling	Horses 6.10.3	<b>Nil</b> – consistent with existing code.	Derived from MCOP

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Proposed Std. No.	Subject matter	Existing model codes of practice	Incremental cost impacts	Reasons for change
	facilities.			
SB8.14	Horses travelling across Bass Strait to be individually stalled, except mares with foals	New standard.	Unquantifiable costs of additional space	Requested by reference group members.
<b>B9</b>	<b>Specific Standards - Pigs</b>			
SB9.1	Water deprivation times	2003 Land Transport of Pigs 8.3, Pigs 9.6 (refer to Appendix 3 of RIS)	Lower time for lactating sows and weaners (24 hours to 12 hours) = <b>minor</b> transport costs.	Partially derived from Land Transport of Pigs MCOP. Standards did not exist and are required to be consistent with other species. Necessary in the expert opinion of AWWG.
SB9.2	Conditions when travelling up to 72 hours	Pigs 7.2, 8.3	Minor cost savings in going from 24 hours to 72 hours.	Response to public comments.
SB9.3	Spell periods	Pigs 9.3	<b>Nil</b> – consistent with existing code.	N/A
SB9.4	Electric prodders not to be used	New standard related to Pigs 5.7.2	<b>Minimal unquantifiable cost</b> of possible increase in loading times.	Necessary in the expert opinion of AWWG.
<b>B10</b>	<b>Specific Standards - poultry</b>			
SB10.1	Water deprivation times – poultry, including chicks	2006 Land Transport of Poultry 3.2.1. New standard for chicks (refer to Appendix 3)	<b>Nil</b> – consistent with existing code.	N/A
SB10.2	Access to food prior to assembly - poultry	Poultry 3.2.2	Minor cost in changing from 24 hours to 12 hours prior to assembly	Derived from Land Transport of Poultry MCOP.
SB10.3	No holding (excluding chicks) in containers >24 hours unless conditions met.	Poultry 3.2.1.	<b>Nil</b> – consistent with existing code.	N/A
SB10.4	No dropping or throwing containers. Positioning and handling of containers	Poultry 4.1, 4.3, 4.5.7	<b>Nil</b> – consistent with existing code.	N/A
SB10.5	No transport if broken legs or can't walk	New standard	<b>Nil</b> - not a common practice.	Consistent with general standards for fitness. Requested by reference group members
SB10.6	Approved methods of lifting	Poultry 4.3.4, 4.5.1. Partial new	<b>Nil</b> – assume consistent with existing code and current	Requested by AECL and ACMF.



Proposed Std. No.	Subject matter	Existing model codes of practice	Incremental cost impacts	Reasons for change
	poultry	standard for turkeys, chicken breeder birds and ducks.	practice	
SB10.7	Legs not tied together	Poultry 3.6.1	Nil - consistent with existing code.	N/A
SB10.8	Transporter to minimise risk to welfare of chicks from chilling and overheating.	Poultry	Nil – consistent with existing code.	Response to public comments.
<b>B11</b>	<b>Specific Standards - Sheep</b>			
SB11.1	Water deprivation times	1983 MCOP Road p.9 Rail p.10 (refer to Appendix 3 of RIS)	<b>Minor transport savings</b> in going from 24 hours to 28 hours for lambs and <b>minor costs</b> in going from 48 hours to 24 hours for pregnant ewes more than 14 weeks pregnant (3 <sup>rd</sup> trimester), excluding last 2 weeks of pregnancy. Gestation = 150 days Trimester = 50 days)-	Requested by industry members. Partially derived from Road Transport of Livestock MCOP and other sources including the draft Land Transport of Sheep MCOP. Standards are required to be consistent with other species. Necessary in the expert opinion of AWWG.
SB11.2	Spell periods	Road p.9 Rail p.10 (refer to Appendix 3 of RIS)	Minor costs in spelling adults for 36 hours instead of 24 hours after 48 hours off water.	Requested by industry members. Partially derived from Road Transport of Livestock MCOP and other sources including the draft Land Transport of Sheep MCOP. Standards are required to be consistent with other species.

**Appendix 3 – Comparison of proposed standards for water deprivation times and spell periods with base case**

Proposed Std. No.	Subject matter	Existing model codes of practice	Class of animal	Base case	Proposed standard
<b>B1</b>	<b>Specific Standards -Alpacas<sup>182</sup></b>				
SB1.1.	Water deprivation times	1983 MCOP. Road p.9. Rail p.10. There are no other relevant codes. Alpacas are not ruminants.	Wethers over 12 months old	Max 24 hours	Max 24 hours
		Road p.9. Rail p.10	Nonpregnant females and males over 12 months old	Max 24 hours	Max 24 hours
		Road p.9. Rail p.10	Alpacas 6 to 12 months old	Max 24 hours	Max 8 hours
		Road p.9. Rail p.10	Pregnant females up to 7.5 months pregnant (1st and 2nd trimester)	Max 24 hours	Max 8 hours
		Road p.9. Rail p.10	Pregnant Alpacas more than 7.5 months pregnant (3rd trimester) excluding last 4 weeks.	Max 24 hours	Max 4 hours
		Road p.9. Rail p.10	Lactating alpacas with crias up to 6 months old	Max 24 hours	Max 4 hours
		Road p.9. Rail p.10	Crias up to 6 months old	Max 24 hours	Max 2 hours
SB1.3	Spell periods	New standard <sup>183</sup>	Wethers over 12 months old	No minimum	Min 24 hours

<sup>182</sup> Alpacas are mainly transported farm to farm or to shows.

<sup>183</sup> Road and rail standards do not apply to spell periods because alpacas are not ruminants.

Proposed Std. No.	Subject matter	Existing model codes of practice	Class of animal	Base case	Proposed standard
			off water for 36 hours		
			Nonpregnant females and males over 12 months old off water for 24 hours	No minimum	Min 12 hours
			Alpacas 6 to 12 months old	No minimum	No mandatory spells for WDTs less than 12 hours
			Pregnant females up to 7.5 months pregnant (1st and 2nd trimester) excluding last 4 weeks.	No minimum	No mandatory spells for WDTs less than 12 hours
			Pregnant Alpacas more than 7.5 months pregnant (3rd trimester)	No minimum	No mandatory spells for WDTs less than 12 hours
			Lactating alpacas with crias up to 6 months old	No minimum	No mandatory spells for WDTs less than 12 hours
			Crias up to 6 months old	No minimum	No mandatory spells for WDTs less than 12 hours
<b>B2</b>	<b>Specific Standards -Buffalo</b>				
SB2.1	Water deprivation times	1983 MCOP. Road p.9. Rail p.10 for adults. There are no other relevant codes.	Adult buffalo over 6 months old	Max 48 hours	Max 36 hours
			Buffalo 1–6 months old	Max 24 hours	Max 24 hours
			Buffalo in more than 7 months pregnant (third trimester of pregnancy) excluding last 4 weeks and lactating buffalo with calves at foot	Max 24 hours	Max 24 hours
SB2.2	Spell periods	Road p.9. Rail p.10	Adult buffalo over 6 months old off-water for 36 hours	Min 12 hours	Min 24 hours
			Buffalo 1–6 months old off-water for 24 hours	Min 12 hours	Min 12 hours
			Buffalo more than 7 months	Min 12 hours	Min 12 hours

Proposed Std. No.	Subject matter	Existing model codes of practice	Class of animal	Base case	Proposed standard
			pregnant (in third trimester of pregnancy) excluding the last 4 weeks and lactating buffalo with calves at foot off-water for 24 hours		
<b>B3</b>	<b>Specific Standards -Camels</b>				
SB3.1	Water deprivation times	2006 MCOP The Camel <sup>184</sup> 10.2 Camels are not ruminants.	Camels over 6 months old	Max 24 hours <sup>185</sup>	Max48 hours <sup>186</sup>
			Lactating cows with calves at foot	Max 24 hours	Max 24 hours
			Pregnant camels more than 9 months pregnant (in third trimester) excluding last 4 weeks.	Max 24 hours	Max 24 hours
SB3.3	Spell periods	New standard <sup>187</sup>	Camels over 6 months old, pregnant camels known to be more than 9 months pregnant (in the third trimester) have been off-water for 24 hours	No minimum	Min 12 hours
<b>B4</b>	<b>Specific Standards –Cattle</b>				
SB4.1	Water deprivation times. Notion of ‘normal’ and ‘extended’ times removed.	2002. Land Transport of Cattle 9.3	Cattle over 6 months old	Max 48 hours	Max 48 hours
			Calves 1–6 months old	Max 24 hours	Max 24 hours
			Lactating cows with calves at foot	Max 24 hours	Max 24 hours

<sup>184</sup> Primary Industries Ministerial Council (2003) *Model code of practice for the welfare of animals: The camel*. CSIRO Publishing, Collingwood.

<sup>185</sup> 72 hours permitted on transport if food and water provided daily.

<sup>186</sup> Under SB3.2, 72 hours permitted on transport if food and water provided daily, there is space to lie down, regular assessments are made and there is a 24 hour spell before starting another journey.

<sup>187</sup> Road and rail standards do not apply to spell periods because camels are not ruminants.

Proposed Std. No.	Subject matter	Existing model codes of practice	Class of animal	Base case	Proposed standard
			Cattle more than 6 months pregnant (in third trimester of pregnancy) excluding last 4 weeks.. Relates mostly to months 6 and 7 of pregnancy. For month 8 and last 2 weeks see SB4.3 and SA4.1 where the higher standards apply. Gestation = 285 days Trimester = 95 days	48 hours for months 6&7.  Max 8 hours for months 8 to 9.25. Full term see SB4.3 <sup>188</sup>	Max 24 hours
SB4.2	Spell periods	Cattle 9.5	Cattle over 6 months old have been off-water for 48 hours	Min 36 hours	Min 36 hours
			Pregnant cows known to be more than 6 months pregnant (in the third trimester) off-water for 24 hours	Min 12 hours	Min 12 hours
			Lactating cows off-water for 24 hours	Min 12 hours	Min 12 hours
			Calves off-water for 24 hours	Min 12 hours	Min 12 hours
SB4.3	Max journey time for cattle in last 4 weeks of pregnancy (SA 4.1 vi is also relevant here)	Cattle 5.4.1 and 9.3	Cattle known to be in last 4 weeks of pregnancy – incorporates SA4.1 vi	Max 8 hours journey	Max 4 hours journey unless under vet advice
<b>B5</b>	<b>Specific Standards - Deer</b>				
SB5.1	Water deprivation times	1983 MCOP Road p.9. Rail p.10. Deer are ruminants. There are no other relevant codes.	Deer over 6 months old	Max 48 hours	Max 48 hours
			Fawns/calves under 6 months old	Max 24 hours <sup>189</sup>	Max 28 hours

<sup>188</sup> 35/95 % of last trimester covered by this old MCOP standard (8 months pregnant – 8 hours). Therefore WDT has reduced from 48-24 for 60/95% and decreased from 8 to 4 + vet advice for 30/95% - in SB4.3.

<sup>189</sup> 36 hours is allowed only if there is a 24 spell

Proposed Std. No.	Subject matter	Existing model codes of practice	Class of animal	Base case	Proposed standard
			Deer more than 5 months pregnant (in the third trimester) excluding last 4 weeks.	Max 24 hours	Max 24 hours
SB5.2	Spell periods	Road p.9. Rail p.10	Deer over 6 months old off-water for 48 hours.	Min 24 hours	Min 36 hours
			Fawns or calves off-water of 28 hours.	Min 12 hours	Min 12 hours
			Pregnant deer known to be more than 5 months pregnant (in the third trimester) off-water of 24 hours,	Min 12 hours	Min 12 hours
<b>B6</b>	<b>Specific Standards – Ratites</b>				
SB6.1	Water deprivation times	1983 MCOP Road p.9, Rail p.10	Adult birds	Max 24 hours	Max 36 hours
			Chicks or young birds	Max 24 hours	Max 24 hours
SB6.5	Spell periods	New standard <sup>190</sup>	Adult birds off-water for 24 hours	No minimum	Min 12 hours
			Chicks or young birds	No minimum	No mandatory spells for WDTs less than 12 hours
<b>B7</b>	<b>Specific Standards –Goats</b>				
SB7.1	Water deprivation times	1983 MCOP Road p.9. Rail p.10 There are no other relevant codes.	Goats over 6 months old	Max 48 hours	Max 48 hours
			Kids under 6 months old	Max 36 hours <sup>191</sup>	Max 28 hours
			Goats in third trimester of pregnancy (beyond 14 weeks pregnant) except last 2 weeks.	Nil If more than 4 months pregnant	Max 24 hours

<sup>190</sup> The road and rail codes do not apply to spell periods because ratites are not ruminants

<sup>191</sup> 36 hours is allowed only if there is a 24 spell.

Proposed Std. No.	Subject matter	Existing model codes of practice	Class of animal	Base case	Proposed standard
			Gestation = 150 days Trimester = 50 days)-	(last 30 days) = 8 hours <sup>192</sup>	
SB7.2	Spell periods	Road p.9 Rail p.10	Goats over 6 months old off-water for 48 hours.	Min 24 hours	Min 36 hours
			Kids off-water for 28 hours,	Min 24 hours <sup>193</sup>	Min 12 hours
			Goats known to be more than 14 weeks pregnant (in the third trimester) excluding last 2 weeks, off-water for 24 hours	Min 12 hours	Min 12 hours
<b>B8</b>	<b>Specific Standards - Horses</b>				
SB8.1	Water deprivation times	2003 MCOP Land Transport of Horses 9.3.1	Horses over 6 months old	Max 36 hours	Max 24 hours
			Lactating mares	Max 8 hours	Max 12 hours
			Foals less than 6 months old	Max 8 hours	Max 12 hours
			Mares more than 7.5 months pregnant (in third trimester) excluding last 4 weeks	Max 36 hours	Max 12 hours
SB8.3	Spell periods	Horses 10.5	Horses off-water for 24 hours.	Min 12 hours	Min 12 hours
			Lactating mares, foals and pregnant mares known to be more than 7.5 months pregnant (in the third trimester) excluding last 4	Min 12 hours	Min 12 hours <sup>194</sup>

<sup>192</sup> Gestation = 150 days, trimester = 50 days, therefore 30/50 % of last trimester covered by this old MCOP standard (4 months pregnant – 8 hours). Therefore WDT has reduced from 48-24 for 20/50% and increased from 8 to 24 for 30/50%.

<sup>193</sup> Required if off water for 36 hours (see SB7.1)

<sup>194</sup> 40/113 % of last trimester covered by old MCOP #62 4.1.5 standard (10 months preg – 8 hours). Therefore WDT has reduced from 36 to 12 hours for 73/113% and increased from 8 to 12 hours for 40/113%

Proposed Std. No.	Subject matter	Existing model codes of practice	Class of animal	Base case	Proposed standard
			weeks, off-water for 12 hours.		
<b>B9</b>	<b>Specific Standards - Pigs</b>				
SB9.1	Water deprivation times	2003 Land Transport of Pigs 8.3, Pigs 9.6	Pigs	Max 24 hours	Max 24 hours
			Lactating sows and piglets	Max 24 hours for sows and 12 hours for piglets	Max 12 hours
			Weaners	Max 24 hours	Max 12 hours
SB9.2	Criteria when travelling >24hrs	Pigs 7.2, 8			
SB9.3	Spell periods	Pigs 9.3	Pigs off-water for the maximum time permitted.	Min 12 hours	Min 12 hours
<b>B10</b>	<b>Specific Standards - Poultry</b>				
SB10.1	Water deprivation times	2006 Land Transport of Poultry 3.2.1.	Poultry	Max 24 hours	Max 24 hours
		Poultry 4.6.8.	Chicks	Max 60 hours after hatching	Max 60 hours following take off
	Spell periods <sup>195</sup>	N/A	N/A	N/A	N/A
<b>B11</b>	<b>Specific Standards - Sheep</b>				
SB11.1	Water deprivation times	1983 MCOP. Road p.9 Rail p.10. There are no other relevant endorsed codes.	Sheep over 4 months old	Max 48 hours	Max 48 hours
			Lambs under 4 months old	Max 36 hours <sup>196</sup>	Max 28 hours
			Ewes in third trimester of pregnancy (beyond 3 months pregnant) excluding last 2	Nil If more than 4 months pregnant	Max 24 hours

<sup>195</sup> There are no spell periods for poultry in either the base case or the proposed standards..

<sup>196</sup> 36 hours is allowed only if there is a 24 spell (see SB11.2)



Proposed Std. No.	Subject matter	Existing model codes of practice	Class of animal	Base case	Proposed standard
			weeks. Gestation = 150 days Trimester = 50 days)-	(last 30 days) = 8 hours <sup>197</sup>	
SB11.2	Spell periods	Road p.9 Rail p.10	Sheep over 4 months old off-water for 48 hours.	Min 24 hours	Min 36 hours
			Lambs under 4 months old off-water for 28 hours.	Min 24 hours <sup>198</sup>	Min 12 hours
			Pregnant ewes known to be more than 14 weeks pregnant (in the third trimester) excluding last 2 weeks, off-water for 24 hours.	Min 12 hours	Min 12 hours

<sup>197</sup> Gestation = 150 days, trimester = 50 days, therefore 30/50 % of last trimester covered by this old MCOP standard (4 months preg – 8 hours). Therefore WDT has reduced from 48-24 for 20/50% and increased from 8 to 24 for 30/50%.

<sup>198</sup> Required if off water for 36 hours (see SB11.1)

**Appendix 4 – Comparison of proposed standards with international standards**

<b>Proposed Std. No.</b>	<b>Subject matter</b>	<b>Equivalent international standards</b>	<b>Nature of any difference</b>	<b>Reason for difference</b>
	<b>Reponsibilities and planning</b>			
SA1.1	Responsibilities for livestock welfare at each stage of journey Person in charge at each stage of journey has responsibility for animal welfare and compliance with standards.	OIE Article 3.7.3.3. <sup>199</sup>	No significant differences. Article 3.7.3.3 spells out the responsibilities of different persons at each stage of the journey. There are differences in the detail but not in the overall approach.	It is important that the responsibilities be recognised by those involved.
SA1.2	For journeys > 24 hours there must be a document that includes times without water, food, inspection times, other relevant information and emergency contacts accompanying the livestock.	OIE Article 3.7.3.5.1 & 3.7.3.6	SA1.3 requires key planning information to be documented but does not extend to loading density.	Documentation of responsibility and water provision are seen as key issues in Australia.. Specific loading densities are considered to be more appropriate as guidelines.
	<b>Stock handling competency</b>			
SA2.1	All persons involved with livestock to be competent or supervised by a competent person	OIE Article 3.7.3.4	Competency requirements are less formal in the proposed standards.	Less formal training is considered sufficient in the often more remote Australian context but competence is defined as part of the standard to be competent for the required task.
	<b>Transport vehicles and</b>			

<sup>199</sup> World Organisation for Animal Health (OIE) (2007) *Terrestrial Animal Health Code – 2007 Appendix 3.7.3. Guidelines For The Transport Of Animals By Land*, World Organisation for Animal Health, Paris.

Proposed Std. No.	Subject matter	Equivalent international standards	Nature of any difference	Reason for difference
	<b>facilities</b>			
SA3.1	Vehicles and facilities designed to minimise risks.	OIE Article 3.7.3.5.4	No significant differences.	N/A
	<b>Pre-transport preparation</b>			
SA4.1	Livestock to be assessed as fit for intended journey	OIE Article 3.7.3.7.3c	No greatly significant differences, except proposed standards rely on visual observations.	Proposed standards are detailed for Australian conditions. Notable differences in them are: newborn are permitted to travel with their mothers with conditions, pregnant animals are permitted to travel up to specified periods depending on the stage of pregnancy, females that have recently given birth are permitted to travel. The OIE Article does not specify dehydration as a condition.
SA4.2	Unfit animals transported only on specific vet advice.	OIE Article 3.7.3.7.3a	No significant differences.	N/A
SA4.3	Consignor to supply livestock fit for the intended journey.	OIE Article 3.7.3.3	No significant differences.	N/A
SA4.4	Where livestock are unfit to load, person in charge must arrange for care, treatment or humane destruction.	OIE Article 3.7.3.7.3b	No significant differences	N/A
	<b>Loading, transport and unloading</b>			
SA5.1	Water, food and rest to be provided if water deprivation times reached.	OIE Article 3.7.3.9.5 is general and not specific.	No significant differences.	Australian standards are more prescriptive.
SA5.2	Time off water to be managed.	OIE Article 3.7.3.5.3	Slightly different approach between the two documents.	N/A
SA5.4	Loading density to be managed to minimise risks	OIE Article 3.7.3.5.6	Neither document is prescriptive	N/A

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Proposed Std. No.	Subject matter	Equivalent international standards	Nature of any difference	Reason for difference
SA5.5	Drivers (except trains and poultry) to have final decision on loading density	OIE Article 3.7.3.3.4.f	No significant differences.	N/A
SA5.6	Segregation of livestock likely to cause injury.	OIE Article 3.7.3.7.2.	No significant differences.	N/A
SA5.7	Handling appropriate to species and without pain or injury. Specifically: - No lifting by head, ears, horns, neck, tail, or wool. No throwing or dropping animals. - No punching, kicking or striking with instruments	OIE Article 3.7.3.8.3.	No significant differences, except that there is no proposed standard against excessive shouting at animals or making loud noises.	N/A
SA5.8	Restrictions on use of electric prodders on sensitive animal parts, under 3 months old or unable to move.	OIE Article 3.7.3.8.3.	No significant differences, except general ban for animals under 3 months in Australia.	Australian standard is higher. Animals under 3 months of age may not have yet learnt to move away from painful stimuli.
SA5.9	Dogs must be under control at all times and must not travel in same pen as livestock. Habitual biters to be muzzled.	OIE Article 3.7.3.7.3.f,	No significant differences.	N/A
SA5.10	Alignment of ramp and vehicle	OIE Article 3.7.3.8.2.	No significant differences. Australian standard interpreted to be within the general OIE clause.	N/A
SA5.11	Inspection of facilities by driver: <ul style="list-style-type: none"> <li>• prior to loading</li> <li>• of receival yard before unloading</li> </ul>	OIE Article 3.7.3.9.1	No significant differences. Australian standard higher and more detailed.	N/A
SA5.12	Inspection of animals by driver: <ul style="list-style-type: none"> <li>• - before departing</li> <li>• - within first hour and every 3 hours</li> <li>• - on unloading</li> </ul>	OIE Article 3.7.3.9.7	No significant differences. Australian standard higher and more detailed.	Every 3 hours is likely to deliver better animal welfare outcomes at minimal cost.

Proposed Std. No.	Subject matter	Equivalent international standards	Nature of any difference	Reason for difference
SA5.13	Treatment or destruction of weak, ill or injured animals at the first opportunity.	OIE Article 3.7.3.9.4 & 3.7.3.10.2	No significant differences.	N/A
SA5.14	Person receiving the livestock must make arrangements for weak or ill livestock.	OIE Article 3.7.3.10.2	No significant differences.	N/A
SA5.15	Driver to take action in extreme hot or cold weather	OIE Article 3.7.3.5.11	No significant differences.	N/A
	<b>Humane destruction</b>		No significant differences.	N/A
SA6.1	Humane destruction to result in immediate loss of consciousness then death.	OIE Article 3.7.3.9.4, 3.7.3.10.2 Appendix 3.7.6.1.6	No significant differences.	N/A
SA6.2	Moribund animals to be destroyed (or seek advice from vet or other competent person). Humane destruction by competent person using approved method at first opportunity	OIE Article 3.7.3.9.4, 3.7.3.10.2, 3.7.6.1.1	No significant differences.	N/A
SA6.3	When competent person not available, must be contacted a.s.a.p.	OIE Article 3.7.3.9.4, 3.7.6.1.1	No significant differences.	N/A
SA6.4	Reasonable action required to confirm death	OIE Article 3.7.6.3.	No significant differences.	N/A
SA6.5	Firearm use to be in frontal or poll position, except for cattle and pigs.	OIE Article 3.7.6.6.	No significant differences.	N/A
SA6.6	Captive bolt stunning to be followed by effective killing method	OIE Article 3.7.6.7.	No significant differences.	N/A
SA6.7	Blunt trauma to head to be used only on newborns <24 hours old followed by effective killing	Not covered	Significant difference.	Only permitted for some species of newborn less than 24 hours old where there is no other alternative.

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<b>Proposed Std. No.</b>	<b>Subject matter</b>	<b>Equivalent international standards</b>	<b>Nature of any difference</b>	<b>Reason for difference</b>
	method			
SA6.8	Bleeding out (deer, sheep and goats only)	OIE Article 3.7.6.7	No significant differences.	N/A
	<b>Species specific standards</b>	OIE Article 3.7.3.12	The OIE guidelines are less specific, but there are no significant differences. Mostly about behavioural and handling issues covered in the guidelines.	Australian standards are a lot more detailed and prescriptive for each species.

## Appendix 5 – Summary of relevant livestock statistics

### A5.1 Total gross value of livestock production

Table A5.1 looks at the total gross value of livestock per annum and is broken up according to the total value of slaughter, disposals and exports (roughly 66% of total gross value) and the total value of livestock products (roughly 33% of total gross value). Furthermore, the total gross value of slaughter, disposals and exports is broken up according to species (i.e. cattle and calves; lamb and sheep; pigs; poultry and other<sup>200</sup>). The total gross value of slaughter, disposal and export is mainly made up of cattle and calves (roughly 63% in 2006-07). The total gross value of livestock products<sup>201</sup> is made up of the gross values of wool, milk and eggs.

**Table A5.1 – Annual gross value of total livestock slaughter, disposals and exports & livestock products (\$m)**

Species/category of livestock product	2002-03 <sup>202</sup>	2003-04 <sup>203</sup>	2004-05 <sup>204</sup>	2005-06 <sup>205</sup>	2006-07 <sup>206</sup>
Cattle + Calves	6,411.1	6,658.8	7,828.8	7,689.5	7,400
Lamb + Sheep	2,036.9	2,038.8	1,949	2,113.1	1,934
Pigs	911.3	878.9	906	888.6	930
Poultry	1,280.5	1,280.8	1,303.7	1,226	1,414
Other	36.2	38.7	42.6	49.1	43
<b>Total gross value slaughter, disposals and exports</b>	<b>10,676</b>	<b>10,896</b>	<b>12,030.1</b>	<b>11,917.2</b>	<b>11,721</b>
Wool	3,317.8	2,396.5	2,195.5	2,092.5	2,678
Milk	2,795.2	2,808.7	3,193.8	3,342.5	3,113
Eggs	294	335.5	327.9	381.5	338
<b>Total gross value of livestock products</b>	<b>6,412.1</b>	<b>5,540.7</b>	<b>5,717.2</b>	<b>5,816.5</b>	<b>6,130</b>
<b>Total gross value of livestock slaughter, disposals, exports + livestock products</b>	<b>17,088.1</b>	<b>16,436.7</b>	<b>17,747.3</b>	<b>17,733.7</b>	<b>17,851</b>

### A5.2 Determination of the number of animals transported per annum by species

Summary statistics for the total number of animals transported per annum by species is shown in Table A5.8 according to species. Deer species include the Red, Fallow and Rusa deer varieties. For the purpose of this RIS transport of livestock is said to occur when livestock is being moved for slaughter, export or for 'other' reasons. For the purpose of this RIS 'other' transport includes: transport for the purposes of: mustering; management; companionship; non-event recreation<sup>207</sup>; breeding/breeder replacement; growing out or finishing; racing; show/exhibition and sale.

<sup>200</sup> Other includes buffalo; horses; deer; camels; alpacas; goats; emus and ostriches.

<sup>201</sup> The annual gross value of honey is not included in the total gross value of livestock products estimates.

<sup>202</sup> ABS, 2004-05, Cat. No. 7503.0.

<sup>203</sup> Ibid 2004-05.

<sup>204</sup> Ibid 2004-05.

<sup>205</sup> ABS, 2005-06, Cat. No. 7501.0.

<sup>206</sup> ABARE (June quarter 2007)

<sup>207</sup> Specifically in relation to horses.

Apart from alpacas (see section A5.4), the numbers for slaughtered and exported livestock have been derived from government statistical sources, as well as, the Meat and Livestock Association (MLA). However, the number of animals involved in ‘other’ transport is estimated as a proportion of total livestock transported - with such proportions depending on the species of animal involved. Excluding cattle, lamb and sheep<sup>208</sup>, the relevant proportions assumed under ‘other’ transport<sup>209</sup> include: buffalo (20%), calves for rearing (5%), calves for slaughter (i.e. ‘bobby calves’) (10%), pigs (30%), poultry for meat (0%), chicks (100%), horses (99.9%), deer (10%), camels (10%), alpacas (99.9%), goats (15%), emus (0%) and ostriches (0%).

### A5.3 Estimations of slaughter and export numbers for particular species

Approximately 5% of mammalian species transported are to be covered by the Australian Standard for Export of Livestock (ASEL), which is a consistently higher animal welfare standard that will apply to all export movements. Despite the lack of impact of the Land Transport Standards (LTS) on live export movements, these livestock numbers have been included in the RIS calculations.<sup>210</sup>

#### *Buffalo (Bubalus bubalis)*

In order to ascertain the slaughter and export number of particular species of livestock, it was necessary to utilise slaughter and export levy data obtained from the Department of Agriculture, Fisheries and Forestry (DAFF). The estimate for the total number of buffalo slaughtered and exported in Australia (approximately 2,300 head per annum) is obtained by dividing the 2005-06 levy revenue for slaughter and export of buffalo of \$24,000<sup>211</sup> by the per head levy of \$10.33<sup>212</sup>. It is believed that most of the 2,300 head of buffalo are exported.<sup>213</sup>

#### *Bobby calves*

The ABS statistics puts the number of calves for slaughter<sup>214</sup> for the 2003-04 year at 860,000<sup>215</sup>. In order to check the long term validity of this estimate, the number of calves for slaughter that were slaughtered between the years 2002 and 2006 is derived in the following way and then an average obtained:

Total number of all calves 2003 to 2005 = average 1,013,000 per annum<sup>216</sup>

Total number of calves for slaughter 2003-04 = 860,000

Percentage of calves for slaughter = 85%

Percentage of calves for rearing = 15%

Average weight of calves for slaughter = 30kg per calf

Average weight of calves for rearing = 50kg per calf

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*Weighted sum of average weight = [30kg x (0.85)] + [50kg x (0.15)] = 33kg per calf*

Total veal produced<sup>217</sup>:

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<sup>208</sup> This is discussed in more detail under part A5.3 of appendix 5 in this RIS.

<sup>209</sup> These proportions have been provided by livestock industry organisations.

<sup>210</sup> On advice from AHA.

<sup>211</sup> DAFF, 2005-06.

<sup>212</sup> <<http://www.daff.gov.au/agriculture-food/levies/livestock>>

<sup>213</sup> On advice from AHA.

<sup>214</sup> See glossary for definition of bobby calf.

<sup>215</sup> ABS, 2005 Cat. No. 1301.0.

<sup>216</sup> ABS, (2004 – 05), Cat. No. 7121 .0.

<sup>217</sup> ABS, (2007) *Time Series Workbook*, Cat.No.7251.0.



2006 = 29,139,000kg  
 2005 = 27,753,990kg  
 2004 = 31,561,980kg  
 2003 = 38,175,000kg  
 2002 = 34,984,980kg

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*Average total veal<sup>218</sup> produced 2002 to 2006 = 32,322,990kg*

Average annual total number of calves 2002 to 2006 = average total veal produced 2002 to 2006/weighted sum of average weight = 32,322,990kg/33kg per calf = 979,485 calves (including calves for slaughter). If the proportion of calves for slaughter assumed is 85% then the average annual total number of calves for slaughter 2002 to 2006 = 832,562

#### *Calves for rearing*

The 2003-04 number of calves for slaughter - slaughtered (i.e. 860,000) is subtracted from the average total number of calves (including both calves for rearing and calves for slaughter) slaughtered between the years 2003-2005 of 1,013,000 per annum, in order to obtain an estimate for the number of calves for rearing slaughtered of 153,000 per annum.

#### *Goats*

The estimate for the total number of goats slaughtered and exported in Australia (approximately 1,305,000 per annum) is obtained by dividing the 2005-06 levy revenue for slaughter and export of goats of \$492,000<sup>219</sup> by the per head levy of \$0.377<sup>220</sup>. The total amount of goats slaughtered is calculated by subtracting the total number of goats exported (57,600 per annum<sup>221</sup>) from the total amount slaughtered and exported of 1,305,000 head per annum. This provides an estimate of slaughter number for goats of 1,247,390 goats.

#### *Horses*

The estimate for the total number of horses slaughtered in Australia (approximately 12,400 per annum) has been calculated by dividing the 2005-06 levy revenue for slaughter of horses of \$62,000<sup>222</sup> by the per head levy of \$5.00<sup>223</sup>.

#### *Ostriches*

The estimate for the total number of ostriches slaughtered in Australia (approximately 9,700 per annum) is obtained by first multiplying the total number of emus slaughtered per annum of 4,600<sup>224</sup> by the per head levy of \$2.00<sup>225</sup> which gives a 2005-06 slaughter levy revenue for emus of \$8,900. The amount of \$8,900 is then subtracted from the total ratite slaughter levy revenue in 2005-06 of \$21,000<sup>226</sup> which gives a balance of \$12,100 of slaughter levy revenue for

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<sup>218</sup> Veal meat is defined as the product of all calves (rearing and slaughter calves) by the Australian Bureau of Statistics.

<sup>219</sup> DAFF, 2005-06.

<sup>220</sup> <<http://www.daff.gov.au/agriculture-food/levies/livestock>>

<sup>221</sup> MLA (2006).

<sup>222</sup> DAFF, 2005-06.

<sup>223</sup> <<http://www.daff.gov.au/agriculture-food/levies/livestock>>

<sup>224</sup> 2005/2006 estimate taken from Shim-Prydon, G. and Camancho-Barreto, H (March 2007).

<sup>225</sup> <<http://www.daff.gov.au/agriculture-food/levies/livestock>>

<sup>226</sup> DAFF, 2005-06

ostriches. Taking \$12,100 and then dividing this by the slaughter levy for ostriches in 2005-06 of \$1.25<sup>227</sup> per head provides an estimate of 9,680 ostriches slaughtered in 2005-06.

#### A5.4 Estimation of annual transport numbers for alpacas

The calculation of annual alpaca transport numbers was undertaken in the following way and on estimate advice from the Australian Alpacas Association for 2007. Slaughter and export figures for Alpacas in 2007 are given as **100** and **500** head, respectively. In terms of national show events it was estimated that the number of alpacas taken to such events were on average 280 head and were transported 52 weeks a year given a total of 14,560 animals transported. Assuming a trip both to and from the events this would mean a total of **29,120** alpacas are transported for this purpose. For regional auctions it was estimated that 14 regions were responsible for 1 auction per annum of 30 head per auction giving a total of **420** animals annually transported. In terms of annual auctions it was estimated that 50 auctions were held with a sale of 30 alpacas each giving a total of **1,500** animals transported per annum. With regards to show sales it was estimated that there were 2 sales held annually by 14 regions annually which involved 100 alpacas at each event giving a total of **2,800** animals needing transport.

For part-time breeders it was assumed that transport was required approximately 30 times a year and for the following number of studs in each state: NSW (100 studs); VIC (100 studs); Qld (30 studs); SA (60 studs); and WA (70 Studs). Total amounts of animals transported for part-time breeding are summarised in Table A5.3 and assume that each activity involves a trip to and from that activity (i.e. number of times a year x number of respective studs x 2 trips each time). For full-time breeders it was estimated that 30 studs were being transported every fortnight (i.e. 183 times a year) giving a total of 5,475 animals one way and therefore, **10,950** animals being transported two ways (to and from).

**Table A5.2 – Summary statistics for annual alpaca transport**

Alpaca activity	No. of animals transported <sup>228</sup>
Slaughter	100
Export	500
National show events	29,120
Regional auctions	420
Annual auctions	1,500
Show sales	2,800
Part-time breeding NSW	6,000
Part-time breeding VIC	6,000
Part-time breeding Qld	1,800
Part-time breeding SA	3,600
Part-time breeding WA	4,200
Full-time breeding	10,950
<b>Total number of alpacas transported/annum</b>	<b>66,990</b>

<sup>227</sup> <<http://www.daff.gov.au/agriculture-food/levies/livestock>>

<sup>228</sup> Takes into account 2 trips for Alpaca activities (excluding export, slaughter, auctions and show sales)

### A5.5 Estimation of annual number of cattle, lamb and sheep transported

The number of cattle, lamb and sheep both slaughtered and exported live per financial year as shown in Tables A5.3, A5.4 and A5.5, respectively, have been taken from the market statistics database<sup>229</sup>. All Department of Agriculture, Fisheries, & Forestry (DAFF) transactions, as shown in Tables A5.3, A5.4 and A5.5, have been obtained from the Levies Revenue Service at DAFF via the Sheepmeat Council of Australia.

#### *A5.5.1 Estimation of annual Cattle transport numbers*

The average number of cattle being transported is estimated as the sum of average annual total levy and non-levy based DAFF transactions (i.e. **19,380,105**) plus ‘other’ non transaction based cattle numbers (i.e. **4,500,000**<sup>230</sup>) = **23,880,105**. Non-levy based transactions are transactions where there is simply an exemption from having to pay the levy<sup>231</sup>.

**Table A5.3 – Average annual number of cattle involved in transport by category 2002/03 to 2006/07)**

Year	Category							
	Slaughter	Live export	DAFF transactions (levy based)	DAFF transactions (non levy)	Total DAFF transactions (e) = (c) + (d)	‘Other’ (transaction based) (f) = (e) – (a) – (b)	‘Other’ (non-transaction based) (g)	Total (h) = (e) + (g)
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
2002/03	8,082,703	1,007,886	14,172,822	5,685,336	19,858,158	10,767,569	4,500,000	24,358,158
2003/04	7,752,887	681,930	13,834,178	5,263,435	19,097,613	10,662,796	4,500,000	23,597,613
2004/05	7,985,577	623,579	14,315,297	5,227,366	19,542,663	10,933,507	4,500,000	24,042,663
2005/06	7,580,056	577,737	13,845,615	4,719,957	18,565,572	10,407,779	4,500,000	23,065,572
2006/07	8,161,655	676,877	14,544,681	5,291,839	19,836,520	10,997,988	4,500,000	24,336,520
<b>5 year average</b>	<b>7,912,576</b>	<b>713,602</b>	<b>14,142,519</b>	<b>5,237,587</b>	<b>19,380,105</b>	<b>10,753,928</b>	<b>4,500,000</b>	<b>23,880,105</b>

#### *A5.5.2 Estimation of annual Lamb (less than 4 months of age) transport numbers*

According to DAFF and the Primary Industries (Excise) Levies Act 1999, a lamb is defined as a sheep that has not cut a permanent incisor tooth. According to this definition, the average number of lamb being transported is estimated as the sum of average annual total sale and no-sale based DAFF transactions (i.e. 23,861,167) plus ‘other’ non transaction based lamb numbers which has been calculated as 20%<sup>232</sup> of total DAFF transactions (i.e. 4,772,223) = 28,633,400. Sale transactions according to the Levies Revenue Service at DAFF relates to the number of lambs sold (valued over \$75), whereas, no-sale, refers to the number of lambs service killed but where there has not been a sale. However, for the purpose of investigating the cost impact of the proposed standards on lambs under 4 months, it has been proposed by the Sheepmeat Council of

<sup>229</sup> <<http://marketdata.mla.com.au/>>

<sup>230</sup> This estimate has been provided by the Cattle Council of Australia on advice from MLA and has been assumed to be a constant number over the years due to lack of consolidated statistics regarding this category of cattle transport.

<sup>231</sup> Description based on recommendation from Levies Revenue Service (DAFF).

<sup>232</sup> 20% has been established on advice from the Sheepmeat Council of Australia.

Australia that slaughter lambs would not be under 4 months and that only 1% of lambs transported for ‘other’ purposes would be under 4 months.

Therefore the total number of lambs under 4 months of age involved in transport per annum is equal to 1% of ‘other’ transaction based and non-transaction based categories (as shown in Table A5.4) or 1% of a 5 year average of 5,943,930 + 4,772,233 = **107,162**<sup>233</sup>.

This would make the remaining total annual transport of ‘lamb over 4 months of age’ (classified as sheep under the proposed standards) equal to 28,633,400 less 107,162 = **28,526,238**

**Table A5.4 – Average annual number of lamb involved in transport by category (2002/03 to 2006/07)**

Year	Category						
	Slaughter	DAFF transactions (sale)	DAFF transactions (no sale)	Total DAFF transactions	‘Other’ (transaction based) (m) = (l) - (i) - (j)	‘Other’ (non-transaction based) (n) = (l) x 20%	Total (o) = (l) + (n)
	(i)	(j)	(k)	(l) = (j) + (k)			
2002/03	16,869,826	14,069,574	6,781,452	20,851,026	3,981,200	4,170,205	25,021,231
2003/04	16,561,782	19,437,039	5,522,139	24,959,178	8,397,396	4,991,836	29,951,014
2004/05	17,330,610	19,047,136	5,300,297	24,347,433	7,016,823	4,869,487	29,216,920
2005/06	18,665,621	18,821,213	5,277,487	24,098,700	5,433,079	4,819,740	28,918,440
2006/07	20,158,344	19,812,042	5,237,456	25,049,498	4,891,154	5,009,900	30,059,398
<b>5 year average</b>	<b>17,917,237</b>	<b>18,237,401</b>	<b>5,623,766</b>	<b>23,861,167</b>	<b>5,943,930</b>	<b>4,772,233</b>	<b>28,633,400</b>

#### A5.5.3 Estimation of annual Sheep transport numbers

The average number of sheep, as defined by DAFF, being transported is estimated as the sum of average annual total sale and no-sale based DAFF transactions (i.e. 31,403,276) plus ‘other’ non transaction based cattle numbers which has been calculated as 20%<sup>234</sup> of total DAFF transactions (i.e. 6,280,655) = 37,683,931. Sale transactions according to the Levies Revenue Service at DAFF relates to the number of sheep sold (valued over \$10), whereas, no-sale, refers to the number of sheep service killed but where there has not been a sale.

<sup>233</sup> This figure has been rounded.

<sup>234</sup> 20% has been established on advice from the Sheepmeat Council of Australia.

**Table A5.5 – Average annual number of sheep involved in transport by category (2002/03 to 2006/07)**

Year	Category							
	Slaughter	Live export	DAFF transactions (sale)	DAFF transactions (no sale)	Total DAFF transactions	‘Other’ (transaction based)	‘Other’ (non-transaction based)	Total
	(p)	(q)	(r)	(s)	(t) = (r) + (s)	(u) = (t) – (p) – (q)	(v) = (t) x 20%	(w) = (t) + (v)
2002/03	13,657,335	5,855,897	31,782,032	1,977,076	33,759,108	14,245,876	6,751,822	40,510,930
2003/04	10,420,739	3,844,589	26,245,465	1,360,811	27,606,276	13,340,948	5,521,255	33,127,531
2004/05	11,442,596	3,236,415	27,847,860	1,386,812	29,234,672	14,555,661	5,846,934	35,081,606
2005/06	11,829,689	4,251,184	31,404,797	1,714,696	33,119,493	17,038,620	6,623,899	39,743,392
2006/07	13,271,161	4,140,069	31,393,989	1,902,841	33,296,830	15,885,600	6,659,366	39,956,196
<b>5 year average</b>	<b>12,124,304</b>	<b>4,265,631</b>	<b>29,734,829</b>	<b>1,668,447</b>	<b>31,403,276</b>	<b>15,013,341</b>	<b>6,280,655</b>	<b>37,683,931</b>

For the purpose of analysing the cost impact of the proposed standards on sheep (as opposed to lamb under 4 months of age), the total number of sheep transported is defined as the combination of sheep and lamb numbers under sections A5.5.2<sup>235</sup> and A5.5.3.

Therefore the total 5 year average for sheep numbers for the purpose of the RIS is considered to be the following:

- slaughter number = 12,124,304 + 17,917,237 = **30,041,541**;
- live export number = **4,265,631**;
- other transaction based = (5,943,930 x 99%) + 15,013,341 = **20,897,832**<sup>236</sup>; and
- other non-transaction based = (4,772,233 x 99%) + 6,280,655 = **11,005,166**<sup>237</sup>.

This would bring the total estimated number of sheep being transported per annum equal to **66,210,170**.

#### A5.6 Estimation of annual horse transport numbers

The estimation for the number of horses transported per annum takes into account the following occasions: slaughter; export; import/re-import; equestrian events (major and minor); horse sales; thoroughbred racing; and harness racing. Table A5.6 illustrates the break-up of major and minor equestrian events with a break-up according to type of event. The total number of horses transported to and from major and minor equestrian events is estimated to be **2,127,880** per annum (see Table A5.6).

The number of horse sales assumes 150 sale days per year<sup>238</sup> and 100 horses sold per day<sup>239</sup> giving a total of **15,000** horses transported per annum.

<sup>235</sup> Excluding 1% of ‘other’ transaction and non-transaction based transport numbers in Table A5.4.

<sup>236</sup> Figure has been rounded.

<sup>237</sup> Figure has been rounded.

<sup>238</sup> Estimates are for 2001 (see Gordon, J, June, 2001).

<sup>239</sup> Ibid (June, 2001).

The number of thoroughbred racing horses is estimated to be 31,248<sup>240</sup> and the number of horse race events which each horse participates in per annum is estimated to be an average of 7<sup>241</sup>. The number of horses transported for thoroughbred racing events per annum is therefore estimated to be 218,736. Assuming transport both to and from racing events this would provide a total figure of **437,472** horses transported per annum.

The number of harness racing days per annum is estimated to be 1,988<sup>242</sup> and the number of trotting horses attending a racing day is 78<sup>243</sup>. The number of horses transported for harness racing events per annum is therefore estimated to be 155,064. Assuming transport both to and from harness racing events this would provide a total figure of **310,128** horses transported per annum.

The number of horses involved in non-event recreation is estimated to be 327,763<sup>244</sup>. Assuming that each horse is transported twice a month and assuming two trips per transport, the total number of horses transported annually for non-event recreational purposes is equal to:

$$327,763 \times 12 \text{ months} \times \text{twice a month} \times 2 \text{ trips (including a return trip)} \\ = \mathbf{15,732,624} \text{ horses transported annually for non-event recreational purposes}$$

Summing the total horses transported for equestrian events, sales, racing and non-event recreation - gives a total of **18,652,048** horses transported per annum, as shown in Table A5.7.

Recreation horse movements are estimated at 16 million p.a. and are not included in some calculations because the new standards will not have a major cost impact. This is due to an expected short journey length of generally less than 4 hours duration and expected high compliance with the proposed standards in other areas. The standards none-the-less will apply to all horse movements.

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<sup>240</sup> CIE, (September, 2007).

<sup>241</sup> Gordon, J, (June, 2001).

<sup>242</sup> Ibid (June, 2001).

<sup>243</sup> Ibid (June, 2001).

<sup>244</sup> Ibid (June, 2001).

**Table A5.6 – Summary of horses transported annually for major and minor equestrian events**

Equestrian events by type	No. of major events	No. of minor events	No. of horses at major events	No. of horses at minor events	No. of horses transported to and from major events <sup>245</sup>	No. of horses transported to and from minor events <sup>246</sup>	Total
Agricultural shows	9	581	500	200	9,000	232,400	241,400
EFA <sup>247</sup> events	60	1,006	500	150	60,000	301,800	361,800
Western events	15	940	500	150	15000	282,000	297,000
Breed events	40	500	250	50	20000	50,000	70,000
Rodeos	50	300	250	50	25000	30,000	55,000
Endurance rides	6	176	250	50	3000	17,600	20,600
Team sports (polo + polocrosse)	18	1,188	300	30	10800	71,280	82,080
Pony club events	50	23,750	500	20	50000	950,000	1,000,000
<b>Total</b>	<b>248</b>	<b>28,441</b>	<b>3,050</b>	<b>700</b>	<b>192,800</b>	<b>1,935,080</b>	<b>2,127,880</b>

**Table A5.7 – Summary of total number of horses transported annually by activity**

Horse activity	No. of horses transported annually
Slaughter	12,400
Export/import/re-import	5,470
Equestrian events	2127880
Horse sales	15,000
Thoroughbred racing	437,472
Harness racing	310,128
Non-event recreation	15,732,624
<b>Total</b>	<b>18,640,974</b>

Finally a projection of estimates for the total number of livestock transported per annum by road and rail per species is summarised in Table A5.8.

**Table A5.8 – Projected average estimates of total number of livestock (000's) transported per annum by species/class of species by road and rail**

Species/class of species	Total no. slaughtered (x)	Total no. exported* (y)	Total no. slaughtered and exported* (z) = (x) + (y)	Total no. transported 'other' (a1) <sup>248</sup>	Total no. transported (b1) = (z) + (a1)
Buffalo	Unknown	Unknown	2.3	0.575	2.875
Cattle	7,912.576 <sup>249</sup>	713.602 <sup>250</sup>	8,626.178	15,253.928 <sup>251</sup>	23,880.105

<sup>245</sup> No. of horses transported at major events is calculated by taking the product of no. of major events per annum and no. of horses at major events per annum and multiplying this product by 2 (1 trip to the event and 1 trip from the event).

<sup>246</sup> No. of horses transported at minor events is calculated by taking the product of no. of minor events per annum and no. of horses at minor events per annum and multiplying this product by 2 (1 trip to the event and 1 trip from the event).

<sup>247</sup> See glossary.

<sup>248</sup> Proportion of livestock moved for 'other' purposes is discussed in section A5.2.

Species/class of species	Total no. slaughtered (x)	Total no. exported* (y)	Total no. slaughtered and exported* (z) = (x) + (y)	Total no. transported 'other' (a1) <sup>248</sup>	Total no. transported (b1) = (z) + (a1)
Calves for rearing	153	N/A	153	8.053	161.053
Calves for slaughter	860	N/A	860	95.556	955.556
Lamb < 4 months old	N/A	N/A	N/A	107.162 <sup>252</sup>	107.162
Sheep	30,041.541 <sup>253</sup>	4,265.631 <sup>254</sup>	34,307.172	31,902.998 <sup>255</sup>	66,210.170
Pigs	5,410.5 <sup>256</sup>	N/A	5,410.5	2,318.786	7,729.286
Poultry for meat	422,333.3 <sup>257</sup>	N/A	422,333.3	N/A	422,333.300
Chicks	N/A	N/A	N/A	443,449.965 <sup>258</sup>	443,449.965
Horses (slaughter, export and recreational)	12.4	5.47 <sup>259</sup>	17.87	15,732.624	15,750.494
Horses (sales + major events <sup>260</sup> )	N/A	N/A	N/A	2,890.48	2,890.48
Deer	44.4 <sup>261</sup>	N/A	44.4	4.933	49.333
Camels	0.350 <sup>262</sup>	0.358 <sup>263</sup>	0.708	0.079	0.787
Alpacas	0.10	0.50	0.60	66.390	66.990
Goats	1,247.39	57.6	1,305	230.294	1,535.294
Emus	4.60	N/A	4.60	0.511	5.111
Ostriches	9.70	N/A	9.70	1.078	10.778
<b>Total</b>	<b>468,032.161</b>	<b>5,043.167</b>	<b>473,075.327</b>	<b>496,330.787</b>	<b>969,406.114</b>

\* Includes imports and re-imports for horses.

#### A5.7 Estimate of the total number of decks used for road transport by species (excluding rail)

Of the total number of animals transported, roughly 600,000 head of cattle<sup>264</sup> and roughly 900 head of horses<sup>265</sup> are transported by rail. These amounts are subtracted from the total amount of cattle and horses transported in Table A5.8. Moreover, the number for horses transported for

<sup>249</sup> See Table A5.3 of Appendix 5.

<sup>250</sup> See Table A5.3 of Appendix 5.

<sup>251</sup> See addition of columns (f) and (g) of Table A5.3 of Appendix 5.

<sup>252</sup> See 1% of addition of column (m) and (n) of Table A5.4 of Appendix 5.

<sup>253</sup> See addition of column (i) of Table A5.4 and column (p) of Table A5.5 of Appendix 5.

<sup>254</sup> See column (q) of Table A5.5 of Appendix 5.

<sup>255</sup> See addition of 99% of columns (m) and (n) of Table A5.4 plus columns (u) and (v) of Table A5.5 of Appendix 5.

<sup>256</sup> Ibid, 2006.

<sup>257</sup> Ibid, 2006.

<sup>258</sup> Number of chicks transported assumes an estimate which is 5% greater than the number of poultry for meat slaughter transported due to a 5% mortality rate of growing chicks on advice from livestock industry organisations.

<sup>259</sup> Average estimate (1995-2000) of total export + import of horses per annum, (see Gordon, J, (2001).

<sup>260</sup> Includes equestrian and racing.

<sup>261</sup> This estimate constitutes an average between 1999 to 2002 (see Tuckwell, C, September, 2003).

<sup>262</sup> Horsburgh (2001) cited in MacNamara, K., et al, (January 2003). Note that Adams, P (2001) also provides an estimate of about 8 camels slaughtered per week. Figures for camels are relatively very small and indeed the world total slaughter figure for camels was only 1.34million in 2001 (see MacNamara, K., et al, January 2003).

<sup>263</sup> 2001 estimate (See Northern Territory Government (2002).

<sup>264</sup> Estimate provided by Queensland Rail that notes that in 2006 there were 360,000 head of cattle transported by rail, however this was 40% lower than a typical year due to drought

<sup>265</sup> Estimate is determined by assuming 5% of horses are transported by rail on advice of Queensland Rail.



‘other’ purposes (i.e. 18,652,048 horses) is also subtracted from the total amount of horses transported annually as these animals are transported via horse floats not decks. Furthermore, the average live weight of animals (per species), the stocking density per species<sup>266</sup> per deck (12.5m x 2.4m or 30m<sup>2</sup>) and the estimated total number of equivalent decks (i.e. **2,329,679**) involved in road transport per annum by species (excluding rail) are shown in Table A5.9.

**Table A5.9 –Estimates of average live weight, stocking densities per deck (12.5m x 2.4m) and total number of equivalent decks (12.5m x 2.4m) used for road transport (excluding rail) per annum by species/class of species**

Species/class of species	Assumed typical live weight of species (kg) (c1)	Total stocking density/deck (12.5 x 2.4m) (d1)	Estimated total no. of equivalent decks used for road transport/ annum/species (e1) = (b1) <sup>267</sup> /(d1) x 1,000
Buffalo	600kg	19	151
Cattle	600kg	20	1,164,006
Calves for rearing	50kg	111	1,451
Calves for slaughter	30kg	130	7,350
Lamb < 4 months old	30kg	157	683
Sheep	45kg	128	517,267
Pigs	100kg	86	89,875
Poultry for meat	2.2kg	840	502,778
Chicks	day old chicks	13,650	32,487
Horses (slaughter and export)	400kg	25	679
Horses(sales + major events)	400kg	25	115,619
Deer	100kg	75	658
Camels	300kg	22	36
Alpacas	60kg	103	650
Goats	40kg	136	11,289
Emus	12months	46	111
Ostriches	juvenile	52	207
<b>Total</b>			<b>2,445,298</b>

#### A5.8 Calculation of the total distance of livestock transport by vehicle type (excluding rail)

Total distance involved in road transport of livestock per annum for all species of animals (excluding rail transport) is estimated to be **142,024,436km**, as shown in Table A5.10. This figure is derived as a weighted sum and is calculated by taking the amount of livestock freight (tonnes) as a proportion of total freight (tonnes) and then taking the product of this and the total kilometres of transport of total freight - for both articulated vehicles<sup>268</sup> and rigid vehicles:

$$\begin{aligned} & \text{(Livestock freight tonnes by articulated vehicles/total freight tonnes by articulated vehicles} \\ & \quad \times \text{total km of transport of total freight by articulated vehicles)} \\ & \quad + \end{aligned}$$

<sup>266</sup> Stocking densities are taken from the proposed standards.

<sup>267</sup> Less 600,000 head for cattle and 900 head of horses transported by rail and not including ‘other’ transport for horses.

<sup>268</sup> Articulated vehicles are those with 6 axles or greater - including B-doubles and road trains (see Figure A5.1) (Productivity Commission (2006)).

(Livestock freight tonnes by rigid vehicles/total freight tonnes by rigid vehicles  
X total km of transport of total freight by rigid vehicles)

Total livestock freight transported in 2001 by articulated vehicles was 12,043,643tonnes<sup>269</sup> and constituted 1.73% of total freight transported by articulated vehicles (i.e. 697,000,000tonnes<sup>270</sup>). Total distance of transport for total freight moved by articulated vehicles in 2001 was 5,321,000,000km.<sup>271</sup> Therefore, total distance of transport of livestock by articulated vehicles was 91,942,933km:

12,043,643tonnes by articulated vehicles/697,000,000tonnes by articulated vehicles x 5,321,000,000km by articulated vehicles = **91,942,933km**

Livestock freight data is not available for freight moved by rigid vehicles. Therefore an assumption has been made regarding the proportion of livestock freight carried by articulated vehicles and rigid vehicles of 70% and 30%, respectively<sup>272</sup>. Subsequently, the amount of livestock weight moved by rigid vehicles (30%) is estimated to be 5,161,561tonnes and constituted 0.76% of total freight transported by rigid vehicles (i.e. 683,000,000tonnes<sup>273</sup>) in 2001. Total distance of transport for total freight moved by rigid vehicles in 2001 was 6,627,000,000km<sup>274</sup>. Therefore, total distance of transport of livestock by rigid vehicles was 50,081,503km:

5,161,561tonnes by rigid vehicles/683,000,000tonnes by rigid vehicles x 6,627,000,000km by rigid vehicles = **50,081,503km**

The total amount of km of transport of livestock by both articulated and rigid vehicles in 2001 was therefore **142,024,436km**<sup>275</sup>. For the purposes of this RIS it is assumed that the distance involved in the transport of livestock is expected to be constant over the next 5 years.

**Table A5.10 –Calculation of estimate of total distance of transport (km) (excluding rail) per annum for livestock freight (2001) – by vehicle type**

	<b>Articulated vehicles</b>	<b>Rigid vehicles</b>	<b>Total</b>
Total livestock freight (Tonnes): (f1)	12,043,643	5,161,561 <sup>276</sup>	17,205,204
Total freight (Tonnes): (g1)	697,000,000	683,000,000	1,380,000,000
Total distance travelled by vehicle type (km): (h1)	5,321,000,000	6,627,000,000	11,948,000,000
Total livestock freight as a % of total freight: (i1) = (f1)/(g1)	1.73%	0.76%	
<b>Total distance travelled by vehicle type (km) x total livestock freight as a % of total freight: (j1) = (h1) x (i1)</b>	<b>91,942,933</b>	<b>50,081,503</b>	<b>142,024,436</b>

<sup>269</sup> ABS (31<sup>st</sup> March 2001).

<sup>270</sup> Bureau of Transport and Regional Economics, 2003.

<sup>271</sup> Ibid, 2003.

<sup>272</sup> Proportions assumed are based on advice from livestock industry organisations.

<sup>273</sup> Bureau of Transport and Regional Economics, 2003.

<sup>274</sup> Ibid, 2003.

<sup>275</sup> This estimate does not include distance (km) travelled by horse floats.

<sup>276</sup> Assumes that the proportion of total livestock freight transported by rigid trucks is 30%.

As shown in Table A5.11, this total distance involved in the transport of live animals (142,024,436km) is apportioned amongst the various species by:

- 1) taking the total number of decks per species per annum (see Table A5.9) as a percentage of the total number of decks used in the transportation of livestock per annum (i.e. **2,445,298** decks); and
- 2) multiplying this percentage by the total distance involved in livestock transport.

**Table A5.11 – Estimate of total distance of road transport (km)(excluding rail) per annum by species/class of species**

Species/class of species	Estimated total no. of equivalent decks (12.5m x 2.4m) used for road transport/annum (e1)	No. of decks per species as a % of total no. of decks used in the transportation of livestock/ annum (k1)	Estimated total distance (km) travelled by road/ annum (l1) = 142,024,436km x (k1)
Buffalo	151	0.01%	8,789
Cattle	1,164,006	47.60%	67,606,207
Calves for rearing	1,451	0.06%	84,271
Calves for slaughter	7,350	0.30%	426,917
Lamb < 4 months old	683	0.03%	39,644
Sheep	517,267	21.15%	30,043,190
Pigs	89,875	3.68%	5,220,021
Poultry for meat	502,778	20.56%	29,201,647
Chicks	32,487	1.33%	1,886,876
Horses (slaughter and export)	679	0.03%	39,426
Horses(sales + major events) <sup>277</sup>	115,619	4.73%	6,715,236
Deer	658	0.03%	38,204
Camels	36	0.00%	2,077
Alpacas	650	0.03%	37,775
Goats	11,289	0.46%	655,668
Emus	111	0.005%	6,453
Ostriches	207	0.01%	12,038
<b>Total</b>	<b>2,445,298</b>	<b>100.00%</b>	<b>142,024,436</b>

#### A5.9 Calculation of total hours of transport per annum per species

Total weighted hours of transport per annum per species are shown in Table A5.12. The estimates have been calculated by taking the product of total distance travelled by road/annum/species and weighting this product according to the average associated speeds of the following arrangements of decks<sup>278</sup>:

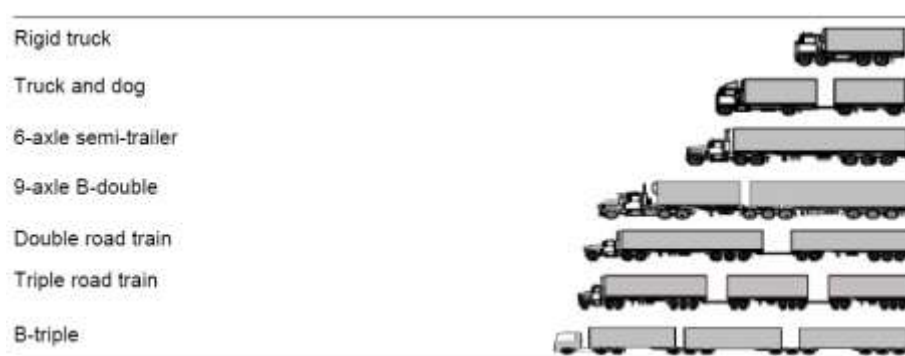
<sup>277</sup> Recreation horse movements are estimated at 16 million p.a. and are not included in calculations because the new standards will not have a major cost impact due to short journey length and expected high compliance with the proposed standards. The standards none-the-less will apply to all livestock movements.

<sup>278</sup> Average speeds for transport vehicle types have been provided by the Livestock Transport Association of Queensland (2007).

- Single deck (80km/hr);
- Double deck (80km/hr);
- B-double (triple deck) (80km/hr);
- 4-Deck road train (70km/hr); and
- 6-Deck road train (55km/hr).

Figure A5.1 provides an illustration of various vehicle types and deck arrangements used for freight transport.

**Figure A5.1 - Multiple vehicle types and sizes**



Source: Productivity Commission (2006), p.4.

Note, that if the total kilometres involved in the transport of live animals per annum, 142,024,436km, is divided by the total weighted number of hours of road transport per annum, 1,840,017 hours – the *average road speed* involved in livestock transport per annum is equal to approximately 77km/hr.

**Table A5.12 - Estimate of weighted total hours of road transport (excluding rail)/ annum/species**

Species/class of species	% of deck type arrangements used					Weighted total hrs of transport/annum (r1) = [(11)x(m1)/80km/hr]+ [(11)x(n1)/80km/hr]+ [(11)x(o1)/80km/hr]+ [(11)x(p1)/70km/hr]+ [(11)x(q1)/55km/hr]
	Single deck (m1)	Double deck (n1)	B-double (triple deck) (o1)	4-Deck road train (p1)	6-Deck road train (q1)	
Buffalo	40%	30%	0%	30%	0%	115
Cattle	20%	25%	35%	10%	10%	895,563
Calves for rearing	40%	40%	20%	0%	0%	1,053
Calves for slaughter	40%	40%	20%	0%	0%	5,336
Lamb < 4 months old	15%	25%	45%	10%	5%	514
Sheep	15%	25%	45%	10%	5%	389,440

Species/class of species	% of deck type arrangements used					Weighted total hrs of transport/annum (r1) = [(l1)x(m1)/80km/hr]+ [(l1)x(n1)/80km/hr]+ [(l1)x(o1)/80km/hr]+ [(l1)x(p1)/70km/hr]+ [(l1)x(q1)/55km/hr]
	Single deck (m1)	Double deck (n1)	B-double (triple deck) (o1)	4-Deck road train (p1)	6-Deck road train (q1)	
Pigs	25%	25%	50%	0%	0%	65,250
Poultry for meat	100%	0%	0%	0%	0%	365,021
Chicks	100%	0%	0%	0%	0%	23,586
Horses (slaughter and export)	95%	5%	0%	0%	0%	492.82
Horses(sales + major events)	100%	0%	0%	0%	0%	83,940.45
Deer	50%	45%	5%	0%	0%	478
Camels	90%	10%	0%	0%	0%	26
Alpacas	100%	0%	0%	0%	0%	472
Goats	15%	25%	45%	10%	5%	8,499
Emus	100%	0%	0%	0%	0%	81
Ostriches	100%	0%	0%	0%	0%	150
<b>Total</b>						<b>1,840,017</b>

#### A5.10 Calculation of total hours of rail transport per annum per species

The rail freight transport industry is oligopolistic<sup>279</sup> in nature made up of four key operators including: Queensland Rail; Pacific National Pty Limited; Australian Rail Track Corporation Limited; and Twentieth Super Pace Nominees Pty Limited.<sup>280</sup> However, the transport of livestock freight by rail is solely undertaken by Queensland Rail. Estimates for rail transport in terms of: number of animals transported per species; total number of decks per species; distance travelled and the total number of hours of transport – are summarised in Table 5.13.

<sup>279</sup> A market situation in which a product is supplied by a relatively small number of firms whose actions and policies are constrained by the expected reactions of each other. (Macquarie Dictionary)

<sup>280</sup> IBISWorld, (August, 2007).

**Table A5.13 –Estimate of total hours of rail transport per annum by species/class of species**

<b>Species/ class of species</b>	<b>Total no. livestock transported / annum 000's (s1)</b>	<b>Total no. of wagons (12.5m x 2.4m)/annum  (t1) = (s1)/(d1) x 1,000</b>	<b>Typical no. of wagons/ journey<sup>281</sup> (u1)</b>	<b>Total no. of laden trips<sup>282</sup>  (v1) = (t1)/(u1)</b>	<b>Average hrs/ journey<sup>283</sup> (w1)</b>	<b>Total hrs of transport/ annum/  (x1) = (v1) x (w1)</b>
Cattle	599.98	29,999	45	667	22	14,667
Horses (slaughter + export)	0.900	35.99	1	36	22	792
<b>Total</b>						<b>15,459</b>

<sup>281</sup> Advice provided by livestock industry organisations.

<sup>282</sup> These figures have been rounded.

<sup>283</sup> Queensland Rail (2007).

## ***Appendix 6 – Cost and cost saving estimate calculations for Option B – the proposed standards***

### A6.1. Costing methodology

The following important assumptions/observations are made in the costing of livestock transport:

- whilst not all livestock is transported in 12.5m by 2.4m decks - the aggregate number of livestock transported per annum is converted to equivalent decks in order to make costing feasible;
- the proposed standards do not apply to horses being transported by horse float and statistics to the number of kilometres of transport for livestock per annum only apply to articulated and rigid trucks - therefore this category of horses is eliminated from the costing calculations; and
- the percentage of transport of livestock per species/class of species by single deck, double deck, triple deck, 4 deck road train, and 6 deck road train - has been established on advice provided by livestock industry organisations and has a significant implication on cost estimates.

The costing of various general and specific standards for animal transport begins with establishing the number of animals being transported for slaughter and export, as well as, 'other'. Once these numbers are confirmed, the typical live weight of livestock species/classes plus stocking densities, obtained from the proposed standards, can be used to determine the number of 12.5m by 2.4m equivalent decks required to transport the numbers of livestock. Once the numbers of equivalent decks have been determined, their numbers as a percentage of total decks used for transport can be used to establish how many kilometres per annum that particular number of equivalent decks has been transported per species/class of species. This is done by apportioning the percentages of *equivalent decks to total decks* to 142,024,436 total kilometres of livestock transport per annum by articulated and rigid trucks (see Table A5.11 in Appendix 5). Total kilometres of transport per livestock species/class of species, is then converted to total hours of travel by weighting the sum of kilometres travelled by the product of:

- the proportions of deck arrangements used (e.g. 20% single deck; 40% 2-deck; and 40% 4-deck road train etc); and
- the typical speeds associated with each of these types of decks (e.g. 80km/hr for single deck and 2-deck and 70km/hr for a 4-deck road train etc).

Once the weighted total hours of travel is established (see Table A5.12 of Appendix 5), then the cost is calculated as a weighted sum of the total hours of travel by the proportion of different hourly rates per arrangement of deck (e.g. \$250/hr for single decks, \$352/hr for double decks, and between \$406/hr and \$462/hr for 4 deck road train etc taken from Table A6.2 of Appendix 6). The weighted total cost can then be divided by the total hours to obtain an average hourly rate for a particular livestock species (see Table A6.3) This average hourly rate can then be used to cost spelling, water deprivation, documentation requirement times etc. Therefore, the implications of general and specific proposed standards are reported, where possible, as incremental time costs (or savings where costs are negative).

In terms of the specific standards relating to particular species or class of species, an important assumption is made regarding the impact of spelling requirements. Firstly, the incremental cost (cost savings) of each of the specific standards is based on the following important proportions in relation to the spelling of livestock:

*The proportion of journeys where changeover is possible during mandatory spells – 5%:*

- The proportion of journeys that vehicles would unload livestock and drive off, thereby requiring another vehicle to come and pick up the livestock and load them. This proportion is assumed to be 5% of journeys only, given that in most cases, organising another vehicle would not be possible due to the remoteness of their location. The time allowance provided for this scenario is 1.5 hours to load and unload livestock plus the changeover time required to bring in another vehicle (2 hours) = 3.5 hours in total; and

*The proportion of journeys where vehicles are idle during mandatory spells – 95%*

- The proportion of journeys that vehicles must remain with livestock is 95% and the time involved is assumed to be either 12 hours or 24 hours (depending on the circumstance). Including the total time to load and unload livestock, the time allowance provided for in this scenario is equal to 13.5 or 25.5 hours in total, respectively. However this would only be representative of half of journeys where vehicles must be idle (due to remoteness of their location or lack of facilities). With regard to the other half of journeys, where vehicles remain idle, it is assumed that vehicles have access to the facilities to provide animals with the minimum voluntary spell thereby extending the water deprivation times by the amount of the minimum voluntary spell (not including loading and unloading). Voluntary spells considered in this RIS are 4 hours (under options B, B1 and D) and 6 hours (under option E) and 12 hours (under option E1) which would provide for a time allowance of 5.5 hours, 7.5 hours and 13.5 hours, respectively.

These proportions will typically give rise to a general formula for estimating the dollar cost/cost savings where mandatory spells are required - made of three components:

**Component 1)** = 5% x relevant number of journeys x 3.5hrs (where changeover is possible) x hourly rate +

**Component 2)** = 95% x 50% x relevant number of journeys x 13.5hrs (or 25.5hrs) (where there are idle vehicles no voluntary spell) x hourly rate +

**Component 3)** = 95% x 50% x relevant number of journeys x 5.5hrs (or 7.5hrs under option E or 13.5 hours under option E1) (where there are idle vehicles with voluntary spell) x hourly rate

However in relation to pig transport, it is acknowledged that in practice there is no actual unloading of vehicles during mandatory spells due to bio-security reasons and, therefore, no changeover of vehicles. As such, it is assumed that vehicles remain idle for 12 hours for 50% of the time where no voluntary spelling is involved and 4 hours (or 6 hours under E) for 50% of the time where voluntary spelling is involved.



## 6.2. Calculation of the range of estimates for the total cost of livestock transport - 'base case'

### A6.2.1 Calculation of hourly road transport charge

Table A6.1 shows the typical rates for road transport of livestock in North Queensland for 2007 for varying types of arrangements of decks. All rates are: per km per deck; GST exclusive; loaded kilometres only; and assume stable fuel prices.

**Table A6.1 – per kilometre rates for livestock road transport north Qld 2007 by deck arrangement**

Kms	Array of decks used in livestock transport			
	2-deck	3-deck B-double	4-deck road train	6-deck road train
Under 100	\$160.00	\$160.00	\$160.00	\$160.00
100>300	\$ 2.20	\$ 2.00	\$ 1.65	\$ 1.50
300> 500	\$ 2.20	\$ 1.65	\$ 1.55	\$ 1.50
500+	\$ 2.20	\$1.55	\$1.45	\$ 1.45

Source: Livestock Transport Association of Queensland (2007).

Table A6.2 converts the per km rate per deck for livestock transport into an estimated range for the hourly rate by taking the product of the lower an upper bound km rates per deck and the associated speeds.

**Table A6.2 – Estimated range for hourly rates for livestock road transport North QLD 2007 by deck arrangement**

	Array of decks used in livestock transport				
	Single deck	2-deck	3-deck B-double	4-deck road train	6-deck road train
Speed (a)	80km/hr	80km/hr	80km/hr	70km/hr	55km/hr
Upper per km rate per deck (b)	\$3.125	\$ 2.20	\$ 2.00	\$ 1.65	\$ 1.50
Lower per km rate per deck (c)	\$3.125	\$ 2.20	\$1.55	\$1.45	\$ 1.45
<b>Estimated range for hourly rates (d) = (a) x (b) – (a) x (c)</b>	<b>\$250/hr</b>	<b>\$352/hr</b>	<b>\$372 – 480/hr</b>	<b>\$406 – 462/hr</b>	<b>\$478.50 – 495/hr</b>

### A6.2.2 Calculation of road (excluding rail) transport cost by species

The range for the annual weighted transport cost by livestock species is obtained by the following formula:

$$\Sigma = WHTA_i \cdot DA_{ij} \cdot HR_j$$

Where:

$WHTA_i$  = Weighted hours of transport per annum<sup>284</sup> for the  $i^{th}$  species: (for  $i$  = buffalo; cattle; calves for rearing; calves for slaughter; lamb; sheep; pigs; poultry for meat; chicks; horses (slaughter and export); horses (sales + major events); deer; camels; alpacas; goats; emus and ostriches);

$DA_{ij}$  = Proportion of  $j^{th}$  deck arrangement<sup>285</sup> for the  $i^{th}$  species<sup>286</sup>: (for  $j$  = Single deck; double deck; triple deck B-double; 4 deck road train and 6 deck road train); and

<sup>284</sup> See column (r1) of Table A5.12 in Appendix 5

<sup>285</sup> Single deck, double deck, triple deck B-double, 4 deck road train and 6 deck road train.

$HR_j$  = Hourly rate range for the  $j^{th}$  deck arrangement<sup>287</sup>.

This formula provides the following range of cost per species for transport via road (excluding rail), as shown in Table A6.3. However, the estimates do not include transport of horses by horse float as data regarding the kilometres and hours of transport for this category is unavailable. Therefore, the transport cost for horses only represents transport for the purposes of slaughter and export/import (including re-import), sales and major events as an approximation of commercial horse movements affected financially by the standards.

Therefore, the estimated total annual cost of transporting livestock for slaughter, export/import and 'other' purposes by road (excluding rail) in the 'base case' is between approximately **\$604.4m** and **\$670.4m**. Note that the *total annual transport cost for horses participating in racing and recreational events* has, on its own, been estimated to be \$10m and \$115m, respectively in 2001 dollars.<sup>288</sup> In 2007 constant dollars this total transport cost estimate would be equal to **\$152,951,056**.<sup>289</sup> However a significant proportion of this transport cost for horses, namely recreational events, has not been included for analysis purposes in this RIS as the standards would not be relevant for this category.

**Table A6.3 – Estimate of the range of annual cost for road transport (excluding rail) by livestock species<sup>290</sup>**

Species/class of species	No. livestock transported/ annum 000's <sup>291</sup> (e)	Lower range of annual weighted cost (f)	Upper range of annual weighted cost (g)	Lower range of transport cost/head (h) = (f)/(e)	Upper range of transport cost/head (i) = (g)/(e)
Buffalo	2.875	\$37,508	\$39,433	\$13.05	\$13.72
Cattle	23,280.122	\$319,402,450	\$359,747,551	\$13.72	\$15.45
Calves for rearing	161.053	\$332,026	\$354,779	\$2.06	\$2.20
Calves for slaughter	955.556	\$1,682,055	\$1,797,322	\$1.76	\$1.88
Lamb < 4 months old	107.162	\$183,676	\$211,952	\$1.71	\$1.98
Sheep	66,210.170	\$139,195,492	\$160,624,413	\$2.10	\$2.43
Pigs	7,729.286	\$21,956,712	\$25,480,225	\$2.84	\$3.30
Poultry for meat	422,333.300	\$91,255,147	\$91,255,147	\$0.22	\$0.22
Chicks	443,449.965	\$5,896,486	\$5,896,486	\$0.01	\$0.01
Horses (slaughter and export)	16.970	\$125,719	\$125,719	\$7.41	\$7.41
Horses (sales +	2,890.48	\$20,985,112	\$20,985,112	\$7.26	\$7.26

<sup>286</sup> See columns (m1) (n1) (o1) (p1) and (q1) of Table A5.12 in Appendix 5.

<sup>287</sup> See row (d) of Table A6.2 in Appendix 6.

<sup>288</sup> Gordon, J, (June, 2001).

<sup>289</sup> To convert the cost into 2007 constant dollars, 1) the conversion factor is obtained = producer price index for transport in June 2001/producer price index for transport in June 2007 = 104.2/127.5 = 0.817254901 and then 2) \$125m is divided by the conversion factor (\$125m/0.817254901 = \$152,951,056). For producer price indexes see ABS, (June 2007), Cat. No. 6427.0.

<sup>290</sup> Cost for horse transport only includes transport by articulated and rigid trucks (i.e. transport for the purposes of slaughter and export/import (including re-import).

<sup>291</sup> See column (b1) of Table A5.8 in Appendix 5 (less 599,980 for cattle and 900 for horses which are transported by rail).

Species/class of species	No. livestock transported/ annum 000's <sup>291</sup> (e)	Lower range of annual weighted cost (f)	Upper range of annual weighted cost (g)	Lower range of transport cost/head (h) = (f)/(e)	Upper range of transport cost/head (i) = (g)/(e)
major events)					
Deer	49.333	\$144,221	\$146,799	\$2.92	\$2.98
Camels	0.787	\$6,755	\$6,755	\$8.59	\$8.59
Alpacas	66.990	\$118,047	\$118,047	\$1.76	\$1.76
Goats	1,535.294	\$3,037,828	\$3,505,496	\$1.98	\$2.28
Emus	5.111	\$20,167	\$20,167	\$3.95	\$3.95
Ostriches	10.778	\$37,619	\$37,619	\$3.49	\$3.49
<b>Total</b>	<b>968,805.231</b>	<b>\$604,417,018</b>	<b>\$670,353,024</b>	<b>N/A</b>	<b>N/A</b>

### A6.2.3 Calculation of hourly rail transport charge

Rail charges are taken from Queensland Rail (2007) and is equal to 76 cents per km per deck<sup>292</sup> and based on the average speed of livestock trains (i.e. 45km/hr) this would give an estimate of **\$34.20 per hour** (i.e. \$0.76/km x 45km/hr = \$34.20/hr). *Flat charges*<sup>293</sup> also apply for rail transport including: **\$60 per deck** for loading and unloading; and **\$90 per train**<sup>294</sup> for stock inspections.

### A6.2.4 Calculation of rail transport cost by species

As shown in Table 5.13 in Appendix 5, the total hours of annual rail transport for cattle and for horses were 14,667 hours and 792 hours, respectively. Furthermore, the number of single decks involved for cattle and horses were 29,999 and 35.99, respectively. Finally the total number of trains (i.e. journeys) associated with cattle and horse transport per annum was 667 and 36, respectively. Therefore, the *total annual rail transport cost for cattle* is calculated as:

$$[\text{Total hrs of rail transport for cattle (14,666.7hrs)} \times \text{hourly rate (\$34.20/hr)}] + [\text{total number of decks (29,999.1 decks)} \times \text{charge per deck (\$60/deck)}] + [\text{total number of journeys/trains (666.7)} \times \text{charge per train (\$90/train)}] = \mathbf{\$2,361,548.60}$$

Furthermore, the *total annual rail transport cost for horses* is calculated as:

$$[\text{Total hrs of rail transport for horses (791.8hrs)} \times \text{hourly rate (\$34.20/hr)}] + [\text{total number of decks (35.99 decks)} \times \text{charge per deck (\$60/deck)}] + [\text{total number of journeys/trains (35.99)} \times \text{charge per train (\$90/train)}] = \mathbf{\$32,477.54}$$

Subsequently, the total annual transport cost for livestock by rail is **\$2,394,026.14**.

### A6.2.5 Total road transport cost by species for 5 years

The total road transport cost of livestock including transport by articulated and rigid vehicles, horse floats and rail - is between approximately **\$606.8m** and **\$672.7m** per annum (each is broken up into its basic components, as shown in Table A6.4). Therefore, the present value of total road transport over 5 years in present value terms in the 'base case' is between **\$2,835,669,966** and **\$3,143,782,478.46**.

<sup>292</sup> Queensland Rail (2007).

<sup>293</sup> Ibid 2007.

<sup>294</sup> A train is typically comprised of 45 decks for cattle and 1 deck for horses.

**Table A6.4 – Estimated annual cost for road transport all livestock species including rail transport**

<b>Type of transport</b>	<b>Lower range of cost<sup>295</sup></b>	<b>Upper range of cost<sup>296</sup></b>
Total non-rail road <sup>297</sup>	\$604,417,018	\$670,353,024
Total rail only	\$2,394,026	\$2,394,026
<b>Total annual cost of road transport</b>	<b>\$606,811,045</b>	<b>\$672,747,050</b>

#### A6.3 Incremental transaction cost of general standard SA1.1 for receivers<sup>298</sup> of livestock

The incremental cost of standard SA1.1 - in outlining the chain of responsibility to livestock handlers for the duty of care regarding the welfare of livestock under their control – applies to all categories of species other than cattle, horses, pigs and poultry as these are covered by existing codes. Moreover, while this standard simply clarifies responsibilities, it would be likely to impose a time cost on the receiver after unloading at a destination in terms of recording delivery of the livestock. It is assumed that an average of 5 minutes is required by the receiver (i.e. the saleyard operator, abattoir operator; livestock owner/farmer etc) to confirm and record the state of livestock in their responsibility.

In order to determine general time cost the proxy of full-time average weekly earnings per person is \$866.40<sup>299</sup> is utilised. Taking the average working hours per week to be 40 hours<sup>300</sup>, the average hourly wage is therefore \$21.66 (i.e. the average opportunity cost of an hour). Taking the product of the hourly wage (\$21.66/hr) and time required to record the state of the livestock (0.0833 hours) – the logistical cost of standard SA1.1 on receivers would be **\$1.80** per shipment/trip of livestock. Furthermore, the number of livestock transports/journeys is estimated as the total number of equivalent (12.5m x 2.4m) decks divided by the weighted sum of number of decks involved in a particular transport per species. Based on column (e1) of Table A5.11 of Appendix 5, the following number of journeys per annum is estimated per species affected by standard SA1.1, as shown in Table A6.5.

<sup>295</sup> Based on lower estimates of weighted annual cost in Table A6.3.

<sup>296</sup> Based on upper estimates of weighted annual cost in Table A6.3.

<sup>297</sup> Only including cost of transport of slaughter/export/import/re-import horses.

<sup>298</sup> Receivers would include livestock owners, operators or staff at properties, feedlots, saleyards, depots and processing plants.

<sup>299</sup> Seasonally adjusted estimate, (see ABS, (May 2007), *Average Weekly Earnings*, Australia, Cat. No. 6302.0).

<sup>300</sup> Full-time work is considered to be 35 hours or more per week.

**Table A6.5 – Number of journeys per annum per species/class of species affected by standard SA1.1 (excluding cattle/horses/pigs/poultry and rail)**

Species/class of species	Estimated total no. of equivalent decks (12.5m x 2.4m) used for road transport/annum <sup>301</sup> (j)	Weighted sum of average number of decks involved per trip/species (k) = [(m1 <sup>302</sup> )x1deck]+ [(n1)x2decks]+[(o1)x3decks]+ [(p1)x4decks]+[(q1)x6decks]	No. of journeys per annum/species affected (l) = (j)/(k)
Buffalo	151	2.2	69 <sup>303</sup>
Calves for rearing	1,451	1.8	806
Calves for slaughter	7,350	1.8	4,084
Lamb < 4 months old	683	2.7	253
Sheep	517,267	2.7	191,580
Deer	658	1.55	424
Camels	36	1.1	33
Alpacas	650	1	650
Goats	11,289	2.7	4,181
Emus	111	1	111
Ostriches	207	1	207
<b>Total</b>	<b>539,853</b>		<b>202,398</b>

Taking the product of column (l) in Table A6.6 and the opportunity cost of 5 minutes of recording time (i.e. \$1.80) it can be shown that **\$364,316.94** per annum would be incurred by receivers of livestock, as shown in Table A6.6. Moreover the majority of additional cost would be imposed on those dealing with lamb, sheep and goats. Over 5 years, and in present value 2008 dollars, this would equal **\$1,702,481.92**.

**Table A6.6 – Additional annual transaction cost for receivers of livestock of standard SA1.1 per livestock category**

Species/class of species	No. of journeys per annum/species affected (l)	Additional transaction cost of 5 min/ species shipment/annum (m) = (l) x \$1.80
Buffalo	69	\$123.80
Calves for rearing	806	\$1,450.92
Calves for slaughter	4,084	\$7,350.43
Lamb < 4 months old	253	\$455.04
Sheep	191,580	\$344,844.63
Deer	424	\$763.87
Camels	33	\$58.51
Alpacas	650	\$1,170.70
Goats	4,181	\$7,525.95
Emus	111	\$200.00
Ostriches	207	\$373.08
<b>Total</b>	<b>202,398</b>	<b>\$364,316.94</b>

<sup>301</sup> See column (e1) in Table A5.11 of Appendix 5.

<sup>302</sup> Figures for m1, n1, o1, p1 and q1 are from corresponding columns in Table A5.12 of Appendix 5.

<sup>303</sup> These figures have been rounded to the nearest whole.

#### A6.4 Incremental cost of general standard SA1.2 for transporters

Standard SA1.2 requires that for journeys > 24 hours there must be a document that includes times without water, inspection times and emergency contacts accompanying the livestock. In the absence of sufficient documentation via waybills etc, this would take up to 5 minutes to arrange however, this matter is already covered by existing codes for the transport of cattle, horses, and pigs and is not applicable to poultry. Furthermore, this standard does not apply to calves or ratites as journeys relating to these species do not/and are not permitted to be greater than 24 hours. The standard would impose an additional cost for all other species/varieties of livestock where documentation for journeys greater than 24 hours is insufficient (assumed to be 5%<sup>304</sup> for the purposes of this calculation). Furthermore, it is assumed that 5%<sup>305</sup> of all decks are involved in journeys which are greater than 24 hours. The procedure for calculating the incremental cost of this standard begins with calculating the hourly rate of transport for the relevant livestock affected (see section A6.4.1). An estimate is then made regarding the number of journeys per annum per livestock affected (see section A6.4.2). Finally, the incremental costs per species affected per annum are then summarised in section A6.4.3.

##### *A6.4.1 Calculation of the hourly rate of transport for relevant livestock affected reflecting 0.25% of 12.5 x 2.4 equivalent decks*

Firstly, the estimate for the total kilometres of travel is adjusted from 142,024,436km to that which reflects only 5% of journeys that are greater than 24 hours, and only for the affected species (i.e. 0.25% of all decks for transport of relevant livestock). As shown in column (e1) of Table A5.11 in Appendix 5 – 142,024,436km travelled reflects a total 2,445,298 (12.5m x 2.4) equivalent decks being transported per annum. However, this total amount of equivalent decks is adjusted to 132,683 (12.5m x 2.4m) equivalent decks per annum as shown in Table A6.7 - which is associated with only **7,706,336.38km** which is calculated as follows:

$$142,024,436\text{km}/2,445,298\text{decks} \times 132,683\text{decks} = 7,706,336.38\text{km}$$

**Table A6.7 –Estimate of total distance of road transport (km) per annum by 0.25% of decks by species (excluding cattle, calves, horses, poultry, pigs and ratites)**

Species/class of species	0.25% of estimated total no. of equivalent decks (12.5m x 2.4m) used for road transport/annum (n)	No. of decks per species as a % of total no. of decks used in the transportation of livestock/ annum (o)	Total distance (km) travelled by road/ annum by 0.25% of decks (p) = 7,706,336.38km x (o)
Buffalo	37.8	0.03%	2,197.13
Lamb < 4 months old	170.6	0.13%	9,910.89
Sheep	129,316.7	97.46%	7,510,797.39
Deer	164.4	0.12%	9,551.04
Camels	8.9	0.01%	519.21
Alpacas	162.6	0.12%	9,443.74
Goats	2,822.2	2.13%	163,917.00

<sup>304</sup> Proposed by AHA

<sup>305</sup> Proportion recommended by AHA

Species/class of species	0.25% of estimated total no. of equivalent decks (12.5m x 2.4m) used for road transport/annum (n)	No. of decks per species as a % of total no. of decks used in the transportation of livestock/ annum (o)	Total distance (km) travelled by road/ annum by 0.25% of decks (p) = 7,706,336.38km x (o)
<b>Total</b>	<b>132,683</b>	<b>100.00%</b>	<b>7,706,336.38</b>

Total weighted hours of transport per annum per species are shown in Table A6.8. The estimates have been calculated by taking the product of total distance travelled by road/annum/species and weighting this product according to the average associated speeds of the following arrangements of decks<sup>306</sup>:

- Single deck (80km/hr); Double deck (80km/hr); B-double (triple deck) (80km/hr); 4-Deck road train (70km/hr); and 6-Deck road train (55km/hr)

**Table A6.8 - Estimate of weighted total hours of road transport of 0.25% of decks (excluding cattle, calves, horses, poultry, pigs and ratites) per annum by species/class of species**

Species/class of species	% of deck arrangement used for transport					Weighted total hrs of road transport/annum for 0.25% of decks (v) = [(p)x(q)/80km/hr]+ [(p)x(r)/80km/hr]+ [(p)x(s)/80km/hr]+ [(p)x(t)/70km/hr]+ [(p)x(u)/55km/hr]
	Single deck (q)	2- deck (r)	3-deck B-double (s)	4-deck road train (t)	6-deck road train (u)	
Buffalo	40%	30%	0%	30%	0%	29
Lamb < 4 months old	15%	25%	45%	10%	5%	128
Sheep	15%	25%	45%	10%	5%	97,360
Deer	50%	45%	5%	0%	0%	119
Camels	90%	10%	0%	0%	0%	6
Alpacas	100%	0%	0%	0%	0%	118
Goats	15%	25%	45%	10%	5%	2,125
<b>Total</b>						<b>99,886</b>

Based on the formula in section A6.2.2 of this RIS, the following lower and upper estimates of annual costs, costs per hour and costs per 5 minutes, are determined for the transport of 0.25% of all 12.5 x 2.4 equivalent decks used to transport livestock, not including cattle, calves, horses, pigs, poultry and ratites (see Table A6.9).

<sup>306</sup> Average speeds for transport vehicle types have been provided by the Livestock Transport Association of Queensland (2007).

**Table A6.9 - Lower and upper estimates of annual costs, costs per hour and costs per 5 minutes for 0.25% of total decks transported for livestock affected by standard SA1.2**

Species/ class of species	Lower range of annual weighted cost/species (w)	Upper range of annual weighted cost/species (x)	Lower range of cost/hr (y) = (w)/(v)	Upper range of cost/hr (z) = (x)/(v)	Lower range of cost/5min (a1) = (y) x (5/60)	Upper range of cost/5min (b1) = (z) x (5/60)
Buffalo	\$9,377.11	\$9,858.28	\$327.40	\$344.20	\$27.28	\$28.68
Lamb	\$45,918.91	\$52,988.06	\$357.43	\$412.45	\$29.79	\$34.37
Sheep	\$34,798,873.12	\$40,156,103.29	\$357.43	\$412.45	\$29.79	\$34.37
Deer	\$36,055.16	\$36,699.86	\$302.00	\$307.40	\$25.17	\$25.62
Camels	\$1,688.72	\$1,688.72	\$260.20	\$260.20	\$21.68	\$21.68
Alpacas	\$29,511.69	\$29,511.69	\$250.00	\$250.00	\$20.83	\$20.83
Goats	\$759,456.89	\$876,374.05	\$357.43	\$412.45	\$29.79	\$34.37
<b>Total</b>	<b>\$35,680,881.60</b>	<b>\$41,163,223.94</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>

*A6.4.2 Estimates for number of journeys per livestock affected per annum as per 0.25% of decks*

The number of journeys per annum is calculated as the total number of equivalent (12.5m x 2.4m) decks divided by the weighted sum of number of decks involved in a particular transport per species. Based on column (n) of Table A6.7 in this appendix, the following numbers of journeys per annum are estimated per species affected by standard SA1.2, as shown in Table A6.10.

**Table A6.10 – Number of journeys per annum per species affected by standard SA1.2**

Species/class of species	Estimated total no. of equivalent decks (12.5m x 2.4m) used for road transport/annum (n)	Weighted sum of average number of decks involved per trip/species (c1) = [(q)x1deck]+[(r)x2decks]+ [(s)x3decks]+[(t)x4decks]+ [(u) x 6decks]	No. of journeys/annum affected (d1) = (n)/(c1)
Buffalo	38	2.2	17
Lamb	171	2.7	63
Sheep	129,317	2.7	47,895
Deer	164	1.55	106
Camels	9	1.1	8
Alpacas	163	1	163
Goats	2,822	2.7	1,045
<b>Total</b>	<b>132,683</b>		<b>49,298</b>

*A6.4.3 Estimate for annual cost of standard SA1.2 per livestock affected as per 0.25% of decks*

The range of additional annual cost of standard SA1.2 per livestock affected (as shown in Table A6.11) is calculated by taking the product of column (d1) in Table A6.10 and columns (a1) and (b1) in Table A6.9. Assuming that document preparation would only require up to 5 minutes, standard SA1.2 is estimated to cost the livestock transport industry an additional **\$1,466,294.23** to **\$1,691,067.78** per annum (see Table A6.11) with sheep transporters incurring the largest proportion of this cost. Over 5 years, in 2007 present value dollars, this would equal between **\$6,852,109.08** and **\$7,902,493.70**.



**Table A6.11 – Additional annual transport cost of standard SA1.2 per livestock affected**

Species/ class of species	No. of journeys/ annum/species (d1)	Lower range of cost/5min (a1)	Upper range of cost/5min (b1)	Lower range of cost of SA1.2/species/ annum (e1) = (d1) x (a1)	Upper range of cost of SA1.2/species/ annum (f1) = (d1) x (b1)
Buffalo	17	\$27.28	\$28.68	\$469.14	\$493.21
Lamb < 4 months old	63	\$29.79	\$34.37	\$1,882.44	\$2,172.24
Sheep	47895	\$29.79	\$34.37	\$1,426,575.16	\$1,646,194.09
Deer	106	\$25.17	\$25.62	\$2,670.01	\$2,717.75
Camels	8	\$21.68	\$21.68	\$176.21	\$176.21
Alpacas	163	\$20.83	\$20.83	\$3,387.44	\$3,387.44
Goats	1045	\$29.79	\$34.37	\$31,133.83	\$35,926.84
<b>Total</b>	<b>49,298</b>	<b>N/A</b>	<b>N/A</b>	<b>\$1,466,294.23</b>	<b>\$1,691,067.78</b>

#### A6.5 Incremental unquantifiable cost of general standard SA2.1 for transporters and livestock owners

Since under the ‘base case’ there is already a requirement for stock-handlers to be experienced,<sup>307</sup> it is expected that the only cost that would be incurred as a result of standard SA2.1 is the costs of familiarisation of the stock-handlers with the standards (approximately 1 hour/ per stock-handler). Given the absence of any consolidated statistics on the number of stock-handlers in Australia, this incremental cost of the standards remains unquantifiable.

#### A6.6 Incremental unquantifiable cost of general standard SA4.1 for transporters and livestock owners

Standard SA4.1 requires that livestock be assessed as fit for intended journey at every loading. While this is consistent with existing codes and the inclusion of ‘unfit’ does not impose additional costs per se, there may be additional training costs in regards to recognising disease conditions. This standard remains unquantifiable as it is unknown just how many livestock transporters or owner drivers would require additional training in this regard as part of either induction training or a short course.

#### A6.7 Incremental veterinary consultation cost of general standard SA4.2 for livestock owners (excluding horses and pigs and poultry)

Standard SA4.2 requires that unfit animals be transported only on specific veterinary advice. It is estimated that approximately 0.01% of total livestock transported would typically be affected by this standard<sup>308</sup>. The average consultation fee for a vet to provide advice is \$100/hr<sup>309</sup> + \$1.14/km<sup>310</sup> of travel. Assuming that a vet would travel an average of 40km<sup>311</sup> to provide consultation, the total average consultation fee would most likely approximate **\$145.60** per visit.

Based on Table A5.8 of Appendix 5, it has been established there are roughly 966,515,633 animals transported per annum. However, poultry is excluded from the population as the cost of

<sup>307</sup> Every state except NSW and NT require such training as part of a B-double licence.

<sup>308</sup> Advice given by Animal Health Australia (2007).

<sup>309</sup> This figure has been recommended by the Sheepmeat Council of Australia.

<sup>310</sup> These average rates have been provided by the Australian Veterinary Association.

<sup>311</sup> This figure has been recommended by the Sheepmeat Council of Australia.

a visit by a vet would definitely exceed the market value of the animal<sup>312</sup> and, therefore, it is assumed that humane destruction would be the preferred option. Furthermore, horses and pigs are already covered in this manner by existing codes. Subsequently, the total number of relevant animals per species/class of species that are estimated to be unfit for travel (i.e. **92,985,213**) are summarised in Table A6.12. Taking the product of the number of animals which are unfit and the average fee of \$145.60 per visit gives a cost of **\$1,353,864.70** per annum for livestock owners. The majority of this cost would be borne by livestock owners of sheep and cattle. The total cost over 5 years to livestock owners in present value terms (2008 dollars) would be **\$6,326,717**.

**Table A6.12 – Additional annual veterinary consultation cost for livestock owners as a result of standard SA4.2 per livestock species/class of species**

Species/class of species	Total no. transported <sup>313</sup> (g1)	Total no. of animals unfit (h1) = (g1) x 0.0001	Annual veterinary costs/species (i1) = (h1) x \$145.60
Buffalo	2,875	0.3	\$41.86
Cattle	23,880,105	2,388.0	\$347,694.33
Calves for rearing	161,053	16.1	\$2,344.93
Calves for slaughter	955,556	95.6	\$13,912.89
Lamb < 4 months old	107,162	10.7	\$1,560.28
Sheep	66,210,170	6,621.0	\$964,020.07
Deer	49,333	4.9	\$718.29
Camels	787	0.1	\$11.45
Alpacas	66,990	6.7	\$975.37
Goats	1,535,294	153.5	\$22,353.88
Emus	5,111	0.5	\$74.42
Ostriches	10,778	1.1	\$156.92
<b>Total</b>	<b>92,985,213</b>	<b>9,298.5</b>	<b>\$1,353,864.70</b>

#### A6.8 Incremental cost of general standard SA5.11 for livestock transporters

The incremental cost of Standard SA5.11 deals with two parts – Standards SA5.11(ii) (part 1 of costs) and Standard SA5.11(iii) (part 2 of costs). Standard SA5.11(ii) deals with the inspection of facilities by a driver prior to loading or receival yard before unloading and affects all species other than horses, and pigs, which are covered under existing codes and transport involving rail. Standard SA5.11(iii) deals with taking reasonable steps to notify a responsible person of the arrival of the livestock at the destination and assumes a 1 minute time cost for 1% of journeys affected.

##### **Part 1 of costs - Standard SA5.11(ii)**

The formula for calculating the incremental cost of standard SA5.11(ii) begins with calculating the hourly rate of transport for the relevant livestock affected<sup>314</sup> (see section A6.8.1(a)). An estimate is then made regarding the number of journeys per annum per livestock affected (see section A6.8.2(a)). Finally, the incremental costs per species affected per annum are then summarised in section A6.8.3(a), assuming that inspection time is around 2.5 minutes.

<sup>312</sup> The retail price of a 2kg chicken is only around \$10.00.

<sup>313</sup> See Table A5.8 of Appendix 5 for estimates (includes 'other' transport).

<sup>314</sup> Existing codes cover horses and pigs regarding this matter.

*A6.8.1(a) Calculation of the hourly rate of transport for relevant livestock affected by SA5.11(ii)*

Firstly, the estimate for the total kilometres of travel is adjusted from 142,024,436km to that which reflects total 'relevant'<sup>315</sup> transport. As shown in column (e1) of Table A5.11 in Appendix 5 – 142,024,436km travelled reflects 2,445,298 total (12.5m x 2.4) equivalent decks being transported per annum. However, this total amount of equivalent decks is adjusted to remove non-relevant transport and, as shown in Table A6.13(a), this gives 2,239,124 (12.5m x 2.4m) equivalent decks per annum, which are associated with **130,049,754km** and is calculated in the following way:

$$142,024,436\text{km} / 2,445,298\text{decks} \times 2,239,124\text{decks} = \mathbf{130,049,754\text{km}}$$

Total weighted hours of transport per annum per species are shown in Table A6.14(a). The estimates have been calculated by taking the product of total distance travelled by road/annum/species and weighting this product according to the average associated speeds of the following arrangements of decks<sup>316</sup>:

- Single deck (80km/hr); 2-deck (80km/hr); 3-deck B-double (80km/hr); 4-deck road train (70km/hr); and 6-deck road train (55km/hr)

**Table A6.13(a) –Estimate of total distance of road transport (km) per annum by species/class of species (excluding horses, pigs and rail)**

Species/class of species	Estimated total no. of equivalent decks (12.5m x 2.4m) used for road transport/annum (j1)	No. of decks per species as a % of total no. of decks used in the transportation of livestock/ annum (k1)	Estimated total distance (km) travelled by road/ annum/species (l1)= <b>130,049,754km x (k1)</b>
Buffalo	151	0.007%	8,789
Cattle	1,164,006	51.985%	67,606,207
Calves for rearing	1,451	0.065%	84,271
Calves for slaughter	7,350	0.328%	426,917
Lamb < 4 months old	683	0.030%	39,644
Sheep	517,267	23.101%	30,043,190
Poultry for meat	502,778	22.454%	29,201,647
Chicks	32,487	1.451%	1,886,876
Deer	658	0.029%	38,204
Camels	36	0.002%	2,077
Alpacas	650.39	0.029%	37,775
Goats	11,289	0.504%	655,668
Emus	111	0.005%	6,453
Ostriches	207	0.009%	12,038
<b>Total</b>	<b>2,239,124</b>	<b>100.000%</b>	<b>130,049,754</b>

<sup>315</sup> Relevant means all species/class of species except for horses and pigs.

<sup>316</sup> Average speeds for transport vehicle types have been provided by the Livestock Transport Association of Queensland (2007).

**Table A6.14(a) - Estimate of weighted total hours of road transport (excluding horses, pigs and rail transport) per annum by species/class of species**

Species/class of species	% of deck arrangement used for transport					Weighted total hrs of road transport/annum (r1) = [(l1)x(m1)/80km/hr]+ [(l1)x(n1)/80km/hr]+ [(l1)x(o1)/80km/hr]+ [(l1)x(p1)/70km/hr]+ [(l1)x(q1)/55km/hr]
	Single deck (m1)	2-deck (n1)	3-deck B-double (o1)	4-deck road train (p1)	6-deck road train (q1)	
Buffalo	40%	30%	0%	30%	0%	115
Cattle	20%	25%	35%	10%	10%	895,563
Calves for rearing	40%	40%	20%	0%	0%	1,053
Calves for slaughter	40%	40%	20%	0%	0%	5,336
Lamb < 4 months old	15%	25%	45%	10%	5%	514
Sheep	15%	25%	45%	10%	5%	389,440
Poultry for meat	100%	0%	0%	0%	0%	365,021
Chicks	100%	0%	0%	0%	0%	23,586
Deer	50%	45%	5%	0%	0%	478
Camels	90%	10%	0%	0%	0%	26
Alpacas	100%	0%	0%	0%	0%	472
Goats	15%	25%	45%	10%	5%	8,499
Emus	100%	0%	0%	0%	0%	81
Ostriches	100%	0%	0%	0%	0%	150
<b>Total</b>						<b>1,690,333</b>

Based on the formula in section A6.2.2 of this RIS, the following lower and upper estimates of annual costs, costs per hour and costs per 2.5 minutes, are determined for the transport of livestock not including horses, pigs and rail (see Table A6.15(a)).

**Table A6.15(a) - Lower and upper estimates of annual costs, costs per hour and costs per 2.5 minutes for the transport of livestock affected by standard SA5.11(ii)**

Species/class of species	Lower range of annual weighted cost/species (s1)	Upper range of annual weighted cost/species (t1)	Lower range of cost/hr (u1)= (s1)/(r1)	Upper range of cost/hr (v1)= (t1)/(r1)	Lower range of cost/2.5min (w1)= (u1)x (2.5/60)	Upper range of cost/2.5min (x1)= (v1) x (2.5/60)
Buffalo	\$37,508.45	\$39,433.13	\$327.40	\$344.20	\$13.64	\$14.34
Cattle	\$319,402,450.02	\$359,747,551.30	\$356.65	\$401.70	\$14.86	\$16.74
Calves for rearing	\$332,026.21	\$354,779.28	\$315.20	\$336.80	\$13.13	\$14.03
Calves for slaughter	\$1,682,054.71	\$1,797,322.42	\$315.20	\$336.80	\$13.13	\$14.03
Lamb < 4 months old	\$183,675.66	\$211,952.22	\$357.43	\$412.45	\$14.89	\$17.19
Sheep	\$139,195,492.48	\$160,624,413.16	\$357.43	\$412.45	\$14.89	\$17.19
Poultry	\$91,255,146.62	\$91,255,146.62	\$250.00	\$250.00	\$10.42	\$10.42

Species/ class of species	Lower range of annual weighted cost/species (s1)	Upper range of annual weighted cost/species (t1)	Lower range of cost/hr (u1)= (s1)/(r1)	Upper range of cost/hr (v1)= (t1)/(r1)	Lower range of cost/2.5min (w1)= (u1)x (2.5/60)	Upper range of cost/2.5min (x1) = (v1) x (2.5/60)
for meat						
Chicks	\$5,896,486.40	\$5,896,486.40	\$250.00	\$250.00	\$10.42	\$10.42
Deer	\$144,220.65	\$146,799.43	\$302.00	\$307.40	\$12.58	\$12.81
Camels	\$6,754.87	\$6,754.87	\$260.20	\$260.20	\$10.84	\$10.84
Alpacas	\$118,046.76	\$118,046.76	\$250.00	\$250.00	\$10.42	\$10.42
Goats	\$3,037,827.56	\$3,505,496.19	\$357.43	\$412.45	\$14.89	\$17.19
Emus	\$20,166.88	\$20,166.88	\$250.00	\$250.00	\$10.42	\$10.42
Ostriches	\$37,619.00	\$37,619.00	\$250.00	\$250.00	\$10.42	\$10.42
<b>Total</b>	<b>\$561,349,476.26</b>	<b>\$623,761,967.67</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>

*A6.8.2(a) Estimate for the number of journeys per livestock affected per annum by SA5.11(ii)*

The number of journeys per annum is calculated as the total number of equivalent (12.5m x 2.4m) decks divided by the weighted sum of number of decks involved in a particular transport per species. Based on column (j1) of Table A6.13(a) in this appendix, the following numbers of journeys per annum are estimated per species affected by standard SA5.11, as shown in Table A6.16(a).

**Table A6.16(a) – Number of journeys per annum per species/class of species affected by standard SA5.11(ii)**

Species/class of species	Estimated total no. of equivalent decks (12.5m x 2.4m) used for road transport/annum (j1)	Weighted sum of average number of decks involved per trip/species (y1)= [(m1)x1deck]+ [(n1)x2decks]+[(o1)x3decks]+ [(p1)x4decks]+[(q1)x6decks]	No. of journeys per annum/species affected (z1)= (j1)/(y1)
Buffalo	151	2.2	69
Cattle	1,164,006	2.75	423,275
Calves for rearing	1,451	1.8	806
Calves for slaughter	7,350	1.8	4,084
Lamb < 4 months old	683	2.7	253
Sheep	517,267	2.7	191,580
Poultry for meat	502,778	1	502,778
Chicks	32,487	1	32,487
Deer	658	1.55	424
Camels	36	1.1	33
Alpacas	650	1	650.39
Goats	11,289	2.7	4,181
Emus	111	1	111
Ostriches	207	1	207
<b>Total</b>	<b>2,239,124</b>		<b>1,160,938</b>

*A6.8.3(a) Estimate for the annual cost of standard SA5.11(ii) per livestock affected*

The range of additional annual cost of standard SA5.11(ii) per livestock affected (as shown in A6.17(a)) is calculated by taking the product of column (z1) in Table A6.16(a) and columns (w1) and (x1) in Table A6.15(a). Assuming that inspection of facilities would require up to 2.5

minutes, standard SA5.11(ii) is estimated to cost the livestock transport industry an additional \$14,865,840.49 to \$16,114,310.63 per annum (excluding pigs, horses and rail) (see Table A6.17(a)) with cattle transporters incurring the largest proportion of this cost.

**Table A6.17(a) – Additional annual transport cost of standard SA5.11(ii) per livestock species/class of species affected (excluding horses, pigs and rail transport)**

Species/ class of species	No. of journeys per annum/species  (z1)	Lower range of cost/2.5min  (w1)	Upper range of cost/2.5min  (x1)	Lower range of cost of SA5.11(ii)/ species/ annum (a2)= (z1) x (w1)	Upper range of cost of SA5.11(ii)/ species/ annum (b2) = (z1)x (x1)
Buffalo	69	\$13.64	\$14.34	\$938.27	\$986.42
Cattle	423,275	\$14.86	\$16.74	\$6,290,042.14	\$7,084,564.50
Calves for rearing	806	\$13.13	\$14.03	\$10,586.38	\$11,311.84
Calves for slaughter	4,084	\$13.13	\$14.03	\$53,630.90	\$57,306.11
Lamb < 4 months old	253	\$14.89	\$17.19	\$3,764.88	\$4,344.48
Sheep	191,580	\$14.89	\$17.19	\$2,853,150.31	\$3,292,388.18
Poultry for meat	502,778	\$10.42	\$10.42	\$5,237,268.11	\$5,237,268.11
Chicks	32,487	\$10.42	\$10.42	\$338,408.09	\$338,408.09
Deer	424	\$12.58	\$12.81	\$5,340.02	\$5,435.51
Camels	33	\$10.84	\$10.84	\$352.43	\$352.43
Alpacas	650	\$10.42	\$10.42	\$6,774.88	\$6,774.88
Goats	4,181	\$14.89	\$17.19	\$62,267.67	\$71,853.67
Emus	111	\$10.42	\$10.42	\$1,157.41	\$1,157.41
Ostriches	207	\$10.42	\$10.42	\$2,159.01	\$2,159.01
<b>Total</b>	<b>1,160,938</b>	<b>N/A</b>	<b>N/A</b>	<b>\$14,865,840.49</b>	<b>\$16,114,310.63</b>

## Part 2 of costs - Standard SA5.11(iii)

The formula for calculating the incremental cost of standard SA5.11(iii) begins with calculating the hourly rate of transport for the relevant livestock affected (1% of all livestock journeys excluding those by rail) (see section A6.8.1(b)). An estimate is then made regarding the number of journeys per annum per livestock affected (see section A6.8.2(b)). Finally, the incremental costs per species affected per annum are then summarised in section A6.8.3(b), assuming that time involved in communication is 1 minute.

### *A6.8.1(b) Calculation of the hourly rate of transport for relevant livestock affected by SA5.11(iii)*

Taking the product of column (r1) in Table A5.12 of Appendix 5 and the lower and upper range of the annual weighted cost of species (columns, (f) and (g) respectively in Table A6.3 – gives the costs per hour and cost per 1 minute for the transport of livestock (see Table A6.15(b)).

**Table A6.15(b) - Lower and upper estimates of annual costs, costs per hour and costs per 1 minute for the transport of livestock affected by standard SA5.11(iii)**

Species/class of species	Lower range of cost/hr (u1(b))= (f)/(r1)	Upper range of cost/hr (v1(b))= (g)/(r1)	Lower range of cost/1min (w1(b))= (u1(b))x (1/60)	Upper range of cost/1min (x1(b)) = (v1(b)) x (1/60)
Buffalo	\$327.40	\$344.20	\$5.46	\$5.74
Cattle	\$356.65	\$401.70	\$5.94	\$6.70
Calves for rearing	\$315.20	\$336.80	\$5.25	\$5.61
Calves for slaughter	\$315.20	\$336.80	\$5.25	\$5.61
Lamb < 4 months old	\$357.43	\$412.45	\$5.96	\$6.87
Sheep	\$357.43	\$412.45	\$5.96	\$6.87
Pigs	\$336.50	\$390.50	\$5.61	\$6.51
Poultry for meat	\$250.00	\$250.00	\$4.17	\$4.17
Chicks	\$250.00	\$250.00	\$4.17	\$4.17
Horses export	\$255.10	\$255.10	\$4.25	\$4.25
Horses sales	\$250.00	\$250.00	\$4.17	\$4.17
Deer	\$302.00	\$307.40	\$5.03	\$5.12
Camels	\$260.20	\$260.20	\$4.34	\$4.34
Alpacas	\$250.00	\$250.00	\$4.17	\$4.17
Goats	\$357.43	\$412.45	\$5.96	\$6.87
Emus	\$250.00	\$250.00	\$4.17	\$4.17
Ostriches	\$250.00	\$250.00	\$4.17	\$4.17

**A6.8.2(b) Estimate for the number of journeys per livestock affected per annum by SA5.11(iii)**

The number of journeys per annum is calculated as the total number of equivalent (12.5m x 2.4m) decks divided by the weighted sum of number of decks involved in a particular transport per species. The following numbers of journeys per annum are estimated per species affected by standard SA5.11(iii), as shown in Table A6.16(b).

**Table A6.16(b) – Number of journeys per annum per species/class of species affected by standard SA5.11(iii)**

Species/class of species	Estimated total no. of equivalent decks (12.5m x 2.4m) used for road transport/annum (e1) <sup>317</sup>	Weighted sum of average number of decks involved per trip/species (y1(b))= [(m1 <sup>318</sup> )x1deck]+ [(n1)x2decks]+[(o1)x3decks]+ [(p1)x4decks]+[(q1)x6decks]	No. of journeys per annum/species affected (z1(b))= (e1)/(y1(b))*1%
Buffalo	151	2.2	1
Cattle	1,164,006	2.75	4,233
Calves for rearing	1,451	1.8	8
Calves for slaughter	7,350	1.8	41
Lamb < 4 months old	683	2.7	3
Sheep	517,267	2.7	1,916
Pigs	89,875	2.25	399

<sup>317</sup> See Table A5.11 of Appendix 5 for source of estimates

<sup>318</sup> See Table A5.12 of Appendix 5 for source of estimates

Species/class of species	Estimated total no. of equivalent decks (12.5m x 2.4m) used for road transport/annum (e1) <sup>317</sup>	Weighted sum of average number of decks involved per trip/species (y1(b))= [(m1 <sup>318</sup> )x1deck]+ [(n1)x2decks]+[(o1)x3decks]+ [(p1)x4decks]+[(q1)x6decks]	No. of journeys per annum/species affected (z1(b))= (e1)/(y1(b))*1%
Poultry for meat	502,778	1	5,028
Chicks	32,487	1	325
Horse exports	679	1.05	6
Horse sales	115,619	1	1,156
Deer	658	1.55	4
Camels	36	1.1	0
Alpacas	650	1	7
Goats	11,289	2.7	42
Emus	111	1	1
Ostriches	207	1	2
<b>Total</b>	<b>2,445,298</b>		<b>13,171</b>

*A6.8.3(b) Estimate for the annual cost of standard SA5.11(iii) per livestock affected*

The range of additional annual cost of standard SA5.11(iii) per livestock affected (as shown in A6.17(b)) is calculated by taking the product of column (z1(b)) in Table A6.16(b) and columns (w1(b)) and (x1(b)) in Table A6.15(b). Assuming that communication would require up to 1 minute, standard SA5.11(iii) is estimated to cost the livestock transport industry an additional \$66,549 to \$71,902 per annum (excluding rail) (see Table A6.17(b)) with cattle transporters incurring the largest proportion of this cost.

**Table A6.17(b) – Additional annual transport cost of standard SA5.11(iii) per livestock species/class of species affected (excluding rail transport)**

Species/ class of species	Lower range of cost of SA5.11(ii)/ species/ annum (a2(b))= (z1(b)) x (w1(b))	Upper range of cost of SA5.11(ii)/ species/ annum (b2(b)) = (z1(b))x (x1(b))
Buffalo	\$3.75	\$3.95
Cattle	\$25,160.17	\$28,338.26
Calves for rearing	\$42.35	\$45.25
Calves for slaughter	\$214.52	\$229.22
Lamb < 4 months old	\$15.06	\$17.38
Sheep	\$11,412.60	\$13,169.55
Pigs	\$2,240.23	\$2,599.73
Poultry for meat	\$20,949.07	\$20,949.07
Chicks	\$1,353.63	\$1,353.63
Horses export	\$27.49	\$27.49
Horses sales	\$4,817.47	\$4,817.47
Deer	\$21.36	\$21.74
Camels	\$1.41	\$1.41
Alpacas	\$27.10	\$27.10
Goats	\$249.07	\$287.41
Emus	\$4.63	\$4.63
Ostriches	\$8.64	\$8.64



Species/ class of species	Lower range of cost of SA5.11(ii)/ species/ annum (a2(b))= (z1(b)) x (w1(b))	Upper range of cost of SA5.11(ii)/ species/ annum (b2(b)) = (z1(b))x (x1(b))
<b>Total</b>	<b>\$66,548.54</b>	<b>\$71,901.93</b>

Therefore the total additional cost to the road transport industry of both SA5.11(ii) (under part 1) and SA5.11(iii) (under part 2) would be between \$14,925,303.86 and **\$16,178,767.87** per annum. Over 5 years in 2007 present value dollars this would equal between **\$69,747,127.13** and **\$75,604,663.77**.

#### A6.9 Incremental cost of general standard SA5.14 for livestock transporters

Standard SA5.14 relates to the requirement that a driver take action during extreme hot or cold conditions to minimise the risk to the welfare of livestock. This would most likely mean spending 60 minutes placing or 30 minutes removing a tarp – giving an average of 45 minutes of additional activity ‘required’ by this standard. This standard would affect all categories of livestock except for cattle (including calves for rearing<sup>319</sup>) which are bred to suit local climatic conditions and are able to withstand weather extremes in their localities<sup>320</sup>. Furthermore, this standard does not relate to pigs as they are covered under existing provisions. Finally, horses transported for sale and major events (e.g. racing) are assumed to be carried in horse floats which are typically insulated from severe temperature and therefore not included in the cost estimation for this standard

In the case of lamb and sheep, the Sheepmeat Council of Australia has advised that *tarps are not commonly used*. Rather, it is assumed that in the instance of extreme heat a lamb/sheep transporter would continue on the journey (at no additional cost) and in the event of extreme cold a transporter would stop for an average of 6 hours<sup>321</sup> to minimise the impact of wind-chill (an additional time cost of idle capital).

The formula for calculating the incremental cost of this standard begins with calculating the hourly rate of transport for the relevant livestock affected (see section A6.9.1). An estimate is then made regarding the number of journeys per annum per livestock affected (see section A6.9.2). Finally, the incremental costs per species affected per annum are then summarised in section A6.9.3 assuming an average of 45 minutes of additional activity (6 hours for lamb and sheep) required by Standard SA5.14.

##### *A6.9.1 Calculation of the hourly rate of transport for relevant livestock affected*

The estimate for the total kilometres of travel is adjusted from 142,024,436km to that which reflects total ‘relevant’<sup>322</sup> transport affected under standard SA5.14. As shown in column (e1) of Table A5.8 in Appendix 5 – 142,024,436km travelled reflects a total 2,445,298 (12.5m x 2.4) equivalent decks being transported per annum. However, this total amount of equivalent decks is adjusted to remove non-relevant transport (i.e. cattle (including calves for rearing) and pigs)

<sup>319</sup> Based on advice from AHA calves for rearing are excluded because they are covered under SB4.4.

<sup>320</sup> Cattle has been excluded based on advice from AHA.

<sup>321</sup> Based on advice from AHA.

<sup>322</sup> Relevant is all species/class of species except for cattle and pigs.

and, as shown in Table A6.18, entails 1,074,346 (12.5m x 2.4m) equivalent decks per annum which are associated with **69,113,938.49km** and is calculated in the following way:

$$142,024,436\text{km}/2,445,298\text{decks} \times 1,074,346\text{decks} = \mathbf{69,113,938.49\text{km}}$$

**Table A6.18 –Estimate of total distance of road transport (km) per annum by species/class of species (excluding cattle, calves for rearing, horses for sale and major events and pigs)**

Species/class of species	Estimated total no. of equivalent decks (12.5m x 2.4m) used for road transport/annum (e1) <sup>323</sup>	No. of decks per species as a % of total no. of decks used in the transportation of livestock/ annum (c2)	Estimated total distance (km) travelled by road/ annum/species (d2) = 69,113,938.49km x (c2)
Buffalo	151	0.014%	9,734.32
Calves for slaughter	7,350	0.684%	472,861.52
Lamb < 4 months old	683	0.064%	43,909.91
Sheep	517,267	48.147%	33,276,383.38
Poultry for meat	502,778	46.798%	32,344,275.46
Chicks	32,487	3.024%	2,089,937.80
Horses (slaughter and export)	679	0.063%	43,668.62
Deer	658	0.061%	42,315.61
Camels	36	0.003%	2,300.33
Alpacas	650	0.061%	41,840.24
Goats	11,289	1.051%	726,229.80
Emus	111	0.010%	7,147.91
Ostriches	207	0.019%	13,333.60
<b>Total</b>	<b>1,074,346</b>	<b>100.00%</b>	<b>69,113,938.49</b>

Total weighted hours of transport per annum per species are shown in Table A6.19. The estimates have been calculated by taking the product of total distance travelled by road/annum/species and weighting this product according to the average associated speeds of the following arrangements of decks.<sup>324</sup>

Single deck (80km/hr); 2-deck (80km/hr); 3-deck B-double (80km/hr); 4-deck road train (70km/hr); and 6-deck road train (55km/hr).

**Table A6.19 - Estimate of weighted total hours of road transport per annum by species/class of species (excluding cattle, calves for rearing, horses for sale and major events and pigs)**

Species/class of species	% of deck arrangement used for transport					Weighted total hrs of road transport/annum (j2) = [(d2)x(e2)/80km/hr]+ [(d2)x(f2)/80km/hr]+ [(d2)x(g2)/80km/hr]+ [(d2)x(h2)/70km/hr]+ [(d2)x(i2)/55km/hr]
	Single deck (e2)	2-deck (f2)	3-deck B-double (g2)	4-deck road train (h2)	6-deck road train (i2)	
Buffalo	40%	30%	0%	30%	0%	127
Calves for slaughter	40%	40%	20%	0%	0%	5,911
Lamb < 4 months old	15%	10%	30%	30%	15%	569
Sheep	15%	10%	30%	30%	15%	431,351

<sup>323</sup> Taken from column (e1) in Table A5.11 of Appendix 5.

<sup>324</sup> Average speeds for transport vehicle types have been provided by the Livestock Transport Association of Queensland (2007).

Species/class of species	% of deck arrangement used for transport					Weighted total hrs of road transport/annum (j2) = [(d2)x(e2)/80km/hr]+ [(d2)x(f2)/80km/hr]+ [(d2)x(g2)/80km/hr]+ [(d2)x(h2)/70km/hr]+ [(d2)x(i2)/55km/hr]
	Single deck (e2)	2-deck (f2)	3-deck B-double (g2)	4-deck road train (h2)	6-deck road train (i2)	
Poultry for meat	100%	0%	0%	0%	0%	404,303
Chicks	100%	0%	0%	0%	0%	26,124
Horses (slaughter and export)	100% <sup>325</sup>	0%	0%	0%	0%	546
Deer	50%	45%	5%	0%	0%	529
Camels	90%	10%	0%	0%	0%	29
Alpacas	100%	0%	0%	0%	0%	523
Goats	15%	10%	30%	30%	15%	9,414
Emus	100%	0%	0%	0%	0%	89
Ostriches	100%	0%	0%	0%	0%	167
<b>Total</b>						<b>879,681</b>

Based on the formula in section A6.2.2 of this RIS, the following lower and upper estimates of annual costs, costs per hour and costs per 45 minutes (or cost per 6 hours for lamb and sheep), are determined for the transport of livestock - not including cattle and rail (see Table A6.20).

**Table A6.20 - Lower and upper estimates of annual costs, costs per hour and costs per 45 minutes (or 6 hours time for lamb and sheep) for the transport of livestock affected by standard SA5.14 (excluding cattle, calves for rearing, horses for sale and major events and pigs)**

Species/ class of species	Lower range of annual weighted cost/species (k2)	Upper range of annual weighted cost/species (l2)	Lower range of cost/hr (m2)= (k2)/(j2)	Upper range of cost/hr (n2) = (l2)/(j2)	Lower range of cost per 45min or per 6hrs for lamb and sheep (o2) = (m2) x (45/60 or 6 for lamb and sheep)	Upper range of cost per 45min or per 6hrs for lamb and sheep (p2)= (n2) x (45/60 or 6 for lamb and sheep)
Buffalo	\$41,545.04	\$43,676.85	\$327.40	\$344.20	\$245.55	\$258.15
Calves for slaughter	\$1,863,074.40	\$1,990,747.01	\$315.20	\$336.80	\$236.40	\$252.60
Lamb < 4 months old	\$203,442.50	\$234,762.14	\$357.43	\$412.45	\$2,144.55	\$2,474.70
Sheep	\$154,175,460.18	\$177,910,522.63	\$357.43	\$412.45	\$2,144.55	\$2,474.70
Poultry for meat	\$101,075,860.82	\$101,075,860.82	\$250.00	\$250.00	\$187.50	\$187.50
Chicks	\$6,531,055.62	\$6,531,055.62	\$250.00	\$250.00	\$187.50	\$187.50

<sup>325</sup> Under the 'base case' it is acknowledged that there is 5% movement of slaughter and export horses in 2-deck arrangements (double decks) (see Table A5.12 of Appendix 5). However, the proposed standards (specifically SB8.10) effectively ban double decks and therefore standard SA5.14 is analysed by assuming that 100% of slaughter and export horses would be undertaken in single deck arrangements.

Species/ class of species	Lower range of annual weighted cost/species (k2)	Upper range of annual weighted cost/species (l2)	Lower range of cost/hr (m2)= (k2)/(j2)	Upper range of cost/hr (n2) = (l2)/(j2)	Lower range of cost per 45min or per 6hrs for lamb and sheep (o2) = (m2) x (45/60 or 6 for lamb and sheep)	Upper range of cost per 45min or per 6hrs for lamb and sheep (p2)= (n2) x (45/60 or 6 for lamb and sheep)
Horses (Slaughter and export)	\$136,464.45	\$136,464.45	\$250.00	\$250.00	\$187.50	\$187.50
Deer	\$159,741.42	\$162,597.72	\$302.00	\$307.40	\$226.50	\$230.55
Camels	\$7,481.81	\$7,481.81	\$260.20	\$260.20	\$195.15	\$195.15
Alpacas	\$130,750.74	\$130,750.74	\$250.00	\$250.00	\$187.50	\$187.50
Goats	\$3,364,753.08	\$3,882,751.36	\$357.43	\$412.45	\$268.07	\$309.34
Emus	\$22,337.21	\$22,337.21	\$250.00	\$250.00	\$187.50	\$187.50
Ostriches	\$41,667.49	\$41,667.49	\$250.00	\$250.00	\$187.50	\$187.50
<b>Total</b>	<b>\$267,753,634.75</b>	<b>\$292,170,675.86</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>

#### *A6.9.2 Estimate for the number of journeys per livestock affected per annum by SA5.14*

The number of journeys per annum is calculated as the total number of equivalent (12.5m x 2.4m) decks divided by the weighted sum of number of decks involved in a particular transport per species. Based on column (e1) of Table A5.11 in Appendix 5, the following numbers of journeys per annum are estimated per species affected by standard SA5.14, as shown in Table A6.21.

**Table A6.21 – Number of journeys per annum per species/class of species affected by standard SA5.14 (excluding cattle, calves for rearing, horses for sale and major events and pigs)**

Species/class of species	Estimated total no. of equivalent decks (12.5m x 2.4m) used for road transport/annum (e1) <sup>326</sup>	Weighted sum of average number of decks involved per trip/species (q2) = [(e2)x1deck]+[(f2)x2decks]+[(g2)x3decks]+[(h2)x4decks]+[(i2)x6decks]	No. of journeys per annum/species affected (r2) = (e1) <sup>327</sup> /(q2)
Buffalo	151	2.2	69
Calves for slaughter	7,350	1.8	4,084
Lamb < 4 months old	683	2.7	253
Sheep	517,267	2.7	191,580
Poultry for meat	502,778	1	502,778
Chicks	32,487	1	32,487
Horses (Slaughter and export)	679	1	679
Deer	658	1.55	424
Camels	36	1.1	33
Alpacas	650	1	650
Goats	11,289	2.7	4,181
Emus	111	1	111
Ostriches	207	1	207
<b>Total</b>	<b>1,074,346</b>		<b>737,536</b>

*A6.9.3 Estimate for the annual cost of standard SA5.14 per livestock affected*

The range of additional annual cost of standard SA5.14 per livestock affected (as shown in Table A6.23) is calculated by taking the product of column (r2) in Table A6.21 and columns (o2) and (p2) in Table A6.20 and then multiplying these products by the probability of ‘extreme weather’. The probability of extreme cold or hot days (i.e. 5.216%) for all livestock (except for lamb and sheep) is determined by taking account of the total average number of days per annum in which there are extreme weather conditions, as shown in Table A6.22, and dividing them by the number of days in the year. For lamb and sheep a probability of cold days only is used (i.e. 1.211%).

**Table A6.22 – Average extreme weather days per annum, Australia 2000 – 2006**

Type of extreme weather	Average number of days 2000-06
Very hot days	14.62
Very cold days	4.42
<b>Total number of days</b>	<b>19.04</b>

Source: Australian Bureau of Meteorology (2007).

Assuming that taking action to minimise temperature extremes (i.e. removal or placement of a tarp) would require up to an average of 45 minutes, and for sheep and lamb the standard would involve a 6 hour stop in extreme cold weather - standard SA5.14 is estimated to cost the

<sup>326</sup> Taken from column (e1) in Table A5.11 of Appendix 5.

<sup>327</sup> Taken from column (e1) in Table A5.11 of Appendix 5.

livestock transport industry an additional \$10,348,047 to \$11,127,604 per annum (excluding rail, cattle, calves for rearing, horses for sale and major events and pigs) (see Table A6.23) with poultry transporters incurring the largest proportion of this cost.

**Table A6.23 – Additional annual transport cost of standard SA5.14 per livestock affected (excluding rail, cattle, calves for rearing and pigs)**

Species/ class of species	No. of journeys per annum/ species (r2)	Lower range of cost per 45min or per 6hrs for lamb and sheep (o2)	Upper range of cost per 45min or per 6hrs for lamb and sheep (p2)	Lower range of cost of SA5.14/species/ annum (s2) = (r2) x (o2) x 5.216% (or 1.211% for lamb and sheep)	Upper range of cost of SA5.14/species/ annum (t2) = (r2) x (p2) x 5.216% (or 1.211% for lamb and sheep)
Buffalo	69	\$245.55	\$258.15	\$880.93	\$926.13
Calves for slaughter	4,084	\$236.40	\$252.60	\$50,352.98	\$53,803.56
Lamb < 4 months old	253	\$2,144.55	\$2,474.70	\$6,565.35	\$7,576.07
Sheep	191,580	\$2,144.55	\$2,474.70	\$4,975,437.64	\$5,741,398.21
Poultry for meat	502,778	\$187.50	\$187.50	\$4,917,166.28	\$4,917,166.28
Chicks	32,487	\$187.50	\$187.50	\$317,724.59	\$317,724.59
Horses (Slaughter and export)	679	\$187.50	\$187.50	\$6,638.76	\$6,638.76
Deer	424	\$226.50	\$230.55	\$5,013.64	\$5,103.29
Camels	33	\$195.15	\$195.15	\$330.89	\$330.89
Alpacas	650	\$187.50	\$187.50	\$6,360.80	\$6,360.80
Goats	4,181	\$268.07	\$309.34	\$58,461.87	\$67,461.98
Emus	111	\$187.50	\$187.50	\$1,086.67	\$1,086.67
Ostriches	207	\$187.50	\$187.50	\$2,027.05	\$2,027.05
<b>Total</b>	<b>737,536</b>	<b>N/A</b>	<b>N/A</b>	<b>\$10,348,047.43</b>	<b>\$11,127,604.27</b>

With regards to rail, there are a further 36 journeys for horses affected by standard SA5.14 (see Table A5.13) travelling an average of 22 hours per journey. Also section A6.1.3 notes that the hourly charge for rail transport is \$34.20 per hour or \$25.65 per 45 minutes. The total additional rail transport cost of standard SA5.14 would therefore be  $36^{328}$  journeys x 22 hours x \$25.65/journey x the probability of extreme hot or cold days (i.e. 5.216%) = **\$1,041.05**. Therefore the total additional cost to the road transport industry would be between **\$10,349,088.48** and **\$11,128,645.32** per annum. Over 5 years in 2007 present value dollars this would equal between **\$48,362,110.21** and **\$52,005,041.07**.

#### A6.11 Incremental unquantifiable costs of general standards SA6.3, SA6.4 and SA6.7 for livestock owners

Standard SA6.3, a new standard for all livestock, requires that in relation to destroying an animal a competent person must be contacted as soon as possible if one is not available. Taking reasonable action to confirm death of livestock under standard SA6.4 would involve minor

<sup>328</sup> This figure has been rounded

training costs to owner/drivers (except in the case of poultry) who are unfamiliar or have insufficient skills in this regard. Additionally, SA6.7, a new standard for all livestock, specifies that blunt trauma to the head be only used on newborns less than 24 hours old or piglets up to 15kg followed by an effective killing method. Again SA6.7 would impose minor training costs as part of induction training or a short course for owner/drivers who would use blunt trauma and are unfamiliar with effective killing methods. Given that 1) the number of owner/drivers; and 2) the proportion of these owner/drivers that need training - are both unknown these standards remain unquantifiable in a dollar sense.

#### A6.12 Incremental net cost of alpaca standard SB1.1 in conjunction with SB1.3 for transporters

Standard SB1.3, which sets out the minimum spelling under maximum water deprivation times under SB1.1, would impose additional time costs for transporters. Specifically, wethers<sup>329</sup> over 12 months old would have a maximum water deprivation time of 24 hours with an associated mandatory spell of 24 hours and non-pregnant females and males over 12 months old have a maximum water deprivation time of 24 hours with an associated mandatory spell of 12 hours.

Other classes of alpacas including alpacas 6 to 12 months old and pregnant females up to 7.5 months pregnant (i.e. in their 1<sup>st</sup> and 2<sup>nd</sup> trimester) have a maximum water deprivation time of 8 hours. Pregnant alpacas more than 7.5 months pregnant (i.e. in their 3<sup>rd</sup> trimester) excluding the last 4 weeks have a maximum water deprivation time of 4 hours. Finally, lactating alpacas with crias<sup>330</sup> up to 6 months old have a maximum water deprivation time of 4 hours. While there are no mandatory spelling requirements under standard SB1.3 for these classes of alpaca, it is assumed that a time cost of 10 minutes would be incurred – in terms of additional watering arrangements - for all journeys that go over their associated maximum water deprivation times. While current industry practice is that water is provided on vehicle for most journeys, avoiding the need for spells or additional watering time arrangements, this is assumed to be relevant for 80%<sup>331</sup> of the journeys.

Secondly, as shown in Table A6.24, specific proportions are assumed for the different classes of alpaca (66,990 head) which are transported. Also it is assumed that where spell periods are for 12 hours or more that 1 hour loading and 30 minutes unloading time apply, whereas for spell periods under this amount, alpacas remain on the vehicle due to welfare and biosecurity reasons.

**Table A6.24 – Proportions and number of alpacas transported – by class**

Class of species	Proportion of class <sup>332</sup>
Wethers over 12 months old	20%
Non-pregnant females and entires over 12 months old	20%
Alpacas 6 to 12 months old	20%
Alpacas up to 7.5 months pregnant (1 <sup>st</sup> and 2 <sup>nd</sup> trimester)	7.5%
Alpacas more than 7.5 months pregnant (3 <sup>rd</sup> trimester)	7.5%
Lactating alpacas with crias up to 6 month old	5%
Crias up to 6 months old	15%
<b>Total</b>	<b>100%</b>

<sup>329</sup> Wether = castrated male.

<sup>330</sup> Crias = camelids less than one year old.

<sup>331</sup> Proposed by AHA

<sup>332</sup> Proposed by AHA.



Other assumptions made in order to calculate the cost to transporters include:

- The proportion of journeys that go over 36 hours, 24 hours, 8 hours, 4 hours and 2 hours for the respective classes of alpacas is 5%, 10%<sup>333</sup>, 20%<sup>334</sup>, 90% and 100% respectively;
- 3.5 hours of loading/unloading and changeover time will be incurred for the relevant proportion of journeys 5% of 650.4 journeys<sup>335</sup> for wethers over 12 months and non-pregnant females and males over 12 months;
- 25.5 hours of loading/unloading and stationary vehicle time will be incurred for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 95% of the proportion of 650.4 journeys relating to wethers over 12 months);
- 13.5 hours of loading/unloading and stationary vehicle time will be incurred for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 95% of the proportion of 650.4 journeys relating to non-pregnant females and males over 12 months);
- 5.5 hours including 1.5 hours loading/unloading and 4 hours minimum voluntary spelling time will be saved for 50% of the time where journeys do not have the ability for changeover for wethers over 12 months and non-pregnant females and males over 12 months.

Therefore, the additional cost for each of the alpaca classes would be equal to:

***For wethers over 12 months old (where water is not provided on the vehicle):***

*Time cost for 5% of journeys where there are no idle trucks*  $[5\% \times 5\% \times 20\% \times 20\% \times 650.4 \text{ journeys} \times 3.5\text{hrs} \times \$250/\text{hr}] +$

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 5\% \times 20\% \times 20\% \times 650.4 \text{ journeys} \times 25.5\text{hrs} \times \$250/\text{hr}] +$

*Time cost for 95% of journeys where there are idle trucks with minimum of 4hrs voluntary spelling*  $[50\% \times 95\% \times 5\% \times 20\% \times 20\% \times 650.4 \text{ journeys} \times 5.5\text{hrs} \times \$250/\text{hr}] = \$4,845.48 \text{ per annum}$

***For non-pregnant females and males over 12 months old (where water is not provided on the vehicle):***

*Time cost for 5% of journeys where there are no idle trucks*  $[5\% \times 10\% \times 20\% \times 20\% \times 650.4 \text{ journeys} \times 3.5\text{hrs} \times \$250/\text{hr}] +$

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 10\% \times 20\% \times 20\% \times 650.4 \text{ journeys} \times 13.5\text{hrs} \times \$250/\text{hr}] +$

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<sup>333</sup> Proposed by AHA.

<sup>334</sup> Proposed by AHA.

<sup>335</sup> See Table A6.23 of Appendix 6 in this RIS.

*Time cost for 95% of journeys where there are idle trucks with minimum of 4hrs voluntary spelling* [50% x 95% x 10% x 20% x 20% x 650.4 journeys x 5.5hrs x \$250/hr] = \$5,983.68 per annum

***For alpacas – 6 to 12 months old and pregnant females up to 7.5 month pregnant (1<sup>st</sup> and 2<sup>nd</sup> trimester) (where water is not provided on the vehicle):***

*Time cost for journeys for additional watering time* [20% x 20% x 27.5% x 650.4 journeys x 0.167hrs x \$250/hr] = \$298.10 per annum

***For pregnant alpacas more than 7.5 months pregnant (3<sup>rd</sup> trimester) excluding the last 4 weeks (where water is not provided on the vehicle):***

*Time cost for journeys for additional watering time* [90% x 20% x 7.5% x 650.4 journeys x 0.167hrs x \$250/hr] = \$365.85 per annum

***For lactating alpacas with crias up to 6 months old (where water is not provided on the vehicle):***

*Time cost for journeys for additional watering time* [90% x 20% x 20% x 650.4 journeys x 0.167hrs x \$250/hr] = \$975.60 per annum

The specification of minimum mandatory spelling periods for all classes of alpaca would impose an incremental cost of **\$12,468.71** per annum. Over 5 years and in present value terms (2008 dollars), this would be equal to **\$57,760.71**.

#### A6.13 Incremental cost savings of alpaca standard SB1.2 for transporters

Standard SB1.2, which allows an extension of journey times to 72 hours if minimum requirements are met, would result in cost savings to alpaca transporters for alpacas over 6 months old and wethers. The cost savings would rely on the following assumptions:

- the proportion of circumstances where minimum requirements for extension of water deprivation times under standard SB1.2 are met (i.e. 80%);
- the number of journeys is 650.4;
- 3.5 hours of loading/unloading and changeover time will be saved for the relevant proportion of journeys (i.e. 5% of the proportion of 650.4 journeys<sup>336</sup> relating to wethers over 12 months and non-pregnant females and males over 12 months);
- 25.5 hours of loading/unloading and stationary vehicle time will be saved for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 95% of the proportion of 650.4 journeys relating to wethers over 12 months);
- 13.5 hours of loading/unloading and stationary vehicle time will be saved for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 95% of the proportion of 650.4 journeys relating to non-pregnant females and males over 12 months);

<sup>336</sup> See Table A6.23 of Appendix 6 in this RIS.

- 5.5 hours including 1.5 hours loading/unloading and 4 hours minimum voluntary spelling time will be saved for 50% of the time where journeys do not have the ability for changeover for wethers over 12 months and non-pregnant females and males over 12 months; and
- the proportion of circumstances where journeys are greater than 36 hours (i.e. 5%<sup>337</sup>);
- the proportion of journeys that are greater than 24 hours (i.e. 10%<sup>338</sup>);
- the proportion of journeys that are greater than 8 hours (i.e. 20%<sup>339</sup>); and
- the transport cost of alpacas is \$250/hour.<sup>340</sup>

Therefore, the incremental annual cost savings per class of alpaca would be calculated in the following way:

***For wethers over 12 months old:***

*Cost savings for 5% of journeys where there are no idle trucks* [5% x 5% x 20% x 20% x 650.4 journeys x 3.5hrs x \$250/hr] +

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling* [50% x 95% x 5% x 20% x 20% x 650.4 journeys x 25.5hrs x \$250/hr] +

*Cost savings for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling* [50% x 95% x 5% x 20% x 20% x 650.4 journeys x 5.5hrs x \$250/hr] = \$4,845.48 per annum

***For non-pregnant females and males over 12 months old:***

*Cost savings for 5% of journeys where there are no idle trucks* [5% x 10% x 20% x 20% x 650.4 journeys x 3.5hrs x \$250/hr] +

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling* [50% x 95% x 10% x 20% x 20% x 650.4 journeys x 13.5hrs x \$250/hr] +

*Cost savings for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling* [50% x 95% x 10% x 20% x 20% x 650.4 journeys x 5.5hrs x \$250/hr] = \$5,983.68 per annum

***For alpacas – 6 to 12 months old:***

*Cost savings for journeys where additional watering time is avoided* [20% x 20% x 20% x 650.4 journeys x 0.167hrs x \$250/hr] = \$216.80 per annum

The net cost saving of standard SB1.2 for all relevant classes of alpaca would therefore be equal to **\$11,045.96** per annum. Over 5 years, and in present value terms (2008 dollars), this would equal **\$51,618.65**.

<sup>337</sup> Proposed by AHA.

<sup>338</sup> Proposed by AHA.

<sup>339</sup> Proposed by AHA.

<sup>340</sup> See Table A6.20 of Appendix 6 in this RIS.

A6.14 Incremental cost of alpaca standard SB1.4 for livestock owners

Standard SB1.4, which requires that alpacas known to be in the last month of pregnancy must be transported under veterinary advice unless the journey is less than 4 hours duration, would result in an incremental cost to livestock owners. The incremental cost would rely on the following assumptions:

- the cost of a consultation by a vet is \$145.60 per visit<sup>341</sup>;
- the number of alpacas transported per annum is 66,990<sup>342</sup>;
- 5%<sup>343</sup> of all pregnant alpacas (15% of all alpacas) transported per annum are assumed to be *in their last month of pregnancy*; and
- 90%<sup>344</sup> of all alpacas would travel greater than 4 hours duration.

Subsequently, the annual incremental veterinary cost for livestock owners is calculated in the following way:

$$5\% \times 15\% \times 90\% \times 66,990 \times \$145.60/\text{visit} = \$65,837.77 \text{ per annum}$$

Over 5 years, and in present value terms (2008 dollars), this would equal **\$307,665.12**.

A6.16 Incremental unquantifiable cost of alpaca standard SB1.5 for livestock transporters

Standard SB1.5 states that young and newly shorn alpacas (8–10 days off shears) which are susceptible to wind-chill, must be transported in vehicles with enclosed fronts or provided with protection during weather that could cause heat or cold stress or sunburn. This standard is expected to affect a very small proportion of animals being transported resulting in a minor cost. However given that the proportion of young animals 8-10 days of shears in a given year (out of a total 66,990 head) is unknown, the incremental cost of this standard remains unquantifiable.

A6.17 Incremental cost of buffalo standard SB2.1 in conjunction with SB2.2 for livestock transporters

Standard SB2.2, which sets out the minimum spelling, would impose additional time costs for transporters going over the maximum water deprivation time under SB1.1. Specifically, adult buffalo over 6 months old would have a maximum water deprivation time of 36 hours with an associated minimum mandatory spell of 24 hours. The mandatory spell for a maximum water deprivation time of 48 hours under the 'base case' is only 12 hours. For the purpose of costing these associated standards it is assumed that 80%<sup>345</sup> of buffalo are over 6 months old and that the proportion of 68.8 journeys<sup>346</sup> which are between 36 hours and 48 hours is 20%<sup>347</sup>. The incremental cost would rely additionally on the following assumptions:

<sup>341</sup> See section A6.7 of Appendix 6 in this RIS for source of cost.

<sup>342</sup> See Table A5.8 of Appendix 5 in this RIS for estimate.

<sup>343</sup> Proposed by AHA.

<sup>344</sup> Proposed by AHA.

<sup>345</sup> Proposed by AHA.

<sup>346</sup> See Table A6.21 of Appendix 6 in this RIS for this estimate.

<sup>347</sup> Proposed by AHA.

- 3.5 hours of loading/unloading and changeover time will be incurred for 5% of 68.8 journeys after first 36 hours;
- 13.5 hours of loading/unloading and idle vehicle time will be incurred for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 95% of 68.8 journeys);
- 5.5 hours minimum voluntary spelling time will be incurred (including 1.5 hours loading/unloading) for 50% of the time where journeys do not have the ability for changeover; and
- the cost of buffalo transport is between \$327.40/hr and \$344.20/hr<sup>348</sup>.

Subsequently, the annual incremental cost for livestock transporters is calculated in the following way:

**Between:**

*Time cost for 5% of journeys where there are no idle trucks*  $[5\% \times 20\% \times 80\% \times 68.8 \text{ journeys} \times 3.5 \text{ hours added} \times \$327.40/\text{hr}] +$

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 20\% \times 80\% \times 68.8 \text{ journeys} \times 13.5 \text{ hours added} \times \$327.40/\text{hr}] +$

*Time cost for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling*  $[50\% \times 95\% \times 20\% \times 80\% \times 68.8 \text{ journeys} \times 5.5 \text{ hours added} \times \$327.40/\text{hr}]$

= **\$33,156.98** per annum

**and**

*Time cost for 5% of journeys where there are no idle trucks*  $[5\% \times 20\% \times 80\% \times 68.8 \text{ journeys} \times 3.5 \text{ hours added} \times \$344.20/\text{hr}] +$

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 20\% \times 80\% \times 68.8 \text{ journeys} \times 13.5 \text{ hours added} \times \$344.20/\text{hr}] +$

*Time cost for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling*  $[50\% \times 95\% \times 20\% \times 80\% \times 68.8 \text{ journeys} \times 5.5 \text{ hours added} \times \$344.20/\text{hr}]$

= **\$34,858.37** per annum

Over 5 years, and in present value terms (2008 dollars), this would equal between **\$154,945.18** and **\$162,895.94**.

**A6.18 Incremental cost of buffalo standard SB2.3 for livestock owners**

Standard SB2.3 requires that buffalo known to be in the last 4 weeks of pregnancy must be transported under veterinary advice unless the journey is less than 4 hours duration and would result in a minor incremental cost to livestock owners. The incremental cost would rely on the following assumptions:

<sup>348</sup> See Table A6.20 of Appendix 6 in this RIS for this estimate.

- the cost of a consultation by a vet is \$145.60 per visit<sup>349</sup>;
- the number of buffalo transported per annum is 2,875<sup>350</sup>;
- 1%<sup>351</sup> of a total buffalo transported per annum are assumed to be *in the last 4 weeks of pregnancy*; and
- 90%<sup>352</sup> of all buffalo would travel more than 4 hours distance.

Subsequently, the annual incremental veterinary cost for livestock owners is calculated in the following way:

$$1\% \times 90\% \times 2,875 \times \$145.60/\text{visit} = \mathbf{\$3,767.40 \text{ per annum}}$$

Over 5 years, and in present value terms (2008 dollars), this would equal **\$17,605.36**.

#### A6.19 Incremental unquantifiable cost of buffalo standard SB2.4 for transporters

Standard SB2.4 would result in minimal additional time costs in terms of loading for transport by restricting the use of electric prodders. However this would only be the case in the instance where an electric prodder is used despite the fact that reasonable action to cause movement was sufficient. Given that the instance of this occurring is unknown, this incremental cost remains unquantifiable.

#### A6.20 Incremental net cost of buffalo standard SB2.6 for transporters

Standard SB2.6, which requires that buffalo suffering from heat stress during transport must be cooled at the first opportunity by water spray, is a new standard which would have minimal costs. The cost would rely on the following assumptions:

- some water + sprayer is carried with the transport vehicle;
- average time cost of spraying heat stressed buffalo (assuming a couple per journey) is approximately 20 minutes<sup>353</sup>;
- the proportion of journeys where a buffalo would suffer from heat stress is 5%<sup>354</sup>;
- the number of buffalo journeys is 68.8 per annum on average<sup>355</sup>; and
- the hourly transport cost of a buffalo journey is between \$327.40 and \$344.20<sup>356</sup>.

Subsequently, the annual incremental net time cost for transporters needing to water spray heat stressed buffalo is calculated in the following way:

<sup>349</sup> See section A6.7 of Appendix 6 in this RIS for source of cost.

<sup>350</sup> See Table A5.8 of Appendix 5 in this RIS for estimate.

<sup>351</sup> Proposed by AHA.

<sup>352</sup> Proposed by AHA.

<sup>353</sup> Proposed by AHA.

<sup>354</sup> Proposed by AHA.

<sup>355</sup> See Table A6.23 of Appendix 6 in this RIS for estimate.

<sup>356</sup> See Table A6.20 of Appendix 6 in this RIS for estimates.

**Between:**

$$5\% \times 68.8 \text{ journeys} \times \$327.40/\text{hr} \times (20\text{min}/60\text{min}) = \$375.42 \text{ per annum}$$

**and**

$$5\% \times 68.8 \text{ journeys} \times \$344.20/\text{hr} \times (20\text{min}/60\text{min}) = \$394.68 \text{ per annum}$$

Over 5 years, and in present value terms (2008 dollars), this would equal between **\$1,754.36** and **\$1,844.38**.

A6.21 Incremental cost of camel standard SB3.1 in conjunction with SB3.3 for livestock transporters

Standard SB3.3 requires that if the maximum time off water of 24 hours is reached, then camels over 6 months old or pregnant camels known to be more than 9 months pregnant (in the third trimester) excluding the last 4 weeks, must be spelled for 12 hours before starting another journey. Spelling under this standard includes the provision of food however, due to lack of information on food requirements, only the time cost of spelling is estimated. The incremental cost would rely on the following assumptions:

- 3.5 hours of loading/unloading and changeover time will be incurred for 5% of journeys after first 24 hours;
- 13.5 hours of loading/unloading and idle vehicle time will be incurred for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 95% of journeys) after the first 24 hours;
- 5.5 hours minimum voluntary spelling time will be incurred (including 1.5 hours loading/unloading) for 50% of the time where journeys do not have the ability for changeover; and
- the proportion of camels transported up to 3 days<sup>357</sup> (i.e. 5%<sup>358</sup>);
- the proportion of camels transported up to 2 days (i.e. 30%<sup>359</sup>);
- the proportion of camels transported up to 1 day (i.e. 65%<sup>360</sup>);
- the number of journeys per annum involving camel transport is 32.5<sup>361</sup>; and
- the cost of camel transport is \$260.20/hr.<sup>362</sup>

Therefore, the additional annual spelling cost would be calculated in the following way:

<sup>357</sup> <<http://www.camelsaust.com.au/chtransport.htm>>

<sup>358</sup> Proposed by AHA.

<sup>359</sup> Proposed by AHA.

<sup>360</sup> Proposed by AHA.

<sup>361</sup> See Table A6.21 of Appendix 6 in this RIS for this estimate.

<sup>362</sup> See Table A6.20 of Appendix 6 in this RIS for this estimate.

*Time cost for 5% of journeys where there are no idle trucks*  $[5\% \times 5\% \times 32.5 \text{ journeys} \times 3.5 \text{ hours added} \times 2 \times \$260.20/\text{hr}]^{363} + [5\% \times 30\% \times 32.5 \text{ journeys} \times 3.5 \text{ hours added} \times \$260.20/\text{hr}]^{364} +$

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*  $+ [50\% \times 95\% \times 5\% \times 32.5 \text{ journeys} \times 13.5 \text{ hours added} \times 2 \times \$260.20/\text{hr}] + [50\% \times 95\% \times 5\% \times 30\% \times 32.5 \text{ journeys} \times 13.5 \text{ hours added} \times \$260.20/\text{hr}] +$

*Time cost for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling*  $[50\% \times 95\% \times 5\% \times 32.5 \text{ journeys} \times 5.5 \text{ hours added} \times 2 \times \$260.20/\text{hr}] + [50\% \times 95\% \times 30\% \times 32.5 \text{ journeys} \times 5.5 \text{ hours added} \times \$260.20/\text{hr}]$

**= \$31,119.92 per annum**

Over 5 years, and in present value terms (2008 dollars), this would equal **\$145,425.85**.

#### A6.22 Incremental cost of camel standard SB3.4 for livestock owners

Standard SB3.4, which requires that camels known to be in their last 4 weeks of pregnancy must be transported under veterinary advice unless the journey is less than 4 hours duration, would result in an additional cost to livestock owners. This additional cost would rely on the following assumptions:

- the cost of a consultation by a vet is \$145.60 per visit<sup>365</sup>;
- the number of camels transported per annum is 787<sup>366</sup>;
- 1%<sup>367</sup> of a total camels transported per annum are assumed to be *in their last 4 weeks of pregnancy*; and
- 90%<sup>368</sup> of all camels would travel more than 4 hours distance.

Subsequently, the annual incremental veterinary cost for all livestock owners is very minor and is calculated in the following way:

$$1\% \times 90\% \times 787 \times \$145.60/\text{visit} = \mathbf{\$1,031.28 \text{ per annum}}$$

Over 5 years, and in present value terms (2008 dollars), this would equal only **\$4,819.28**.

#### A6.23 Incremental unquantifiable cost of camel standard SB3.6 for transporters

Standard SB3.6 would result in minimal additional time costs in terms of loading for camel transport by restricting the use of electric prodders. However this would only be the case in the instance where an electric prodder is used despite the fact that reasonable action to cause movement was sufficient. Given that the instance of this occurring is unknown, this incremental cost remains unquantifiable.

#### A6.24 Incremental unquantifiable cost of camel standard SB3.8 for transporters

<sup>363</sup> Proportion of camels transported up to 3 days who would have to be spelled twice.

<sup>364</sup> Proportion of camels transported up to 2 days who would have to be spelled once.

<sup>365</sup> See section A6.7 of Appendix 6 in this RIS for source of cost.

<sup>366</sup> See Table A5.8 of Appendix 5 in this RIS for estimate.

<sup>367</sup> Proposed by AHA.

<sup>368</sup> Proposed by AHA.



Standard SB3.8 requires that camel bulls in rut be segregated during transport. The incremental cost would involve space lost per deck due to segregation however this cost would be very minor given that the number of camel bulls in rut transported is expected to be small. In addition, given that the number expected to be transported is not known, this standard remains unquantifiable.

#### A6.25 Incremental net cost saving of cattle standard SB4.1 in conjunction with SB4.2 for transporters

##### *A6.25.1 Incremental cost savings for cattle in their third trimester of pregnancy and more than 8 months pregnant*

Standard SB4.1 increases the maximum water deprivation time as compared to the 'base case' and provides an incremental cost savings for cattle more than 8 months pregnant and in their third trimester of pregnancy from 8 hours to 24 hours before a mandatory minimum spell of 12 hours is operational under standard SB4.2.

Each of these incremental cost savings/costs is analysed separately.

##### *A6.25.2 Incremental cost savings for calves aged 5 to 30 days travelling without their mothers*

The cost savings for this particular class of cattle would rely on the following assumptions:

- the proportion of circumstances where calves for rearing are transported without their mothers and are aged 5 to 30 days and are sent for slaughter (i.e. 5%<sup>369</sup>);
- the number of journeys involving calves for rearing per annum (i.e. 806.1<sup>370</sup>);
- the proportion of circumstances where calves for slaughter are transported without their mothers and are aged 5 to 30 days (i.e. 100%);
- the number of journey involving calves for slaughter per annum (4,083.6<sup>371</sup>);
- The proportion of journeys for calves between 10 hours and 12 hours (i.e. 7%<sup>372</sup>);
- 3.5 hours of loading/unloading and changeover time will be saved for the relevant proportion of journeys (i.e. 5%);
- 13.5 hours of loading/unloading and idle vehicle time will be saved for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 95% of journeys);
- 5.5 hours minimum voluntary spelling time (including 1.5 hours loading/unloading) will be saved for 50% of the time where journeys do not have the ability for changeover; and
- the cost of transporting calves for rearing and slaughter is between \$315.20/hr and \$336.80/hr<sup>373</sup>.

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<sup>369</sup> Proposed by AHA

<sup>370</sup> See Table A6.16 of Appendix 6 in this RIS for estimate.

<sup>371</sup> See Table A6.16 of Appendix 6 in this RIS for estimate.

<sup>372</sup> Proposed by AHA.

<sup>373</sup> See Table A6.15 of Appendix 6 in this RIS for this estimate

Therefore, the incremental annual cost savings for this class of livestock would be calculated in the following way:

**Between:**

*Cost savings for 5% of journeys where there are no idle trucks*  $[5\% \times 5\% \times 7\% \times 806.1 \text{ journeys} \times 3.5 \text{ hours saved} \times \$315.20/\text{hr}]^{374} + [5\% \times 7\% \times 4,083.6 \text{ journeys} \times 3.5 \text{ hours saved} \times \$315.20/\text{hr}]^{375} +$

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 5\% \times 7\% \times 806.1 \text{ journeys} \times 13.5 \text{ hours saved} \times \$315.20/\text{hr}] + [50\% \times 95\% \times 5\% \times 7\% \times 4,083.6 \text{ journeys} \times 13.5 \text{ hours saved} \times \$315.20/\text{hr}] +$

*Cost savings for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling*  $[50\% \times 95\% \times 5\% \times 7\% \times 806.1 \text{ journeys} \times 5.5 \text{ hours saved} \times \$315.20/\text{hr}] + [50\% \times 95\% \times 5\% \times 7\% \times 4,083.6 \text{ journeys} \times 5.5 \text{ hours saved} \times \$315.20/\text{hr}] = \$837,106.53 \text{ per annum.}$

**and**

*Cost savings for 5% of journeys where there are no idle trucks*  $[5\% \times 5\% \times 7\% \times 806.1 \text{ journeys} \times 3.5 \text{ hours saved} \times \$336.80/\text{hr}] + [5\% \times 7\% \times 4,083.6 \text{ journeys} \times 3.5 \text{ hours saved} \times \$336.80/\text{hr}] +$

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 5\% \times 7\% \times 806.1 \text{ journeys} \times 13.5 \text{ hours saved} \times \$336.80/\text{hr}] + [50\% \times 95\% \times 5\% \times 7\% \times 4,083.6 \text{ journeys} \times 13.5 \text{ hours saved} \times \$336.80/\text{hr}] +$

*Cost savings for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling*  $[50\% \times 95\% \times 5\% \times 7\% \times 806.1 \text{ journeys} \times 5.5 \text{ hours saved} \times \$336.80/\text{hr}] + [50\% \times 95\% \times 5\% \times 7\% \times 4,083.6 \text{ journeys} \times 5.5 \text{ hours saved} \times \$336.80/\text{hr}] = \$894,471.70 \text{ per annum.}$

#### ***A6.25.3 Incremental cost savings for cattle in their third trimester of pregnancy and more than 8 months pregnant***

- 3.5 hours of loading/unloading and changeover time will be saved for the relevant proportion of journeys (i.e. 5%);
- 13.5 hours of loading/unloading and idle vehicle time will be saved for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 95% of journeys);
- 5.5 hours minimum voluntary spelling time (including 1.5 hours loading/unloading) will be saved for 50% of the time where journeys do not have the ability for changeover; and
- the proportion of pregnant cows known to be in the third trimester (i.e. 2%<sup>376</sup>)
- the proportion of cows in the third trimester that are more than 8 months pregnant (i.e. 36.84%<sup>377</sup>)
- the proportion of cattle journeys between 8 and 24 hours (i.e. 50%<sup>378</sup>);

<sup>374</sup> Representing cost savings to non-bobby calf transport

<sup>375</sup> Representing cost savings to bobby calf transport

<sup>376</sup> Proposed by AHA

<sup>377</sup> Estimated as 35 days divided by a trimester of 95 days.

<sup>378</sup> Proposed by AHA.

- the number of journeys per annum involving cattle transport is estimated to be 423,274.95<sup>379</sup>; and
- the cost of cattle transport is between \$356.65/hr and \$401.70/hr<sup>380</sup>.

Therefore, the additional annual cost saving would be calculated in the following way:

**Between:**

*Cost savings for 5% of journeys where there are no idle trucks* [5% x 36.84% x 2% x 50% x 423,274.95 journeys x 3.5 hours saved x \$356.65/hr] +

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling* [50% x 95% x 36.84% x 2% x 50% x 423,274.95 journeys x 13.5 hours saved x \$356.65/hr] +

*Cost savings for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling* [50% x 95% x 36.84% x 2% x 50% x 423,274.95 journeys x 5.5 hours saved x \$356.65/hr] = \$5,116,491.35 per annum

**and**

*Cost savings for 5% of journeys where there are no idle trucks* [5% x 36.84% x 2% x 50% x 423,274.95 journeys x 3.5 hours saved x \$401.70/hr] +

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling* [50% x 95% x 36.84% x 2% x 50% x 423,274.95 journeys x 13.5 hours saved x \$401.70/hr] +

*Cost savings for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling* [50% x 95% x 36.84% x 2% x 50% x 423,274.95 journeys x 5.5 hours saved x \$401.70/hr] = \$5,762,777.44 per annum

**A6.25.4 Incremental costs for cattle in their third trimester of pregnancy and less than 8 months pregnant**

Standard SB4.1 reduces the maximum water deprivation time as compared to the 'base case' for cattle in their third trimester of pregnancy and less than 8 months pregnant from 48 hours to 24 hours, thereby leading to an incremental cost. The incremental cost of needing a mandatory spell of 12 hours for journeys (under SB4.2) for cattle less than 8 months pregnant and in their third trimester would rely on the following assumptions:

- 3.5 hours of loading/unloading and changeover time will be incurred for the relevant proportion of journeys (i.e. 5%);
- 13.5 hours of loading/unloading and idle vehicle time will be incurred for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 95% of journeys);
- 5.5 hours minimum voluntary spelling time (including 1.5 hours loading/unloading) will be incurred for 50% of the time where journeys do not have the ability for changeover; and

<sup>379</sup> See Table A6.16 of Appendix 6 in this RIS for this estimate.

<sup>380</sup> See Table A6.15 of Appendix 6 in this RIS for this estimate.

- the proportion of pregnant cows known to be in the third trimester (i.e. 2%<sup>381</sup>)
- the proportion of cows in the third trimester that are less than 8 months pregnant (i.e. 63.16%<sup>382</sup>)
- the proportion of cattle journeys between 24 and 48 hours (i.e. 50%<sup>383</sup>);
- the number of journeys per annum involving cattle transport is estimated to be 423,274.95<sup>384</sup>; and
- the cost of cattle transport is between \$356.65/hr and \$401.70/hr.<sup>385</sup>

Therefore, the additional annual cost would be calculated in the following way:

**Between:**

*Time cost for 5% of journeys where there are no idle trucks* [5% x 63.16% x 2% x 50% x 423,274.95 journeys x 3.5 hours added x \$356.65/hr] +

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling* [50% x 95% x 63.16% x 2% x 50% x 423,274.95 journeys x 13.5 hours added x \$356.65/hr] +

*Time cost for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling* [50% x 95% x 63.16% x 2% x 50% x 423,274.95 journeys x 5.5 hours added x \$356.65/hr] = \$8,771,921.65 per annum

**and**

*Time cost for 5% of journeys where there are no idle trucks* [5% x 63.16% x 2% x 50% x 423,274.95 journeys x 3.5 hours added x \$401.70/hr] +

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling* [50% x 95% x 63.16% x 2% x 50% x 423,274.95 journeys x 13.5 hours added x \$401.70/hr] +

*Time cost for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling* [50% x 95% x 63.16% x 2% x 50% x 423,274.95 journeys x 5.5 hours added x \$401.70/hr] = \$9,879,940.92 per annum

The total annual net incremental cost of standard SB4.1 in conjunction with SB4.2 (i.e. subtracting the total in A6.25.1 and A6.25.2 from A6.25.3) would be between **\$2,818,323.78** and **\$3,222,691.78**. Over 5 years, and in present value terms (2008 dollars), this would equal between **\$13,170,250.24** and **\$15,059,893.94**.

A6.26 Incremental cost of cattle standard SB4.3 for livestock owners

Standard SB4.3 requires that cattle known to be in last 4 weeks of pregnancy must be transported under veterinary advice unless the journey is less than 4 hours duration, and would result in an

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<sup>381</sup> Proposed by AHA

<sup>382</sup> Estimated as 60 days divided by a trimester of 95 days

<sup>383</sup> Proposed by AHA

<sup>384</sup> See Table A6.16 of Appendix 6 in this RIS for this estimate.

<sup>385</sup> See Table A6.15 of Appendix 6 in this RIS for this estimate.

additional cost to livestock owners. This additional cost would rely on the following assumptions:

- the cost of a consultation by a vet is \$145.60 per visit<sup>386</sup>;
- the number of cattle transported per annum is 23,880,105<sup>387</sup>;
- the proportion of cattle in their third trimester (i.e. 2%);
- the proportion of pregnant cattle in their third trimester known to be *in the last 4 weeks of pregnancy* (i.e. 36.84%<sup>388</sup>); and
- 5%<sup>389</sup> of all cattle in the last 4 weeks of pregnancy would travel more than 4 hours distance.

*Subsequently, the annual incremental veterinary cost for all livestock owners is calculated in the following way:*

$$5\% \times 36.84\% \times 2\% \times 23,880,105 \times \$145.60/\text{visit} = \$1,280,905.91 \text{ per annum}$$

Over 5 years, and in present value terms (2008 dollars), this would equal **\$5,985,774.76**.

#### A6.27 Incremental unquantifiable cost of cattle standard SB4.4 for transporters

Standard SB4.4 requires that certain conditions be met when transporting calves under 5 days old without their mothers to a calf rearing facility. These new conditions form an incremental cost in terms of the 'base case' and include the requirements for calves to be:

- fed a liquid feed within 6 hours before loading;
- provided with thick bedding and room to lie down
- protected from cold and heat;
- not consigned through saleyards; and
- not be transported for longer than 6 hours.

Assuming that there are approximately only 8,053<sup>390</sup> calves for rearing which are transported for reasons other than slaughter, and that 5%<sup>391</sup> would be less than 5 days old, then this would entail a relevant population affected of approximately 403 calves per annum. However, it is unknown what proportion of these would be travelling without their mothers and what proportion of those travelling without their mothers would be: 1) typically consigned through saleyards; 2) not typically be fed liquid feed; 3) not be provided with thick bedding and room to lie down; 4) not protected from cold and heat; and 5) are transported more than 6 hours. Given the small relevant population (403 calves) it is not expected that this would be a large number affected.

<sup>386</sup> See section A6.7 of Appendix 6 in this RIS for source of cost.

<sup>387</sup> See Table A5.8 of Appendix 5 in this RIS for estimate.

<sup>388</sup> Estimated as 35 days divided by a trimester of 95 days.

<sup>389</sup> Proposed by AHA.

<sup>390</sup> See Table A5.8 of Appendix 5 in this RIS for estimate.

<sup>391</sup> Proposed by AHA.

Moreover the only cost variable that is determinable in regards to the new conditions under standard SB4.4, is the time cost of 45 minutes on average to place and remove tarps if this was to be used for protection from cold and heat of between \$236.40 and \$252.60<sup>392</sup> for each journey<sup>393</sup>. The remaining cost variables that would need to be obtained in order to quantify the incremental cost of this standard is the cost of liquid feed per calf, as well as, the cost of providing bedding and room to lie down on the vehicle. Furthermore, the opportunity cost of not consigning a calf through a saleyard, as well as, possible hidden transaction costs, is also unknown.

Given the extent of unknown variables associated with this standard, it is not possible to quantify the incremental costs, however it is expected that such costs would be very minor given the potential number of calves affected (i.e. less than 403 calves per annum).

#### A6.28 Incremental unquantifiable net cost savings of cattle standard SB4.5(iv) for livestock owners and transporters

Standard SB4.5(iv) which requires that calves be prepared and transported to ensure delivery in less than 18 hours from last feed, with no more than 12 hours spent on transports<sup>394</sup> entails an extension of journey time from the 'base case' of 10 hours. This would allow for greater flexibility/availability of processing facilities for livestock owners and an aggregation of slaughter calf transport:

- *Flexibility/availability of processing facilities for livestock owners:* Greater flexibility/availability in terms of processing facilities (abattoirs) in the face of any potential overload at processing facilities, especially during a glut of calves, would result in a higher incidence of slaughter calf transports than otherwise would have been the case (under the 'base case'). The cost savings for farmers would be in the form of fewer calves needing slaughter on the farm implying both a lower on-farm slaughter cost and a reduction of foregone sales revenue. Given that the frequency and extent to which slaughter calves need to be slaughtered on farms is unknown, this component of cost savings remains unquantifiable.
- *Aggregation of calf transport:* This standard also allows for cost savings in aggregating smaller groups of slaughter calves from different farms into full truck loads - allowing transporters to take advantage of greater scale economies in transport. The extent to which economies of scale under greater aggregation would be exploited and the degree to which this would reduce average transport cost, are both unknown. Therefore, this component of cost savings remains unquantifiable.

#### A6.29 Incremental unquantifiable net cost of cattle standard SB4.5(v) for livestock transporters

Standard SB4.5(v) requires transporters to have an auditable and accessible record that identifies the date and time that the calves were last fed involves a negligible cost of recording. Having an auditable and accessible record may involve simply keeping a diary entry however it is also acknowledged that the NVD for calves may require revision to make a provision for this standard. Moreover, it is equally noted that NVDs are typically updated from time to time in the normal course of activity. Therefore, it is difficult to establish if, and to what extent, incremental revision costs in relation to NVD for calves will be purely as a consequence of this standard.

<sup>392</sup> See Table A6.20 of Appendix 6 in this RIS for estimate.

<sup>393</sup> Note however, that given the numbers affected is unknown the number of journeys is also unknown.

<sup>394</sup> This is liquid feed.

A6.30 Incremental cost of cattle standard SB4.7(a) for livestock transporters

Standard SB4.7(a) requires that slaughter calves born earlier than a normal pregnancy term (including induced calves) must be at an equivalent stage of fitness when transported, compared with normal, full-term calves. This standard would create additional costs in terms of:

- not being able to transport some calves;
- needing to humanely destroy calves; or
- needing to provide them with additional days of feeding.

Given that the number of calves born earlier than in a normal pregnancy is low, the expected cost is also expected to be low. Furthermore, it is arguably already an existing fitness requirement. This standard remains unquantifiable however because the percentage of calves rejected from loading because of failure to meet this condition is unknown.

A6.30 Incremental cost of cattle standard SB4.7(b) for livestock transporters

Standard SB4.8(b) requires that calves under 30 days old must all have sufficient space in the livestock crate to lie down on their sternums. This standard would have a direct impact on the stocking density of rearing calves and slaughter calves 5 to 30 days old being transported. The base case assumes that for an average weight of 40kg and the stocking density of 130 slaughter calves and 111 rearing calves per 30sqm deck implies an average space of 0.25sqm per calf:

$$30\text{sqm}/130 \text{ calves per deck} \times 50\% + 30\text{sqm}/111 \text{ calves per deck} \times 50\% = 0.2505\text{sqm}$$

However with standard SB4.8(b) and an average weight of 40kg an average space of 0.33sqm per calf would be required. For rearing and slaughter calves this would mean that the stocking density would be reduced to 80 calves and 106 calves respectively per 30sqm deck:

$$30\text{sqm}/106 \text{ calves per deck} \times 50\% + 30\text{sqm}/80 \text{ calves per deck} \times 50\% = 0.329\text{sqm}$$

This would entail an 18.5% reduction in space for slaughter calves and a 27.9% reduction in space for rearing calves (an average reduction of 23.2%). Given the number of rearing and slaughter calves 161,053 and 955,556, respectively (see Table A5.8 of Appendix 5) the number of decks (weighted hrs of annual transport) for rearing calves required for transport would increase from 1,451 decks (1,053hrs) to 2,013 decks (1,460hrs). Moreover the number of decks (weighted hrs of annual transport) for slaughter calves required for transport would increase from 7350 decks (5,336hrs) to 9,015 decks (6,539hrs) per annum. Therefore standard SB4.8(b) would result in 562 more decks (407hrs) required for transporting rearing calves and 1,665 more decks (1,203hrs) required for transporting slaughter calves per annum. As shown in Table A6.15(a), the hourly cost of transport for rearing and slaughter calves is between \$315.20/hr and \$336.80/hr. Therefore the general incremental cost of transport for rearing calves would be:

$$\text{Between: } \$315.20/\text{hr} \times 407\text{hrs} = \$128,286.40 \text{ and } \$336.80/\text{hr} \times 407\text{hrs} = \$137,077.60$$

For slaughter calves the general incremental cost of transport would be:

$$\text{Between: } \$315.20/\text{hr} \times 1,203\text{hrs} = \$379,185.60 \text{ and } \$336.80 \times 1,203\text{hrs} = \$405,170.40$$

The total general incremental cost of transport for all calves would be between \$507,472 and \$542,248 per annum



Moreover, SB4.8(b) would also affect the cost/cost savings of other specific and general standards as they apply to calves. These are summarised in the following sections.

*A6.30.1 The incremental cost of standard SB4.8(b) in terms of SA1.1 for livestock receivers*

Standard SB4.8(b) would result in an increase in the number of journeys required for rearing and slaughter calves by 312 and 924 journeys, respectively. In terms of standard SA1.1 there would be a 5 minute requirement of time per journey at rate of \$1.80/5 minutes (see section A6.3 of Appendix 6). This would entail an incremental cost of \$561.60 and \$1,663.20 per annum for rearing and slaughter calves, respectively.

*A6.30.2 The incremental cost of standard SB4.8(b) in terms of SA5.11(ii) for livestock transporters*

Standard SB4.8(b) would result in an increase in the number of journeys required for rearing and slaughter calves by 312 and 924 journeys, respectively. In terms of standard SA5.11(ii) there would be a 2.5 minute requirement of time per journey (inspection of receival yard) at rate between \$13.13 and \$14.03 per 2.5 minutes (see Table A6.17(a) of Appendix 6). This would entail an incremental cost of between \$4,097.60 and \$4,378.40 per annum for rearing calves and between \$12,135.20 and \$12,966.80 for slaughter calves, respectively.

The total incremental cost of standard SB4.8(b) for all calves in relation to SA5.11(ii) would be between \$16,232.80 and \$17,345.20 per annum

*A6.30.3 The incremental cost of standard SB4.8(b) in terms of SA5.11(iii) for livestock transporters*

Standard SB4.8(b) would result in an increase in the number of journeys required for rearing and slaughter calves by 312 and 924 journeys, respectively. However SA5.11(iii) would only affect 1% of journeys and therefore the incremental number of journeys affected would be only approximately 3 for rearing calves and 9 for slaughter calves. In terms of standard SA5.11(iii) there would be a 1 minute requirement of time per journey involving the notification of a responsible person of the arrival of the livestock at the destination. The cost would be at rate between \$5.25 and \$5.61 per 1 minute (see Table A6.15(b) of Appendix 6). This would entail an incremental cost of between \$15.76 and \$16.84 per annum for rearing calves and between \$47.28 and \$50.52 for slaughter calves, respectively.

The total incremental cost of standard SB4.8(b) for all calves in relation to SA5.11(iii) would be between \$63.04 and \$67.36 per annum

*A6.30.4 The incremental cost of standard SB4.8(b) in terms of SA5.14 for livestock transports*

Standard SB4.8(b) would result in an increase in the number of journeys required for slaughter calves by 924 journeys. SA5.14 which requires protecting livestock from extreme temperatures applies only to slaughter calves as rearing calves are covered under SB4.4. The probability of extreme cold or hot days is 5.216% (see section A6.9.3 of Appendix 6) and the 45 minute rate of protecting calves is between \$236.40 and \$252.60 (see Table A6.20 of Appendix 6). Therefore the incremental cost of SB4.8(b) in relation to SA5.14 would be:

Between 924 journeys x \$236.40 X 5.216% = \$11,393.50 and 924 journeys x \$252.60 x 5.216% = \$12,174.27

*A6.30.5 The incremental cost savings of standard SB4.8(b) in terms of SB4.1 in conjunction with SB4.2 for livestock transporters*

Standard SB4.8(b) would result in an increase in the number of journeys required for rearing and slaughter calves by 312 and 924 journeys, respectively. Therefore, the incremental annual increase in cost savings for calves in terms of SB4.1 in conjunction with SB4.2 (as a result of SB4.8(b)) would be calculated in the following way:

**Between:**

*Cost saving increase for 5% of journeys where there are no idle trucks*  $[5\% \times 5\% \times 7\% \times 312 \text{ journeys} \times 3.5 \text{ hours saved} \times \$315.20/\text{hr}]^{395} + [5\% \times 7\% \times 924 \text{ journeys} \times 3.5 \text{ hours saved} \times \$315.20/\text{hr}]^{396} +$

*Cost saving increase for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 5\% \times 7\% \times 312 \text{ journeys} \times 13.5 \text{ hours saved} \times \$315.20/\text{hr}] + [50\% \times 95\% \times 5\% \times 7\% \times 924 \text{ journeys} \times 13.5 \text{ hours saved} \times \$315.20/\text{hr}] +$

*Cost saving increase for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling*  $[50\% \times 95\% \times 5\% \times 7\% \times 312 \text{ journeys} \times 5.5 \text{ hours saved} \times \$315.20/\text{hr}] + [50\% \times 95\% \times 5\% \times 7\% \times 924 \text{ journeys} \times 5.5 \text{ hours saved} \times \$315.20/\text{hr}] = \$190,728.28 \text{ per annum.}$

**and**

*Cost saving increase for 5% of journeys where there are no idle trucks*  $[5\% \times 5\% \times 7\% \times 312 \text{ journeys} \times 3.5 \text{ hours saved} \times \$336.80/\text{hr}] + [5\% \times 7\% \times 924 \text{ journeys} \times 3.5 \text{ hours saved} \times \$336.80/\text{hr}] +$

*Cost saving increase 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 5\% \times 7\% \times 312 \text{ journeys} \times 13.5 \text{ hours saved} \times \$336.80/\text{hr}] + [50\% \times 95\% \times 5\% \times 7\% \times 924 \text{ journeys} \times 13.5 \text{ hours saved} \times \$336.80/\text{hr}] +$

*Cost saving increase 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling*  $[50\% \times 95\% \times 5\% \times 7\% \times 312 \text{ journeys} \times 5.5 \text{ hours saved} \times \$336.80/\text{hr}] + [50\% \times 95\% \times 5\% \times 7\% \times 924 \text{ journeys} \times 5.5 \text{ hours saved} \times \$336.80/\text{hr}] = \$203,798.49 \text{ per annum.}$

Finally, in combining all the costs/cost savings in the aforementioned subsections including A6.30.1 to A6.30.5, the incremental net cost of standard SB4.8(b) would be expected to be between **\$344,994.66** and **\$369,699.54** per annum. Over 5 years, and in present value terms (2008 dollars), this would equal between **\$1,612,187.39** and **\$1,727,635.24**.

A6.31 Incremental unquantifiable cost of cattle standard SB4.7 for transporters

Standard SB4.7 requires that dogs must not be used to move slaughter calves and would result in minimal additional time costs in terms of loading for transport. However this would only be relevant in the instances where dogs are currently being used. Given that the probability of this remains unknown, this incremental cost remains unquantifiable.

<sup>395</sup> Representing cost savings to non-bobby calf transport

<sup>396</sup> Representing cost savings to bobby calf transport

A6.32 Incremental net cost savings of deer standard SB5.1 in conjunction with SB5.2 for transporters

Standard SB5.1 increases the maximum time of water for fawns/calves under 6 months old from 24 hours under the 'base case' to 28 hours. This class of deer would be associated with a cost savings in terms of spelling periods required under SB5.2 however deer over 6 months old would be associated with an incremental cost in terms of increased spelling period required under SB5.2 as compared to the 'base case' (i.e. from 24 hours to 36 hours).

*A6.32.1 Incremental cost savings for fawns/calves less than 6 months old*

The incremental time cost saving would rely on the following assumptions:

- 3.5 hours of loading/unloading and changeover time will be saved for 5% of the relevant proportion of journeys;
- 13.5 hours of loading/unloading and idle vehicle time will be saved for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 95% of journeys) for fawns/calves under 6 months;
- 5.5 hours minimum voluntary spelling time (including 1.5 hours loading/unloading) will be saved for 50% of the time where journeys do not have the ability for changeover;
- the proportion of deer older than 6 months (i.e. 90%<sup>397</sup>);
- the proportion of deer journeys between 24 and 28 hours (i.e. 5%<sup>398</sup>);
- the number of journeys per annum involving deer transport is estimated to be 424.4<sup>399</sup>; and
- the cost of deer transport is between \$302/hr and \$307.40/hr.<sup>400</sup>

Therefore, the additional annual cost savings would be calculated in the following way:

**Between:**

*Cost savings for 5% of journeys where there are no idle trucks* [5% x 5% x 10% x 424.4 journeys x 3.5 hours saved x \$302/hr] +

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling* [50% x 95% x 5% x 10% x 424.4 journeys x 13.5 hours saved x \$302/hr] +

*Cost savings for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling* [50% x 95% x 5% x 10% x 424.4 journeys x 5.5 hours saved x \$302/hr] = **\$5,895.76** per annum

**and**

<sup>397</sup> Proposed by AHA

<sup>398</sup> Proposed by AHA

<sup>399</sup> See Table A6.23 of Appendix 6 in this RIS for this estimate

<sup>400</sup> See Table A6.20 of Appendix 6 in this RIS for this estimate

*Cost savings for 5% of journeys where there are no idle trucks*  $[5\% \times 5\% \times 10\% \times 424.4 \text{ journeys} \times 3.5 \text{ hours saved} \times \$307.40/\text{hr}] +$

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 5\% \times 10\% \times 424.4 \text{ journeys} \times 13.5 \text{ hours saved} \times \$307.40/\text{hr}] +$

*Cost savings for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling*  $[50\% \times 95\% \times 5\% \times 10\% \times 424.4 \text{ journeys} \times 5.5 \text{ hours saved} \times \$307.40/\text{hr}] = \text{\$6,001.19}$  per annum

#### A6.32.2 Incremental cost for deer over 6 months old

The incremental time cost would rely on the following assumptions:

- 3.5 hours of loading/unloading and changeover time will be incurred for 5% of the relevant proportion of journeys;
- 13.5 additional hours loading/unloading and idle vehicle time will be incurred (as compared to the 'base case') for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 95% of journeys) for deer over 6 months;
- 5.5 hours minimum voluntary spelling time (including 1.5 hours loading/unloading) will be incurred for 50% of the time where journeys do not have the ability for changeover;
- the proportion of deer older than 6 months (i.e. 90%<sup>401</sup>);
- the proportion of deer journeys greater than 48 hours (i.e. 2%<sup>402</sup>);
- the number of journeys per annum involving deer transport is estimated to be 424.4<sup>403</sup>; and
- the cost of deer transport is between \$302/hr and \$307.40/hr.<sup>404</sup>

Therefore, the additional annual cost would be calculated in the following way:

#### **Between:**

*Time cost for 5% of journeys where there are no idle trucks*  $[5\% \times 2\% \times 90\% \times 424.4 \text{ journeys} \times 3.5 \text{ hours} \times \$302/\text{hr}] +$

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 2\% \times 90\% \times 424.4 \text{ journeys} \times 13.5 \text{ hours} \times \$302/\text{hr}] +$

*Time cost for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling*  $[50\% \times 95\% \times 2\% \times 90\% \times 424.4 \text{ journeys} \times 5.5 \text{ hours} \times \$302/\text{hr}] = \$21,224.75$  per annum

**and**

<sup>401</sup> Proposed by AHA.

<sup>402</sup> Proposed by AHA.

<sup>403</sup> See Table A6.23 of Appendix 6 in this RIS for this estimate.

<sup>404</sup> See Table A6.20 of Appendix 6 in this RIS for this estimate.

*Time cost for 5% of journeys where there are no idle trucks* [5% x 2% x 90% x 424.4 journeys x 3.5 hours x \$307.40/hr] +

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling* [50% x 95% x 2% x 90% x 424.4 journeys x 13.5 hours x \$307.40/hr] +

*Time cost for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling* [50% x 95% x 2% x 90% x 424.4 journeys x 5.5 hours x \$307.40/hr] = \$21,604.27 per annum

The total annual net incremental cost of standard SB5.1 in conjunction with SB5.2 (i.e. subtracting the total in A6.32.1 from A6.32.2) would be between **\$15,328.99** and **\$15,603.08**. Over 5 years, and in present value terms (2008 dollars), this would equal between **\$71,633.58** and **\$72,914.44**.

#### A6.33 Incremental cost of deer standard SB5.3 for livestock owners

Standard SB5.3 requires that deer known to be in their last 4 weeks of pregnancy must be transported under veterinary advice unless the journey is less than 4 hours duration and would result in an additional cost to livestock owners. This additional cost would rely on the following assumptions:

- the cost of a consultation by a vet is \$145.60 per visit<sup>405</sup>;
- the number of deer transported per annum is 49,333<sup>406</sup>;
- 1%<sup>407</sup> of a total deer transported per annum are assumed to be *in their last 4 weeks of pregnancy*; and
- 70%<sup>408</sup> of all deer would travel more than 4 hours distance.

Subsequently, the annual incremental veterinary cost for livestock owners is very minor and is calculated in the following way:

$$1\% \times 70\% \times 49,333 \times \$145.60/\text{visit} = \mathbf{\$50,280.19 \text{ per annum}}$$

Over 5 years, and in present value terms (2008 dollars), this would equal **\$234,963.33**.

#### A6.34 Incremental unquantifiable cost of deer standard SB5.4 for transporters

Standard SB3.6 would result in minimal additional time costs in terms of loading for deer transport by restricting the use of electric prodders. However this would only be the case in the instance where an electric prod is used despite the fact that reasonable action to cause movement was sufficient. Given that the instance of this occurring is unknown, this incremental cost remains unquantifiable.

<sup>405</sup> See section A6.7 of Appendix 6 in this RIS for source of cost.

<sup>406</sup> See Table A5.8 of Appendix 5 in this RIS for estimate.

<sup>407</sup> Proposed by AHA.

<sup>408</sup> Proposed by AHA.

A6.36 Incremental cost of ratite standard SB6.1 in conjunction with SB6.5 for transporters*A6.36.1 Adult ratites*

Standard SB6.5 introduces a mandatory minimum spelling time of 12 hours for adult ratites which involve water deprivation times of greater than 24 hours as per standard SB6.1. This incremental time cost will rely on the following assumptions being made:

- 3.5 hours of loading/unloading and changeover time will be incurred for 5% of the relevant proportion of journeys;
- 13.5 hours of loading/unloading and idle vehicle time will be incurred for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 95% of journeys);
- 5.5 hours minimum voluntary spelling time (including 1.5 hours loading/unloading) will be incurred for 50% of the time where journeys do not have the ability for changeover;
- the proportion of adult emus (i.e. 95%<sup>409</sup>);
- the proportion of adult ostriches (i.e. 95%<sup>410</sup>);
- the proportion of ratite journeys greater than 24 hours (i.e. 5%<sup>411</sup>);
- the number of journeys per annum involving emu and ostrich transport is estimated to be 111.1 and 207.3, respectively<sup>412</sup>; and
- the cost of ratite transport is \$250/hr.<sup>413</sup>

Therefore, the additional annual spelling (time) cost for emu and ostrich transporters would be calculated in the following way:

**Adult emus:**

*Time cost for 5% of journeys where there are no idle trucks* [5% x 5% x 95% x 111.1 journeys x 3.5 hours added x \$250/hr] +

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling* [50% x 95% x 5% x 95% x 111.1 journeys x 13.5 hours added x \$250/hr] +

*Time cost for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling* [50% x 95% x 5% x 95% x 111.1 journeys x 5.5 hours added x \$250/hr] = **\$12,137.68**  
per annum

**Adult ostriches:**


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<sup>409</sup> Proposed by AHA.

<sup>410</sup> Proposed by AHA.

<sup>411</sup> Proposed by AHA.

<sup>412</sup> See Table A6.23 of Appendix 6 in this RIS for this estimate.

<sup>413</sup> See Table A6.20 of Appendix 6 in this RIS for this estimate.

*Time cost for 5% of journeys where there are no idle trucks*  $[5\% \times 5\% \times 95\% \times 207.3 \text{ journeys} \times 3.5 \text{ hours added} \times \$250/\text{hr}] +$

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 5\% \times 95\% \times 207.3 \text{ journeys} \times 13.5 \text{ hours added} \times \$250/\text{hr}] +$

*Time cost for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling*  $[50\% \times 95\% \times 5\% \times 95\% \times 207.3 \text{ journeys} \times 5.5 \text{ hours added} \times \$250/\text{hr}] = \mathbf{\$22,647.53}$   
per annum

#### A6.36.2 Ratite chicks

Standard SB6.1 reduces the maximum water deprivation time from 24 hours to 12 hours for emu and ostrich chicks. This incremental time cost will rely on the following assumptions being made:

- the proportion of ratite chicks (i.e. 5%<sup>414</sup>);
- the time cost of watering chicks is 10 minutes;
- the proportion of ratite journeys greater than 12 hours (i.e. 30%<sup>415</sup>);
- the number of journeys per annum involving emu and ostrich transport is estimated to be 111.1 and 207.3, respectively<sup>416</sup>; and
- the cost of ratite transport is \$250/hr<sup>417</sup>.

Subsequently, the annual incremental cost for emu and ostrich transporters is calculated in the following way:

**Emu chicks** =  $5\% \times 30\% \times 111.1 \text{ journeys} \times 0.167\text{hrs added} \times \$250/\text{hr} = \mathbf{\$69.44}$  per annum

**Ostrich chicks** =  $5\% \times 30\% \times 207.3 \text{ journeys} \times 0.167\text{hrs added} \times \$250/\text{hr} = \mathbf{\$129.56}$  per annum

The total combined annual cost for adults and chicks as shown in sections A6.36.1 and A6.36.2, of standard SB6.1 in conjunction with SB6.5, would be **\$12,207.11** per annum for emu transporters and **\$22,777.09** per annum for ostrich transporters. Over 5 years, and in present value terms (2008 dollars), this would equal **\$57,044.80** for emu transporters and **\$106,439.13** for ostrich transporters.

#### A6.37 Incremental unquantifiable cost of ratite standard SB6.2 and SB6.3 for transporters

SB6.2 requires that chicks and young birds be fed every 12 hours during transport. Standard SB6.3 requires that ratite chicks not be held in containers greater than 12 hours without being provided food, water and shelter or fed every 12 hours. These standards are likely to impose a minor cost to address the needs of ratite chicks in the aforementioned situations. Given that the number of emu and ostrich chicks transported is unknown this cost remains unquantifiable.

#### A6.38 Incremental unquantifiable cost of ratite standard SB6.5 for transporters

<sup>414</sup> Proposed by AHA.

<sup>415</sup> Proposed by AHA.

<sup>416</sup> See Table A6.23 of Appendix 6 in this RIS for this estimate.

<sup>417</sup> See Table A6.20 of Appendix 6 in this RIS for this estimate.

Standard SB6.5 specifies that containers of ratite chicks must be *suitable* and *securely attached* to the vehicle and specifies how such containers must be *handled*. This standard is unquantifiable in terms of costs due to lack of information of current suitability of containers and whether or not such containers are currently handled according to the requirement of this new standard. Nonetheless it is assumed, for the purpose of this RIS, that any such costs would be minimal.

A6.39 Incremental unquantifiable cost of ratite standard SB6.6 for livestock transporters/owners

Standard SB6.6 stipulates that legs of ratites must not be tied together. The incremental cost of not tying legs of ratites for livestock transporters/owners is unknown and, as such, the cost of this standard remains unquantifiable. However, since tying of legs is not common practice in the industry, the cost of this standard (which may result in some minimal inconvenience to very few transporters or owners) is assumed to be negligible.

A6.40 Incremental unquantifiable cost of ratite standard SB6.7 for transporters

Standard SB3.6 would result in minimal additional time costs in terms of loading for ratite transport by restricting the use of electric prodders. However this would only be the case in the instance where an electric prodder is used despite the fact that reasonable action to cause movement was sufficient. Given that the instance of this occurring is unknown, this incremental cost remains unquantifiable.

A6.41 Incremental unquantifiable one-off cost of ratite standard SB6.8 for livestock owners

Standard SB6.7 which requires the humane destruction of ratites represents a very minimal one-off training cost to ratite livestock owners. Given that the number of ratite livestock owners and the proportion that would require necessary training is unknown – the impact of this standard remains unquantifiable in dollar terms.

A6.42 Incremental net cost of goat standard SB7.1 in conjunction with SB7.2 for transporters

*A6.42.1 Incremental cost savings for goats over 4 months pregnant*

Standard SB7.1 increases the maximum time off water of from 8 hours to 24 hours for goats over 4 months pregnant (under which a minimum mandatory spell of 12 hours comes under operation under standard SB7.2). The incremental cost savings would rely on the following assumptions:

- 3.5 hours of loading/unloading and changeover time will be saved for 5% of the relevant proportion of journeys;
- 13.5 hours of loading/unloading and idle vehicle time will be saved for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 95% of journeys);
- 5.5 hours minimum voluntary spelling time (including 1.5 hours loading/unloading) will be saved for 50% of the time where journeys do not have the ability for changeover;



- the proportion of pregnant goats known to be over 14 weeks pregnant (i.e. in their third trimester) (i.e. 2%<sup>418</sup>);
- the proportion of the 2% of goats in their third trimester and over 4 months pregnant (i.e. 60%<sup>419</sup>);
- the proportion of journeys between 8 and 24 hours (i.e. 40%<sup>420</sup>);
- the number of journeys per annum involving goat transport is estimated to be 4,181.08<sup>421</sup>; and
- the cost of goat transport is between \$357.43 and \$412.45/hr.<sup>422</sup>

Therefore, the additional annual time cost saving for goat transporters would be calculated in the following way:

**Between:**

*Cost savings for 5% of journeys where there are no idle trucks* [5% x 40% x 2% x 60% x 4,181.08 journeys x 3.5 hours saved x \$357.43/hr] +

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling* [50% x 95% x 40% x 2% x 60% x 4,181.08 journeys x 13.5 hours saved x \$357.43/hr] +

*Cost savings for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling* [50% x 95% x 40% x 2% x 60% x 4,181.08 journeys x 5.5 hours saved x \$357.43/hr] = \$65,994.62 per annum

**and**

*Cost savings for 5% of journeys where there are no idle trucks* [5% x 40% x 2% x 60% x 4,181.08 journeys x 3.5 hours saved x \$412.45/hr] +

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling* [50% x 95% x 40% x 2% x 60% x 4,181.08 journeys x 13.5 hours saved x \$412.45/hr] +

*Cost savings for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling* [50% x 95% x 40% x 2% x 60% x 4,181.08 journeys x 5.5 hours saved x \$412.45/hr] = \$76,153.32 per annum

**A6.42.2 Incremental cost for goats in their third trimester and less than 4 months pregnant and for kids under 6 months old**

Standard SB7.1 reduces the maximum time off water of from 48 hours to 24 hours for goats in their third trimester and less than 4 months pregnant (under which a minimum mandatory spell of 12 hours comes under operation under standard SB7.2). SB7.1 also reduces the maximum

<sup>418</sup> Proposed by AHA.

<sup>419</sup> Estimated as 30 days divided by the total trimester of 50 days.

<sup>420</sup> Proposed by AHA.

<sup>421</sup> See Table A6.23 of Appendix 6 in this RIS for this estimate.

<sup>422</sup> See Table A6.20 of Appendix 6 in this RIS for this estimate.

time of water from 36 hours to 28 hours for kids less than 6 months of age (under which a minimum mandatory spell of 12 hours comes under operation under standard SB7.2).

The incremental cost would rely on the following assumptions:

- 3.5 hours of loading/unloading and changeover time will be incurred for 5% of the relevant proportion of journeys;
- 13.5 hours of loading/unloading and idle vehicle time will be incurred for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 95% of journeys);
- 5.5 hours minimum voluntary spelling time (including 1.5 hours loading/unloading) will be incurred for 50% of the time where journeys do not have the ability for changeover;
- the proportion of pregnant goats known to be in their third trimester (i.e. 2%<sup>423</sup>);
- the proportion of the 2% of goats in their third trimester and less than 4 months pregnant (i.e. 40%<sup>424</sup>);
- the proportion of journeys between 24 and 48 hours (i.e. 25%<sup>425</sup>);
- the proportion of kids less than 6 months (i.e. 10%<sup>426</sup>);
- the proportion of kids where the journey would exceed 28 hours (i.e. 0.01%<sup>427</sup>);
- the number of journeys per annum involving goat transport is estimated to be 4,181.08<sup>428</sup>; and
- the cost of goat transport is between \$357.43 and \$412.45/hr<sup>429</sup>.

Therefore, the additional annual time cost for goat transporters would be calculated in the following way:

**Kids under 6 months:**

**Between:**

*Time cost for 5% of journeys where there are no idle trucks* [5% x 10% x 0.01% x 4,181.08 journeys x 3.5 hours x \$357.43/hr] +

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling* [50% x 95% x 10% x 0.01% x 4,181.08 journeys x 13.5 hours x \$357.43/hr] +

*Time cost for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling* [50% x 95% x 10% x 0.01% x 4,181.08 journeys x 5.5 hours x \$357.43/hr] =  
\$58,661.95 per annum

<sup>423</sup> Proposed by AHA.

<sup>424</sup> Estimated as 20 days divided by the total trimester of 50 days.

<sup>425</sup> Proposed by AHA.

<sup>426</sup> Proposed by AHA.

<sup>427</sup> Proposed by AHA and Ian Cathles GICA.

<sup>428</sup> See Table A6.23 of Appendix 6 in this RIS for this estimate.

<sup>429</sup> See Table A6.20 of Appendix 6 in this RIS for this estimate.

**and**

*Time cost for 5% of journeys where there are no idle trucks*  $[5\% \times 10\% \times 0.01\% \times 4,181.08 \text{ journeys} \times 3.5 \text{ hours} \times \$412.45/\text{hr}] +$

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 10\% \times 0.01\% \times 4,181.08 \text{ journeys} \times 13.5 \text{ hours} \times \$412.45/\text{hr}] +$

*Time cost for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling*  $[50\% \times 95\% \times 10\% \times 0.1\% \times 4,181.08 \text{ journeys} \times 5.5 \text{ hours} \times \$412.45/\text{hr}] = \$67,691.91$  per annum

**Goats less than 4 months pregnant:**

**Between:**

*Time cost for 5% of journeys where there are no idle trucks*  $[5\% \times 40\% \times 2\% \times 25\% \times 4,181.08 \text{ journeys} \times 3.5 \text{ hours added} \times \$357.43/\text{hr}] +$

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 40\% \times 2\% \times 25\% \times 4,181.08 \text{ journeys} \times 13.5 \text{ hours added} \times \$357.43/\text{hr}] +$

*Time cost for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling*  $[50\% \times 95\% \times 40\% \times 2\% \times 25\% \times 4,181.08 \text{ journeys} \times 5.5 \text{ hours added} \times \$357.43/\text{hr}] = \$27,497.76$  per annum

**and**

*Time cost for 5% of journeys where there are no idle trucks*  $[5\% \times 40\% \times 2\% \times 25\% \times 4,181.08 \text{ journeys} \times 3.5 \text{ hours added} \times \$412.45/\text{hr}] +$

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 40\% \times 2\% \times 25\% \times 4,181.08 \text{ journeys} \times 13.5 \text{ hours added} \times \$412.45/\text{hr}] +$

*Time cost for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling*  $[50\% \times 95\% \times 40\% \times 2\% \times 25\% \times 4,181.08 \text{ journeys} \times 5.5 \text{ hours added} \times \$412.45/\text{hr}] = \$31,730.55$  per annum

#### **A6.42.3 Incremental cost for goats over 6 months old off water for 48 hours**

Standard SB7.2 increases the minimum mandatory spell from 24 hours under the ‘base case’ to 36 hours for goats over 6 months and off water for 48 hours. The incremental cost would rely on the following assumptions:

- 3.5 hours of loading/unloading and changeover time will be incurred for 5% of the relevant proportion of journeys;
- 13.5 additional hours of loading/unloading and idle vehicle time will be incurred (as compared to the ‘base case’) for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 95% of journeys);
- 5.5 hours minimum voluntary spelling time (including 1.5 hours loading/unloading) will be incurred for 50% of the time where journeys do not have the ability for changeover;

- the proportion of goats over 6 months (i.e. 90%<sup>430</sup>);
- the proportion of goats for which journeys are over 48 hours (i.e. 0.05%<sup>431</sup>);
- the number of journeys per annum involving goat transport is estimated to be 4,181.08<sup>432</sup>; and
- the cost of goat transport is between \$357.43 and \$412.45/hr.<sup>433</sup>

Therefore, the additional annual time cost for goat transporters would be calculated in the following way:

**Between:**

*Time cost for 5% of journeys where there are no idle trucks* [5% x 0.05% x 90% x 4,181.08 journeys x 3.5 hours added x \$357.43/hr] +

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling* [50% x 95% x 0.05% x 90% x 4,181.08 journeys x 13.5 hours added x \$357.43/hr] +

*Time cost for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling* [50% x 95% x 0.05% x 90% x 4,181.08 journeys x 5.5 hours added x \$357.43/hr] = \$21,999.14 per annum

**and**

*Time cost for 5% of journeys where there are no idle trucks* [5% x 0.05% x 90% x 4,181.08 journeys x 3.5 hours added x \$412.45/hr] +

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling* [50% x 95% x 0.05% x 90% x 4,181.08 journeys x 13.5 hours added x \$412.45/hr] +

*Time cost for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling* [50% x 95% x 0.05% x 90% x 4,181.08 journeys x 5.5 hours added x \$412.45/hr] = \$25,385.52 per annum

Subsequently, the total incremental net cost of standard SB7.1 in conjunction with SB7.2, (subtracting the cost savings in section A6.42.1 from the costs in section A6.42.2 plus costs in section A6.37.3) - would be between **\$42,164.23** and **\$48,654.66**. Over 5 years, and in present value terms (2008 dollars), this would equal between **\$197,036.77** and **\$227,367.08**.

A6.45 Incremental net savings of horse standard SB8.1 in conjunction with SB8.3 for transporters

The analysis of the incremental net savings of horse standards SB8.1 in conjunction with SB8.3 for transporters excludes recreational horses from the calculations as it is assumed that most movements will be less than 4 hours duration and not affected by the standards relating to water provision/journey length.

<sup>430</sup> Proposed by AHA

<sup>431</sup> Proposed by AHA and Ian Cathles GICA.

<sup>432</sup> See Table A6.23 of Appendix 6 in this RIS for this estimate

<sup>433</sup> See Table A6.20 of Appendix 6 in this RIS for this estimate

*A6.45.1 Incremental cost savings in relation to lactating mares and foals less than 6 months old*

Standard SB8.1 increases the maximum water deprivation times for lactating mares and foals less than 6 months old from 8 to 12 hours resulting in a cost savings for transporters in terms of the mandatory minimum spelling time of 12 hours under SB8.3. This incremental cost savings will rely on the following assumptions being made:

- 3.5 hours of loading/unloading and changeover time will be saved for 5% of the relevant proportion of journeys;
- 13.5 hours of loading/unloading and idle vehicle time will be saved for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 95% of journeys);
- 5.5 hours minimum voluntary spelling time (including 1.5 hours loading/unloading) will be saved for 50% of the time where journeys do not have the ability for changeover;
- the proportion of horses which are lactating mares (i.e. 1%<sup>434</sup>);
- the proportion of horses which are foals less than 6 months old (i.e. 1%<sup>435</sup>);
- the proportion of horses journeys between 8 and 12 hours (i.e. 10%<sup>436</sup>);
- the number of journeys per annum involving horses for slaughter and export is estimated to be 116,298;

The estimated number of annual journeys is calculated in the following way:

- estimated number of (12.5m x 2.4m) decks used for road transport per annum = 679 (for slaughter and export) and 115,619 (for sales and major events)<sup>437</sup>
- average number of decks involved per journey = 1 deck
- estimated number of annual journeys = 116,298/1 deck = 116,298 journeys
- the cost of horse transport is \$250/hr<sup>438</sup>.

Therefore, the additional cost savings for horse transporters would be calculated in the following way:

*Cost savings for 5% of journeys where there are no idle trucks* [5% x 1% x 10% x 116,298 journeys x 3.5 hours saved x \$250/hr]<sup>439</sup> + [5% x 1% x 10% x 116,298 journeys x 3.5 hours saved x \$250/hr]<sup>440</sup> +

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<sup>434</sup> Proposed by AHA

<sup>435</sup> Proposed by AHA

<sup>436</sup> Proposed by AHA

<sup>437</sup> See Table A5.9 of Appendix 5 in this RIS for this estimate

<sup>438</sup> See Table A6.20 of Appendix 6 in this RIS for this estimate. Furthermore, it is acknowledged that the hourly rate for transports of horses destined for sale or major events will vary however all transports have been converted to (12.4m x 2.5m) equivalent decks for the purpose of estimation and the corresponding hourly rate of \$250 is applied.

<sup>439</sup> Represents the cost savings to lactating mares

<sup>440</sup> Represents the cost savings to foals less than 6 months old

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 1\% \times 10\% \times 116,298 \text{ journeys} \times 13.5 \text{ hours saved} \times \$250/\text{hr}] + [50\% \times 95\% \times 1\% \times 10\% \times 116,298 \text{ journeys} \times 13.5 \text{ hours saved} \times \$250/\text{hr}] +$

*Cost savings for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling*  $[50\% \times 95\% \times 1\% \times 10\% \times 116,298 \text{ journeys} \times 5.5 \text{ hours saved} \times \$250/\text{hr}] + [50\% \times 95\% \times 1\% \times 10\% \times 116,298 \text{ journeys} \times 5.5 \text{ hours saved} \times \$250/\text{hr}] = \$534,970.80 \text{ per annum}$

#### *A6.45.2 Incremental cost in relation to horses over 6 months and mares over 7.5 months pregnant*

Standard SB8.1 reduces the maximum water deprivation times for adult horses over 6 months old from 36 to 24 hours<sup>441</sup> and for mares more than 7.5 months pregnant (i.e. in third trimester of pregnancy) from 36 to 12 hours resulting in an incremental cost in terms of the mandatory minimum spelling time 12 hours under SB8.3. Very few horses would be affected by this change in standards and this incremental cost will rely on the following assumptions being made:

- 3.5 hours of loading/unloading and changeover time will be incurred for 5% of the relevant proportion of journeys;
- 13.5 hours of loading/unloading and idle vehicle time will be incurred for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 95% of journeys);
- 5.5 hours minimum voluntary spelling time (including 1.5 hours loading/unloading) will be incurred for 50% of the time where journeys do not have the ability for changeover;
- the proportion of horses which are in their 3<sup>rd</sup> trimester of pregnancy (i.e. 1%<sup>442</sup>);
- the proportion of horses in their 3<sup>rd</sup> trimester where journeys exceed 12 hours (i.e. 0.001%<sup>443</sup>);
- the proportion of horses which are more than 6 months old (i.e. 99%<sup>444</sup>);
- the proportion of horses over 6 months old where journeys exceed 24 hours (i.e. 0.01%<sup>445</sup>) not covered by SB8.2;
- the number of journeys per annum involving horses for slaughter and export is estimated to be 116,298<sup>446</sup>; and
- the cost of horse transport is \$250/hr.<sup>447</sup>

Therefore, the additional cost for horse transporters would be calculated in the following way:

**For mares more than 7.5 months pregnant:**

<sup>441</sup> Note that standard SB8.2 permits extended transport under specific conditions

<sup>442</sup> Proposed by AHA

<sup>443</sup> Proposed by AHA

<sup>444</sup> Proposed by AHA

<sup>445</sup> Proposed by AHA.

<sup>446</sup> Refer to section A6.39.1 of this RIS for this estimate.

<sup>447</sup> See Table A6.20 of Appendix 6 in this RIS for this estimate.

*Time cost for 5% of journeys where there are no idle trucks*  $[5\% \times 0.001\% \times 1\% \times 116,298 \text{ journeys} \times 3.5 \text{ hours added} \times \$250/\text{hr}] +$

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 0.001\% \times 1\% \times 116,298 \text{ journeys} \times 13.5 \text{ hours added} \times \$250/\text{hr}] +$

*Time cost for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling*  $[50\% \times 95\% \times 0.001\% \times 1\% \times 116,298 \text{ journeys} \times 5.5 \text{ hours added} \times \$250/\text{hr}] = \$247.02 \text{ per annum}$

**For adult horses more than 6 months old:**

*Time cost for 5% of journeys where there are no idle trucks*  $[5\% \times 0.01\% \times 99\% \times 116,298 \text{ journeys} \times 3.5 \text{ hours added} \times \$250/\text{hr}] +$

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 0.01\% \times 99\% \times 116,298 \text{ journeys} \times 13.5 \text{ hours added} \times \$250/\text{hr}] +$

*Time cost for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling*  $[50\% \times 95\% \times 0.01\% \times 99\% \times 116,298 \text{ journeys} \times 5.5 \text{ hours added} \times \$250/\text{hr}] = \$27,021.27 \text{ per annum}$

The total incremental net savings of standard SB8.1 in conjunction with SB8.3 across all three classes of species, (subtracting the costs in section A6.46.2 from the cost savings in section A6.45.1), would be **\$507,702.51** per annum. Over 5 years, and in present value terms (2008 dollars), this would equal **\$2,372,534.03**.

**A6.46 Incremental cost of horse standard SB8.2 for transporters**

Standard SB8.2 Permits the maximum journey time of 36 hours for horses if specific requirements according to this standard are met. One of these changed requirements is that horses be spelled for 24 hours before starting another journey (an increment of 12 hours from the 'base case') but there would be very few journeys that would exceed 36 hours. The incremental cost would rely on the following assumptions:

- 3.5 hours of loading/unloading and changeover time will be incurred for 0.01% of the relevant proportion of journeys;
- 13.5 hours of loading/unloading and idle vehicle time will be incurred for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 99.99% of journeys);
- 5.5 hours minimum voluntary spelling time (including 1.5 hours loading/unloading) will be saved for 50% of the time where journeys do not have the ability for changeover;
- the proportion of journeys greater 36 hours (i.e.  $0.005\%^{448}$ );
- the proportion of circumstances for which requirements under SB8.2 are met (i.e.  $99.99\%^{449}$ );

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<sup>448</sup> Proposed by AHA. It is acknowledged that only a few thousand horses would be affected by 36 hours transport or more.

- the number of journeys per annum involving horse transport is estimated to be 116,298<sup>450</sup>; and
- the cost of horse transport is \$250/hr.<sup>451</sup>

Therefore, the additional annual cost for horse transporters, in terms of time, would be calculated in the following way:

*Time cost for 5% of journeys where there are no idle trucks* [0.01% x 0.005% x 99.99% x 116,298 journeys x 3.5 hours x \$250/hr] +

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling* [50% x 99.99% x 0.005% x 99.99% x 116,298 journeys x 13.5 hours x \$250/hr] +

*Time cost for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling* [50% x 99.99% x 0.005% x 99.99% x 116,298 journeys x 5.5 hours x \$250/hr] =  
**\$13,808.13** per annum

Over 5 years, and in present value terms (2008 dollars), this would equal **\$64,526.51**.

#### A6.47 Incremental cost of horse standard SB8.4 for livestock owners

Standard SB8.4 requires that mares known to be in their last 4 weeks of pregnancy must be transported under veterinary advice unless the journey is less than 4 hours duration. This would result in an additional cost to livestock owners. This additional cost would rely on the following assumptions:

- the cost of a consultation by a vet is \$145.60 per visit<sup>452</sup>;
- the number of horses transported per annum (for slaughter export sales and major events) is 2,908,350<sup>453</sup>;
- 0.01%<sup>454</sup> of total horses transported per annum are assumed to be *in their last 4 weeks of pregnancy*; and
- 2%<sup>455</sup> of all horses would travel more than 4 hours distance.

Subsequently, the annual incremental veterinary cost for livestock owners is very minor and is calculated in the following way:

$$0.01\% \times 2\% \times 2,908,350 \times \$145.60/\text{visit} = \mathbf{\$846.91} \text{ per annum}$$

Over 5 years, and in present value terms (2008 dollars), this would equal **\$3,957.68**.

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<sup>449</sup> Proposed by AHA.

<sup>450</sup> Refer to section A6.39.1 of this RIS for this estimate.

<sup>451</sup> See Table A6.20 of Appendix 6 in this RIS for this estimate.

<sup>452</sup> See section A6.7 of Appendix 6 in this RIS for source of cost.

<sup>453</sup> See Table A5.8 of Appendix 5 in this RIS for estimate.

<sup>454</sup> Proposed by AHA.

<sup>455</sup> Proposed by AHA.



#### A6.48 Incremental cost of horse standard SB8.8 for transporters – reducing stocking density by 3 horses/30m<sup>2</sup>

Standard SB8.8 requires easy access to each horse and also non-slip flooring. Whilst non-slip flooring is typically normal practice (99.99% of occasions), providing easy access would create an additional cost for horse transporters by increasing the number of 12.5m x 2.4m equivalent decks (currently 679<sup>456</sup>) required to transport horses annually.

Based on Table A5.8 of Appendix 5, it can be seen that there are 12,400 horses transported for slaughter and roughly 5,470 horses transported for export/import - giving a total of 17,870 transported annually by 12.5m x 2.4m equivalent decks (16,970 by articulated and rigid vehicles and 900 by rail<sup>457</sup>). Reducing the stocking density by just 3 horses/30m<sup>2</sup> would increase the number of 12.5m x 2.4m equivalent decks required to 771.4<sup>458</sup>.

The total kilometres travelled by horse transporters would increase from 39,426.7km<sup>459</sup> per annum to 44,800.24km<sup>460</sup> per annum. This would increase total weighted hours of transport per annum for horses by 69.5 hours (i.e. from 492.82 hours<sup>461</sup> to 560 hours). Assuming that 50% of transporters are already compliant, then the additional cost of standard SB8.8 would be 0.5% x 67.18 hours x \$250/hour = **\$8,397.50** per annum. This would equal **\$39,242.18** over 5 years in present value terms (2008 dollars).

#### A6.49 Incremental net cost of horse standard SB8.10 for livestock owners

Standard SB8.10 requires the provision of a vertical clearance of 2.2 metres in any vehicle used for horse transport which effectively results in a ban on the use of double decks for horses. This form of transport is only relevant for the slaughter/export category. Export numbers have been included for convenience and to recognise the potential for a limited number of other occasions where double deck transport may take place.

A total of 17,870 horses<sup>462</sup> are transported annually for slaughter and export by 12.5m x 2.4m equivalent decks, 16,970 (i.e. 95%) by articulated and rigid vehicles. Of the total horses for slaughter and export transported by rail (i.e. 5%<sup>463</sup>) all are single decks so the elimination of double decks does not apply to this category. Furthermore, it is assumed that horses transported for racing, sale and events are transported by horse float and that consequently the elimination of double deck transports does not apply to this category.

Total number of 12.5m x 2.4m equivalent decks involved in the transport of slaughter and export/import horses per annum is given as 679, which is calculated in the following way:

- 1) Average weight of horse is 400kg
- 2) Minimum space allowance is 25/m<sup>2</sup>

<sup>456</sup> See Table A5.11 of Appendix 5 in this RIS.

<sup>457</sup> On advice from Queensland rail it is assumed that about 5% of all horses for slaughter and export/import are transported by rail.

<sup>458</sup> Approximately 771.4 decks = 16,970 horses divided by 22 horses per 12.5m x 2.4m equivalent decks.

<sup>459</sup> See Table A5.11 of Appendix 5 in this RIS.

<sup>460</sup> This is calculated as: 771.4 horse decks/2,445,390 all livestock decks (i.e. 0.0315%) x total km travelled by all livestock (i.e. 142,024,436 (see section A5.11 of Appendix 5 for estimate)) = 44,800.24km.

<sup>461</sup> See Table A5.12 of Appendix 5 in this RIS.

<sup>462</sup> See Table A5.5 of Appendix 5 in this RIS.

<sup>463</sup> On advice from Queensland rail it is assumed that about 5% of all horses for slaughter and export/import are transported by rail.

### 3) Stocking density is 25 horses per (12.5m x 2.4m) deck

Therefore 16,970 horses/25 horses per deck = 679 decks and represents 0.028% of a total 2,445,298<sup>464</sup>, 12.5m x 2.4m equivalent decks. Apportioning the total number of kilometres of transport per annum (i.e. 142,024,436km<sup>465</sup>) by the % of decks involved in horse transport, it is estimated that slaughter and export/import horses travel 39,426.7km per annum in rigid and articulated trucks.

The Queensland Livestock Association puts the average speed of single and double deck vehicles at 80km/hr. Therefore, 39,426.7km of travel is associated with 492.82 hours of travel per annum. Furthermore, it is assumed that 95% of horses transport on single decks and 5% of horses transported on double decks.<sup>466</sup> Therefore, it is estimated that 95% of 492.82 hours of horse transport involves transport on single decks (i.e. 468.18 hours) with the remaining 5% of involving horse transport on double decks (i.e. 24.64 hours). Taking the product of relevant hours of travel by deck arrangement (single or double) and the corresponding hourly rates in Table A6.2 in Appendix 6 – gives the following total annual costs for single and double deck transport of slaughter/export/import horses:

Single deck transport of horses = 468.18 hours x \$250 = \$117,045

Double deck transport of horses = 24.64hrs x \$352 = \$8,673.28

Total cost for all deck arrangements = \$125,718.28

By banning double decks all horses would have to be transported on single decks which would now require 492.82 hours plus an additional 24.64 hours to take account of the 5% of horses which need to be transported twice on single decks rather once on double decks – giving a total of 517.46 hours of transport. Taking the product of 517.46 hours and an assumed hourly rate of \$250/hr for single deck arrangements gives a total cost of \$129,365. Therefore, the incremental ‘transport’ cost of standard SB8.10 is **\$3,646.72** per annum. However, two other issues remain: 1) the impact of standard SB8.10 on loading times; and 2) the impact of standard SB8.10 on the demand/hourly price on single deck transport arrangements.

#### *A6.50.1 Impact of standard SB8.10 on loading times*

If it can be argued that there are scale economies in loading a transport truck (i.e. it is cheaper to load 60 horses on one truck rather than 30 horses on 2 trucks), then there could be additional time costs/inconvenience costs. Taking 679 decks and assuming that 95% of them belong to single deck arrangements then this would be equal to 645.05 decks. The remaining 5% (i.e. 33.95) would belong to a double deck arrangement. Assuming that it takes 1/2 an hour to load a single deck vehicle and that it takes 45 minutes to load a double deck vehicle (i.e. 22.5minutes per deck) then the loading times would be:

Single deck = 645.05 decks x 0.5hrs/deck = 322.525hrs

Double deck = 33.95 decks x 0.375hrs/deck = 12.73125hrs

The total time cost would therefore be 335.25625 hours. Assuming that this time cost is worth \$60/hr<sup>467</sup> then the total cost would be equal to \$20,115.38. By banning double decks - 679 decks

<sup>464</sup> See Table A5.9 in Appendix 5.

<sup>465</sup> See Table A5.11 In Appendix 5.

<sup>466</sup> Based on advices from Livestock industry organisations

<sup>467</sup> This hourly loading cost is taken from Queensland Rail rates for loading livestock.

would now have to be loaded at 1/2 an hour a deck at \$60/hr – giving a total cost of \$20,370. This would create a negligible incremental cost of **\$254.62** for increased loading times.

#### *A6.50.2 Impact of standard SB8.10 on the demand/hourly price on single deck transport arrangements*

Assuming no change in supply of single deck arrangements - so far it has been assumed that the hourly rate for a single deck arrangement in transport (\$250/hr) would remain constant or stable even in the face of increased demand for this type of deck arrangement. However, the number of additional single deck arrangements that would be required for horses (i.e. 33.95 decks per annum) is negligible in proportion to the number of single deck arrangements for cattle<sup>468</sup> which are assumed to be equivalent to approximately 349,202<sup>469</sup>. Therefore, it is highly unlikely for there to be any significant demand pressures and therefore any significant impact on the hourly rates for single deck arrangement transports. Furthermore, it can be argued that the demand is seasonal and when demand for cattle consignments is low, that horse consigners can take advantage of such off-peak times. Therefore, the demand for single deck transport arrangements is likely to remain fairly stable. Even if the hourly rate were to increase by 1% (which is highly unlikely) from \$250/hr to \$252.50/hr then the cost of transporting horses for slaughter and export would only increase by **\$2,140.43**.

#### *A6.50.3 Total estimated cost of standard SB8.10 for transporters*

Based on the findings above, there would be a minor incremental cost to transporting horses if double decks ceased to be used – amounting to **\$6,041.77** per annum in total for the slaughter/export/import segment of the horse transport industry. In present value terms (2008 dollars) and over 5 years this would be equal to **\$28,233.67**.<sup>470</sup>

#### A6.51 Incremental cost of horse standard SB8.11 for transporters

Standard SB8.11 specifies the need to segregate horses from unbroken stallions and the latter from each other. This would lead to additional costs to the horse transport industry however, only in relation to horses transported for slaughter as it is not an issue for handled (broken in) horses. Export numbers have been included for convenience and to recognise the potential for a limited number of other occasions where transport of unbroken stallions may take place. This incremental cost is calculated making the following assumptions:

- average time spent in segregating horses per journey is 30 minutes;<sup>471</sup>
- number of journeys unbroken stallions are transported (679)<sup>472</sup>; and
- the average cost of horse transport is \$250/hr.<sup>473</sup>

Subsequently, the annual incremental cost for horse transporters is calculated in the following way:

$$679 \text{ journeys} \times 0.5 \text{ hours} \times \$250/\text{hr} = \mathbf{\$84,875} \text{ per annum}$$

<sup>468</sup> Assuming that cattle trucks would be the most suitable for horse transport.

<sup>469</sup> Calculated as the product of 1,164,006.1 (12.5 x 2.4 equivalent decks see Table A5.9 in Appendix 5) x 30% (the proportion of single decks used for cattle transport).

<sup>470</sup> This figure has been discounted at a rate of 3.5%.

<sup>471</sup> Proposed by AHA.

<sup>472</sup> See Table A6.21 of Appendix 6 in this RIS for estimate.

<sup>473</sup> See Table A6.20 of Appendix 6 in this RIS for estimate.

Over 5 years, and in present value terms (2008 dollars), this would equal **\$396,627.60**.

A6.52 Incremental unquantifiable cost of horse standard SB8.12 for transporters

Standard SB8.12 would result in a minimal additional time cost in terms of loading for horse transport (most likely relevant to the slaughter category) by no longer permitting the use of electric prodders. However this would only be the case in the instance where an electric prodder would normally otherwise be used. Given that the instance of this occurring is unknown, this incremental cost remains unquantifiable.

A6.53 Incremental unquantifiable cost of horse standard SB8.14 for transporters

Standard SB8.14 would impose additional costs of space for horses travelling across Bass Strait. Specifically horses would have to be individually stalled - except for mares with foals at foot which would have to be stalled together. The proportion of horses travelling across Bass Strait is unknown as is the proportion of mares with foals at foot. For these reasons, it remains that the incremental cost of standard SB8.14 remains unquantifiable. Finally, it is believed that most of current movements across Bass Strait comply with this requirement as part of existing local requirements not in the MCOP. Therefore the incremental cost is likely to be only minor.

A6.54 Incremental cost of pig standard SB9.1 in conjunction with SB9.3 for transporters

Standard SB9.1 reduces the water deprivation time from 24 hours to 12 hours for lactating sows. This would increase the time cost of transport whilst the lactating sows were watered, fed and rested for a mandatory minimum of 12 hours under standards SB9.3. The cost of food and water is not considered in this calculation due to lack of data. The incremental time cost of mandatory spelling for lactating sows will rely on the following assumptions being made:

- pigs are not loaded or unloaded during spelling for bio-security reasons;
- 12 hours of idle vehicle time will be incurred for 50% of the relevant journeys over 12 hours;
- 4 hours minimum voluntary spelling time will be incurred for 50% of the time;
- The proportion of lactating sows and piglets involved in journeys over 12 hours (i.e. 0.01%;<sup>474</sup>)
- the proportion of pig transport journeys greater than 12 hours (i.e. 10%;<sup>475</sup>) and
- the number of journeys per annum involving pig transport is estimated to be 39,944.63.

The estimated number of annual journeys is calculated in the following way:

- estimated number of (12.5m x 2.4m) decks used for road transport per annum = 89,875<sup>476</sup>

<sup>474</sup> Proportion recommended by APL.

<sup>476</sup> See Table A5.9 of Appendix 5 in this RIS for this estimate.

- weighted sum of average number of decks involved per trip =  $25\% \times 1 \text{ deck} + 25\% \times 2 \text{ decks} + 50\% \times 3 \text{ decks}^{477} = 2.25 \text{ decks}$
- estimated number of annual journeys =  $89,875 / 2.25 = 39,944.63$
- the cost of pig transport is between \$336.50/hr and \$390.50/hour.

The estimated cost of pig transport is calculated in the following way:

- lower and upper range of annual total weighted cost = \$23,046,397 and \$26,744,779 - respectively<sup>478</sup>
- weighted hours of road transport per annum = 68,489<sup>479</sup>
- lower and upper range of hourly cost for pig transport =  $\$23,046,397 / 68,489 =$  **\$336.50/hr** and  $\$26,744,779 / 68,489 =$  **\$390.50/hr** - respectively.

Subsequently, the annual incremental cost for pig transporters is calculated in the following way:

**Between:**

*Time cost for 50% of journeys where there are idle trucks and no voluntary spelling* [50% x 0.01% x 10% x 39,944.63 journeys x 12 hours added x \$336.50/hr] +

*Time cost for 50% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling* [50% x 0.01% x 10% x 39,944.63 journeys x 4 hours added x \$336.50/hr] = **\$1,075.31** per annum

**and**

*Time cost for 50% of journeys where there are idle trucks and no voluntary spelling* [50% x 0.01% x 10% x 39,944.63 journeys x 12 hours added x \$390.50/hr] +

*Time cost for 50% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling* [50% x 0.01% x 10% x 39,944.63 journeys x 4 hours added x \$390.50/hr] = **\$1,247.87** per annum

Over 5 years, and in present value terms (2008 dollars), this would equal between **\$5,025.01** and **\$5,831.40**.

A6.55 Incremental cost savings of pig standard SB9.2 for transporters

Standard SB9.2, which allows an extension of journey times from 24 hours to 48 hours if minimum requirements are met, would result in cost savings to pig transporters. Journeys under 24 hours are conducted under the operation of standard SB9.1 in conjunction with SB9.3. The cost savings under SB9.2 would rely on the following assumptions:

- pigs are not loaded or unloaded during spelling for bio-security reasons;
- 12 hours of idle vehicle time will be incurred for 50% of the relevant journeys;

<sup>477</sup> See Table A5.12 of Appendix 5 for source of these proportions.

<sup>478</sup> See Table A6.3 of Appendix 6 in this RIS for these estimates.

<sup>479</sup> See Table A5.12 of Appendix 5 in this RIS for this estimate.

- 4 hours minimum voluntary spelling time will be incurred for 50% of the time;
- the proportion of pigs for which journeys are greater than 24 hours (i.e. 0.1%;<sup>480</sup>);
- the number of journeys per annum involving pig transport is estimated to be 39,944.63;<sup>481</sup>
- the proportion of circumstances where minimum requirements for extension of water deprivation times under standard SB9.2 are met (i.e. 100%<sup>482</sup>); and
- the cost of pig transport is between \$336.50/hr and \$390.50/hr.<sup>483</sup>

Therefore, the incremental annual cost savings would be calculated in the following way:

**Between:**

*Cost savings for 50% of journeys where there are idle trucks and no voluntary spelling [50% x 0.1% x 39,944.63 journeys x 12 hours saved x \$336.50/hr] +*

*Cost savings for 50% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling [50% x 0.1% x 39,944.63 journeys x 4 hours saved x \$336.50/hr] = **\$107,530.94** per annum*

**and**

*Cost savings for 50% of journeys where there are idle trucks and no voluntary spelling [50% x 0.1% x 39,944.63 journeys x 12 hours saved x \$390.50/hr] +*

*Cost savings for 50% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling [50% x 0.1% x 39,944.63 journeys x 4 hours saved x \$390.50/hr] = **\$124,787.02** per annum*

Over 5 years, and in present value terms (2008 dollars), the cost savings of SB9.2 would equal between **\$502,500.62** and **\$583,139.65**.

**A6.56 Incremental unquantifiable cost of pig standard SB9.4 for transporters**

Standard SB9.4 would result in minimal additional time costs in terms of loading for pig transport by restricting the use of electric prodders. However this would only be the case in the instance where an electric prodder would normally otherwise be used. Given that the instance of this occurring is unknown, this incremental cost remains unquantifiable.

**A6.57 Incremental unquantifiable cost of poultry standard SB10.2 for livestock owners**

Standard SB10.2 reduces the time within which poultry need to have access to food before assembly for transport from 24 hours under the 'base case' to 12 hours. It has been advised that 99.95% of industry is already compliant with the 12 hour feed curfew limit before assembly for transport.<sup>484</sup> Keeping in mind that producers need to balance between feed cost and body weight loss in order to maximise weight gain with the lowest food wastage - the additional contingency

<sup>480</sup> Proposed by AHA.

<sup>481</sup> Estimate is taken from Section A6.47 of Appendix 6 in this RIS.

<sup>482</sup> Proposed by AHA.

<sup>483</sup> Estimate is taken from Section A6.46 of Appendix 6 in this RIS.

<sup>484</sup> Advice provided by Dr Vivien Kite of Rural Industries Research and Development Corporation (RIRDC).

cost of having to commence feeding again to avoid going over the 12 curfew is unquantifiable/minimal for the following reasons:

- poultry producers do not ‘in practice’ feed curfew the birds for 24 hours under the ‘base case’ and feeding is timed to run out to allow a feed curfew going to slaughter of at least 6 hours for food safety reasons; and
- there is no saving of half a day’s feed, in that any leftover feed is generally not redistributed (due to being uneconomical) and, therefore, the next crop of birds would A6.58 Incremental net cost savings of Sheep standard SB11.1 in conjunction with SB11.2 for transporters

*A6.58.1 Incremental cost savings for transporters relating to Ewes in their third trimester where more than 4 months pregnant and lambs under 4 months old*

Standard SB11.1 increases the maximum time off water from 8 hours to 24 hours for sheep over 4 months pregnant and in their third trimester with an associated minimum spelling time of 12 hours under standard SB11.2 and increases the maximum time off water from 24 hours to 28 hours for lambs under 4 months with an associated minimum spelling time of 12 hours under standards SB11.2. This would reduce the time cost of transport and feed cost of transport @ \$0.20/12hr<sup>485</sup>. The incremental cost savings will rely on the following assumptions being made:

- 3.5 hours of loading/unloading and changeover time will be saved for 5% of the relevant proportion of journeys;
- 13.5 hours of loading/unloading and idle vehicle time will be saved for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 95% of journeys);
- 5.5 hours minimum voluntary spelling time (including 1.5 hours loading/unloading) will be saved for 50% of the time where journeys do not have the ability for changeover;
- the proportion of sheep journeys between 8 hours and 24 hours (i.e. 38%<sup>486</sup>);
- the proportion of sheep that are pregnant and known to be in their third trimester (i.e. 1%<sup>487</sup>);
- the proportion of the 1% of sheep that are in the third trimester and more than 4 months pregnant (i.e. 60%<sup>488</sup>);
- the proportion of lamb journeys between 24 hours and 28 hours (i.e. 5%<sup>489</sup>);
- the number of journeys per annum involving sheep transport is estimated to be 191,580.35<sup>490</sup>;

<sup>485</sup> \$0.40/24hrs suggested by Sheepmeat Council of Australia.

<sup>486</sup> Proposed by AHA.

<sup>487</sup> Proposed by AHA.

<sup>488</sup> Estimated as 30 days divided by the total days of the third trimester of 50 days.

<sup>489</sup> Proposed by AHA.

<sup>490</sup> See Table A6.23 of Appendix 6 in this RIS for this estimate.

- the number of journeys per annum involving lamb transport is estimated to be 252.8<sup>491</sup>; and
- the cost of sheep and lamb transport is between \$357.43/hr and \$412.45/hr<sup>492</sup>.

Consequently, the annual cost savings for transporters is calculated in the following way:

**For Sheep in third trimester and more than 4 months pregnant:**

**Between:**

*Time cost savings for 5% of journeys where there are no idle trucks* [5% x 38% x 1% x 60% x 191,580.35 journeys x 3.5 hours saved x \$357.43/hr] +

*Time cost savings for 95% of journeys where there are idle trucks and no voluntary spelling* [50% x 95% x 38% x 1% x 60% x 191,580.35 journeys x 13.5 hours saved x \$357.43/hr] +

*Time cost savings for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling* [50% x 95% x 38% x 1% x 60% x 191,580.35 journeys x 5.5 hours saved x \$357.43/hr] +

*Food cost savings* [38% x 1% x 60% x 66,210,170 sheep x 12 hours saved x \$0.20/12hr/sheep] = \$1,798,666.47 per annum

**and**

*Time cost savings for 5% of journeys where there are no idle trucks* [5% x 38% x 1% x 60% x 191,580.35 journeys x 3.5 hours saved x \$412.45/hr] +

*Time cost savings for 95% of journeys where there are idle trucks and no voluntary spelling* [50% x 95% x 38% x 1% x 60% x 191,580.35 journeys x 13.5 hours saved x \$412.45/hr] +

*Time cost savings for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling* [50% x 95% x 38% x 1% x 60% x 191,580.35 journeys x 5.5 hours saved x \$412.45/hr] +

*Food cost savings* [38% x 1% x 60% x 66,210,170 sheep x 12 hours saved x \$0.20/12hr/sheep] = \$2,019,769.26 per annum

**For lamb under 4 months old:**

**Between:**

*Time cost savings for 5% of journeys where there are no idle trucks* [5% x 5% x 252.8 journeys x 3.5 hours saved x \$357.43/hr] +

*Time cost savings for 95% of journeys where there are idle trucks and no voluntary spelling* [50% x 95% x 5% x 252.8 journeys x 13.5 hours saved x \$357.43/hr] +

*Time cost savings for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling* [50% x 95% x 5% x 252.8 journeys x 5.5 hours saved x \$357.43/hr] +

<sup>491</sup> See Table A6.23 of Appendix 6 in this RIS for this estimate.

<sup>492</sup> See Table A6.20 of Appendix 6 in this RIS for this estimate.



*Food cost savings* [5% x 107,162 lambs x 12 hours saved x \$0.20/12hr/lamb] = \$54,424.26 per annum

**and**

*Time cost savings for 5% of journeys where there are no idle trucks* [5% x 5% x 252.8 journeys x 3.5 hours saved x \$412.45/hr] +

*Time cost savings for 95% of journeys where there are idle trucks and no voluntary spelling* [50% x 95% x 5% x 252.8 journeys x 13.5 hours saved x \$412.45/hr] +

*Time cost savings for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling* [50% x 95% x 5% x 252.8 journeys x 5.5 hours saved x \$412.45/hr] +

*Food cost savings* [5% x 107,162 lambs x 12 hours saved x \$0.20/12hr/lamb] = \$60,822.43 per annum

#### *A6.58.2 Incremental cost for transporters relating to ewes in third trimester of pregnancy and less than 4 months pregnant*

Standard SB11.1 reduces the maximum time off water from 48 hours to 24 hours for ewes in their third trimester and less than 4 months pregnant, with an associated minimum spelling time of 12 hours under standard SB11.2. This would increase the time cost and feed cost of transport @ \$0.20/12hr. The incremental time cost will rely on the following assumptions being made:

- 3.5 hours of loading/unloading and changeover time will be incurred for 5% of the relevant proportion of journeys;
- 13.5 hours of loading/unloading and idle vehicle time will be incurred for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 95% of journeys);
- 5.5 hours minimum voluntary spelling time (including 1.5 hours loading/unloading) will be incurred for 50% of the time where journeys do not have the ability for changeover;
- the proportion of sheep journeys between 24 hours and 48 hours (i.e. 5%<sup>493</sup>);
- the proportion of sheep in their 3<sup>rd</sup> trimester of pregnancy (i.e. 1%<sup>494</sup>);
- the proportion of the 1% of ewes in the third trimester that are less than 4 months pregnant (i.e. 40%<sup>495</sup>);
- the number of journeys per annum involving sheep transport is estimated to be 191,580.35<sup>496</sup>; and
- the cost of sheep and lamb transport is between \$357.43/hr and \$412.45/hr<sup>497</sup>.

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<sup>493</sup> Proposed by AHA

<sup>494</sup> Proposed by AHA

<sup>495</sup> Estimated as 20 days divided by the total days of the third trimester of 50 days

<sup>496</sup> See Table A6.23 of Appendix 6 in this RIS for this estimate

<sup>497</sup> See Table A6.20 of Appendix 6 in this RIS for this estimate

Subsequently, the annual incremental cost for transporters is calculated in the following way:

**Between:**

*Time cost for 5% of journeys where there are no idle trucks*  $[5\% \times 5\% \times 1\% \times 40\% \times 191,580.35 \text{ journeys} \times 3.5 \text{ hours added} \times \$357.43/\text{hr}] +$

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 5\% \times 1\% \times 40\% \times 191,580.35 \text{ journeys} \times 13.5 \text{ hours added} \times \$357.43/\text{hr}] +$

*Time cost for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling*  $[50\% \times 95\% \times 5\% \times 1\% \times 40\% \times 191,580.35 \text{ journeys} \times 5.5 \text{ hours added} \times \$357.43/\text{hr}] +$

*Food cost*  $[5\% \times 1\% \times 40\% \times 66,210,170 \text{ sheep} \times 12 \text{ hours} \times \$0.20/12\text{hr}/\text{sheep}] = \$157,777.76$   
per annum

**and**

*Time cost for 5% of journeys where there are no idle trucks*  $[5\% \times 5\% \times 1\% \times 40\% \times 191,580.35 \text{ journeys} \times 3.5 \text{ hours added} \times \$412.45/\text{hr}] +$

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 5\% \times 1\% \times 40\% \times 191,580.35 \text{ journeys} \times 13.5 \text{ hours added} \times \$412.45/\text{hr}] +$

*Time cost for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling*  $[50\% \times 95\% \times 5\% \times 1\% \times 40\% \times 191,580.35 \text{ journeys} \times 5.5 \text{ hours added} \times \$412.45/\text{hr}] +$

*Food cost*  $[5\% \times 1\% \times 40\% \times 66,210,170 \text{ sheep} \times 12 \text{ hours} \times \$0.20/12\text{hr}/\text{sheep}] = \$177,172.74$   
per annum

**A6.58.3 Incremental cost for livestock owners as a result of reductions in water deprivation times**

Standard SB11.1 would impose an incremental cost on livestock owners from a loss of income from contaminated fleece (dung and urine stain) and reduced price at sale yards due to poorly presented sheep<sup>498</sup>. It is taken that there is a *1% probability of the full impact* of these costs as a result of standard SB11.1. The full impact is calculated in the Table A6.25 below:

<sup>498</sup> Advice provided by Wool Producers Australia.

**Table A6.25 – Approximate cost to livestock owners from contaminated fleece and reduced price at sale yards from full impact of SB11.1**

	Transactions	Slaughter	Live Export	Total
	20,897,832			
	11,005,166			
RIS*	<b>31,902,998</b>	<b>30,041,541</b>	<b>4,265,631</b>	66,210,170
% of total flock	48.2%	45.4%	6.4%	100%
Journeys > 24h**	5.0%	5.0%	5.0%	
	1,595,150	1,502,077	213,282	3,310,509
EMI^	1,036 c			
Discount***	50%			
	\$5.18			
WPFC****	4.2			
Loss per head	<b>\$22</b>	<b>\$4*****</b>	<b>\$4*****</b>	
	\$35,093,300	\$6,008,308	\$853,128	<b>\$41,954,736</b>

Source: Wool Producers Australia - January 2008

^ Eastern Market Indicator as at 18/1/2007.

\* Statistics taken from Table 5.5 of Appendix 5 in this RIS.

\*\* 5% proposed by AHA.

\*\*\* Based on advice from WPA.

\*\*\*\* Wool Production Forecasting Committee, average fleece weight 2007/2008.

\*\*\*\*\* Based on advice from WPA.

Therefore the total cost to livestock owners would be in the order of \$419,547.36 per annum.

The total incremental net cost savings of standard SB11.1 in conjunction with SB11.2 across all three classes of species, is calculated by subtracting the costs under section A6.58.2 and costs under section A6.58.3 - from the cost savings under section A6.58.1. This would entail a net cost savings of between **\$1,275,765.61** and **\$1,483,871.58** per annum. Over 5 years, and in present value terms (2008 dollars), this would equal between **\$5,961,753.73** and **\$6,934,249.43**.

#### A6.59 Summary net incremental cost for general and specific proposed standards – by species

The following tables represent the net incremental costs of standards (general and specific), as they apply to each of the livestock species/classes. Negative figures represent *cost savings*. Costs for general standards for each species/class of livestock are taken from sections A6.3 to A6.9 and associated tables (inclusive). Costs for specific standards are taken from sections A6.12 to A6.58.

**Table A6.26 – Net incremental cost of proposed standards in relation to buffalo**

Standard	Brief description	Min cost	Max cost
SA1.1	Journey documentation	\$123.80	\$123.80
SA1.2	Documents for journeys > 24hrs	\$469.14	\$493.21
SA4.2	Transport of unfit animals only on vet advice	\$41.86	\$41.86
SA5.11(ii)+(iii)	Inspection of facilities + communication upon arrival	\$942.03	\$990.36
SA5.14	Minimise hot cold conditions	\$880.93	\$926.13
SB2.1&SB2.2	Maximum time off water and associated spelling	\$33,156.98	\$34,858.37
SB2.3	Pregnancy transport under vet advice	\$3,767.40	\$3,767.40
SB2.6	Cooling by water spray	\$375.42	\$394.68
<b>Total annual quantitative cost</b>		<b>\$39,757.55</b>	<b>\$41,595.82</b>
<b>5-year present value (2008 dollars)</b>		<b>\$185,790.16</b>	<b>\$194,380.57</b>

**Table A6.27 – Net incremental cost of proposed standards in relation to cattle (including calves but excluding rail)**

Standard	Brief description	Min cost	Max cost
<b>Cattle</b>			
SA4.2	Transport of unfit animals only on vet advice	\$347,694.33	\$347,694.33
SA5.11(ii)+(iii)	Inspection of facilities + communication upon arrival	\$6,315,202.31	\$7,112,902.76
<b>Calve for rearing</b>			
SA1.1	Journey documentation	\$1,450.92	\$1,450.92
SA4.2	Transport of unfit animals only on vet advice	\$2,344.93	\$2,344.93
SA5.11(ii)+(iii)	Inspection of facilities + communication upon arrival	\$10,628.72	\$11,357.09
<b>Calves for slaughter</b>			
SA1.1	Journey documentation	\$7,350.43	\$7,350.43
SA4.2	Transport of unfit animals only on vet advice	\$13,912.89	\$13,912.89
SA5.11(ii)+(iii)	Inspection of facilities + communication upon arrival	\$53,845.42	\$57,535.33
SA5.14	Minimise hot cold conditions	\$50,352.98	\$53,803.56
<b>Cattle (including calves)</b>			
SB4.1&SB4.2	Maximum time of water and associated spelling	\$2,818,323.78	\$3,222,691.78
SB4.3	Pregnant animal to be transported under vet advice	\$1,280,905.91	\$1,280,905.91
SB4.8(b)	Calves to lie on their sternum	\$344,994.66	\$369,699.54
<b>Total annual quantitative cost</b>		<b>\$11,247,007.27</b>	<b>\$12,481,649.46</b>
<b>5-year present value (2008 dollars)</b>		<b>\$52,558,155.85</b>	<b>\$58,327,736.60</b>

**Table A6.28 – Net incremental cost of proposed standards in relation to lamb < 4 months old**

Standard	Brief description	Min cost	Max cost
SA1.1	Journey documentation	\$455.04	\$455.04
SA1.2	Documents for journeys > 24hrs	\$1,882.44	\$2,172.24
SA4.2	Transport of unfit animals only on vet advice	\$1,560.28	\$1,560.28
SA5.11(ii)+(iii)	Inspection of facilities + communication upon arrival	\$3,779.94	\$4,361.85
SA5.14	Minimise hot cold conditions	\$6,565.35	\$7,576.07
SB11.1&SB11.2	Maximum time off water and associated spelling	-\$54,424.26	-\$60,822.43
<b>Total annual quantitative cost</b>		<b>-\$40,181.21</b>	<b>-\$44,696.94</b>
<b>5-year present value (2008 dollars)</b>		<b>-\$187,770.00</b>	<b>-\$208,872.35</b>

**Table A6.29 – Net incremental cost of proposed standards in relation to sheep > 4 months old**

Standard	Brief description	Max cost	Min cost
SA1.1	Journey documentation	\$344,844.63	\$344,844.63
SA1.2	Documents for journeys > 24hrs	\$1,426,575.16	\$1,646,194.09
SA4.2	Transport of unfit animals only on vet advice	\$964,020.07	\$964,020.07
SA5.11(ii)+(iii)	Inspection of facilities + communication upon arrival	\$2,864,562.91	\$3,305,557.73
SA5.14	Minimise hot cold conditions	\$4,975,437.64	\$5,741,398.21
SB11.1&SB11.2	Maximum time off water and associated spelling	-\$1,221,341.35	-\$1,423,049.16
<b>Total annual quantitative costs</b>		<b>\$9,354,099.07</b>	<b>\$10,578,965.58</b>
<b>5-year present value (2008 dollars)</b>		<b>\$43,712,445.86</b>	<b>\$49,436,344.12</b>

**Table A6.30 – Net incremental cost of proposed standards in relation to pigs**

Standard	Brief description	Min cost	Max cost
SA5.11(iii)	Communication upon arrival	\$2,240.23	\$2,599.73
SB9.1&SB9.3	Maximum time off water and associated spelling	\$1,075.31	\$1,247.87
SB9.2	Extension of time-off water	-\$107,530.94	-\$124,787.02
<b>Total annual quantitative costs</b>		<b>-\$104,215.41</b>	<b>-\$120,939.42</b>
<b>5-year present value (2008 dollars)</b>		<b>-\$487,006.85</b>	<b>-\$565,159.51</b>

**Table A6.31 – Net incremental cost of proposed standards in relation to poultry for meat**

Standard	Brief description	Cost
SA5.11(ii)+(iii)	Inspection of facilities + communication upon arrival	\$5,258,217.18
SA5.14	Minimise hot cold conditions	\$4,917,166.28
<b>Total annual quantitative costs</b>		<b>\$10,175,383.46</b>
<b>5-year present value (2008 dollars)</b>		<b>\$47,550,372.87</b>

**Table A6.32 – Net incremental cost of proposed standards in relation to chicks**

Standard	Brief description	Cost
SA5.11(ii)+(iii)	Inspection of facilities + communication upon arrival	\$339,761.73
SA5.14	Minimise hot cold conditions	\$317,724.59
<b>Total annual quantitative costs</b>		<b>\$657,486.32</b>
<b>5-year present value (2008 dollars)</b>		<b>\$3,072,485.63</b>

**Table A6.33 – Net incremental cost of proposed standards in relation to horses (excluding rail)**

Standard	Brief description	Cost
SA5.11(iii)	Communication upon arrival	\$4,844.95
SA5.14	Minimise hot cold conditions	\$6,638.76
SB8.1&SB8.3	Maximum time off water and associated spelling	-\$507,702.51
SB8.2	Extension of journey time to 36hrs	\$13,808.13
SB8.4	Pregnant horses transported only on vet advice	\$846.91
SB8.8	Access to horses (lower stocking density)	\$8,397.50
SB8.10	Height requirement	\$6,042
SB8.11	Segregation only for unbroken stallions	\$84,875.00
<b>Total annual quantitative costs</b>		<b>-\$382,249.48</b>
<b>5-year present value (2008 dollars)</b>		<b>-\$1,786,282.09</b>

**Table A6.34 – Net incremental cost of proposed standards in relation to deer**

Standard	Brief description	Min Cost	Max cost
SA1.1	Journey documentation	\$763.87	\$763.87
SA1.2	Documents for journeys > 24hrs	\$2,670.01	\$2,717.75
SA4.2	Transport of unfit animals only on vet advice	\$718.29	\$718.29
SA5.11(ii)+(iii)	Inspection of facilities + communication upon arrival	\$5,361.38	\$5,457.25
SA5.14	Minimise hot cold conditions	\$5,013.64	\$5,103.29
SB5.1&SB5.2	Maximum time off water and associated spelling	\$15,328.99	\$15,603.08
SB5.3	Pregnant deer to be transported only on vet advice	\$50,280.19	\$50,280.19
<b>Total Annual quantitative costs</b>		<b>\$80,115.02</b>	<b>\$80,621.99</b>
<b>5-year present value (2008 dollars)</b>		<b>\$374,483.67</b>	<b>\$376,854.56</b>

**Table A6.35 – Net incremental cost of proposed standards in relation to camels**

Standard	Brief description	Cost
SA1.1	Journey documentation	\$58.51
SA1.2	Documents for journeys > 24hrs	\$176.21
SA4.2	Transport of unfit animals only on vet advice	\$11.45
SA5.11(ii)+(iii)	Inspection of facilities + communication upon arrival	\$353.84
SA5.14	Minimise hot cold conditions	\$330.89
SB3.1&SB3.3	Maximum time off water and associated spelling	\$31,119.92
SB3.4	Pregnant animal transport only under vet advice	\$1,031.28
<b>Total annual quantitative cost</b>		<b>\$33,082.11</b>
<b>5-year present value (2008 dollars)</b>		<b>\$154,595.33</b>

**Table A6.36 – Net incremental cost of proposed standards in relation to alpacas**

Standard	Brief description	Cost
SA1.1	Journey documentation	\$1,170.70
SA1.2	Documents for journeys > 24hrs	\$3,387.44
SA4.2	Transport of unfit animals only on vet advice	\$975.37
SA5.11(ii)+(iii)	Inspection of facilities + communication upon arrival	\$6,801.98
SA5.14	Minimise hot cold conditions	\$6,360.80
SB1.1&1.3	Maximum time off water and associated spelling	\$12,468.71
SB1.2	Journey extension	-\$11,045.96
SB1.4	Last month of pregnancy transported only on vet advice	\$65,837.77
<b>Total annual quantitative cost</b>		<b>\$85,956.81</b>
<b>5-year present value (2008 dollars)</b>		<b>\$401,682.99</b>

**Table A6.37 – Net incremental cost of proposed standards in relation to goats**

Standard	Brief description	Min cost	Max cost
SA1.1	Journey documentation	\$7,525.95	\$7,525.95
SA1.2	Documents for journeys > 24hrs	\$31,133.83	\$35,926.84
SA4.2	Transport of unfit animals only on vet advice	\$22,353.88	\$22,353.88
SA5.11(ii)+(iii)	Inspection of facilities + communication upon arrival	\$62,516.74	\$72,141.09
SA5.14	Minimise hot cold conditions	\$58,461.87	\$67,461.98
SB7.1&SB7.2	Maximum time off water and associated spelling	\$42,164.23	\$48,654.66
<b>Total annual quantitative cost</b>		<b>\$224,156.50</b>	<b>\$254,064.40</b>
<b>5-year present value (2008 dollars)</b>		<b>\$1,047,501.08</b>	<b>\$1,187,263.06</b>

**Table A6.38 – Net incremental cost of proposed standards in relation to emus**

Standard	Description	Cost
SA1.1	Journey documentation	\$200.00
SA4.2	Transport of unfit animals only on vet advice	\$74.42
SA5.11(ii)+(iii)	Inspection of facilities + communication upon arrival	\$1,162.04
SA5.14	Minimise hot cold conditions	\$1,086.67
SB6.1&SB6.5	Maximum time off water and associated spelling	\$12,207.11
<b>Total annual quantitative cost</b>		<b>\$14,730.23</b>
<b>5-year present value (2008 dollars)</b>		<b>\$68,835.55</b>

**Table A6.39 – Net incremental cost of proposed standards in relation to ostriches**

Standard	Brief description	Cost
SA1.1	Journey documentation	\$373.08
SA4.2	Transport of unfit animals on vet advice	\$156.92
SA5.11(ii)+(iii)	Inspection of facilities + communication upon arrival	\$2,167.65
SA5.14	Minimise hot cold conditions	\$2,027.05
SB6.1&SB6.5	Maximum time off water and associated spelling	\$22,777.09
<b>Total annual quantitative cost</b>		<b>\$27,501.79</b>
<b>5-year present value (2008 dollars)</b>		<b>\$128,518.03</b>

A6.60 Total incremental net costs/cost savings of general and specific standards (proposed) by species/class and standard

Finally, Table A6.40 provides the total incremental net maximum and minimum cost of the proposed general and specific standard by species or class of species over 5 years in present value terms (2008 dollars). Minimum and maximum costs are taken from Tables A6.26 to A6.39 for the respective livestock species/class. Table A6.41 provides the total incremental costs/cost savings of the proposed standards by general and specific standard classification.

**Table A6.40 – Net incremental cost/cost savings of the proposed standards over 5 years in present value terms (2008 dollars) – by species + rail**

Livestock Species/Class/mode of travel	Min Cost	Max cost
Buffalo	\$185,790.16	\$194,380.57
Cattle (including calves)	\$52,558,155.85	\$58,327,736.60
Lamb < 4 months old	-\$187,770.00	-\$208,872.35
Sheep	\$43,712,445.86	\$49,436,344.12
Pigs	-\$487,006.85	-\$565,159.51
Poultry for meat	\$47,550,372.87	\$47,550,372.87
Chicks	\$3,072,485.63	\$3,072,485.63
Horses (slaughter/export/sales/major events)	-\$1,786,282.09	-\$1,786,282.09
Deer	\$374,483.67	\$376,854.56
Camels	\$154,595.33	\$154,595.33
Alpacas	\$401,682.99	\$401,682.99
Goats	\$1,047,501.08	\$1,187,263.06
Emus	\$68,835.55	\$68,835.55
Ostriches	\$128,518.03	\$128,518.03
Rail	\$4,864.92	\$4,864.92
<b>Total 5-year present value (2008 dollars)</b>	<b>\$146,798,673.00</b>	<b>\$158,343,620.26</b>

**Table A6.41 – Summary of net incremental annual cost/cost savings over 5 years in present value terms (2008 dollars) of proposed standards (Option B) – by standard classification**

Standard	Annual min	Annual max	Present value over 5 years min	Present value over 5 years max
SA1.1	\$364,317	\$364,317	\$1,702,482	\$1,702,482
SA1.2	\$1,466,294	\$1,691,068	\$6,852,109	\$7,902,494
SA4.2	\$1,353,865	\$1,353,865	\$6,326,717	\$6,326,717
SA5.11(ii)+(iii)	\$14,932,389	\$16,186,213	\$69,780,237	\$75,639,453
SA5.14	\$10,349,088	\$11,128,645	\$48,362,110	\$52,005,041
SB1.1&SB1.3	\$12,469	\$12,469	\$58,267	\$58,267
SB1.2	-\$11,046	-\$11,046	-\$51,619	-\$51,619
SB1.4	\$65,838	\$65,838	\$307,665	\$307,665
SB2.1&SB2.2	\$33,157	\$34,858	\$154,945.18	\$162,895.94
SB2.3	\$3,767	\$3,767	\$17,605.36	\$17,605
SB2.6	\$375	\$395	\$1,754.36	\$1,844.38
SB3.1&SB3.3	\$31,119.92	\$31,119.92	\$145,425.85	\$145,426
SB3.4	\$1,031	\$1,031	\$4,819	\$4,819
SB4.1&SB4.2	\$2,818,324	\$3,222,692	\$13,170,250	\$15,059,894
SB4.3	\$1,280,906	\$1,280,906	\$5,985,775	\$5,985,775
SB4.8(b)	\$344,995	\$369,700	\$1,612,187	\$1,727,635
SB5.1&SB5.2	\$15,329	\$15,603	\$71,634	\$72,914
SB5.3	\$50,280	\$50,280	\$234,963	\$234,963
SB6.1&SB6.5	\$34,984	\$34,984	\$163,484	\$163,484
SB7.1&SB7.2	\$42,164	\$48,655	\$197,037	\$227,367
SB8.1&SB8.3	-\$507,703	-\$507,703	-\$2,372,534	-\$2,372,534
SB8.2	\$13,808	\$13,808	\$64,527	\$64,527
SB8.4	\$847	\$847	\$3,958	\$3,958
SB8.8	\$8,398	\$8,398	\$39,242	\$39,242
SB8.10	\$6,042	\$6,042	\$28,234	\$28,234
SB8.11	\$84,875	\$84,875	\$396,628	\$396,628
SB9.1&SB9.3	\$1,075	\$1,248	\$5,025	\$5,831
SB9.2	-\$107,531	-\$124,787	-\$502,501	-\$583,140
SB11.1&SB11.2	-\$1,275,766	-\$1,483,872	-\$5,961,754	-\$6,934,249
<b>Total</b>	<b>\$31,413,692</b>	<b>\$33,884,215</b>	<b>\$146,798,673</b>	<b>\$158,343,620</b>

**A6.61 Estimated increase in retail meat prices****Table A6.42 – Increase in transport cost for major livestock species due to proposed standards**

Livestock Species <sup>499</sup>	Incremental annual cost <sup>500</sup>	Annual total cost of livestock transport <sup>501</sup>	Incremental annual cost as a % of annual total cost of transport <sup>502</sup> (d3)
Cattle (+ calves)	\$11,247,007 to \$12,481,649	\$319,402,450 to \$359,747,551	3.52% to 3.47%
Sheep	\$9,354,099 to \$10,578,966	\$139,195,492 to \$160,624,413	6.72% to 6.59%
Pigs	-\$104,215 to -\$120,939	\$21,956,712 to \$25,480,225	-0.47%
Poultry for meat	\$10,175,383	\$91,255,147	11.15%

<sup>499</sup> Species does not include chicks, buffalo, horses, deer, camels, alpacas, goats, emus and ostriches.<sup>500</sup> Cost estimates are rounded to the nearest dollar and taken from Tables A6.26 to A6.39 of Appendix 6 in this RIS.<sup>501</sup> Cost estimates are rounded to the nearest dollar and taken from Table A6.3 of Appendix 6 in this RIS.<sup>502</sup> If all costs are eventually passed on to consumers then it would be expected that the increase in price would roughly equate to the increase in annual cost as a percentage of total annual cost.



**Table A6.43 - Proportion of transport cost borne by livestock producers and consumers of meat products as a result of proposed standards (Option B)**

Meat product	Price sensitivity of supply <sup>503</sup> (e3)	Price sensitivity of demand <sup>504</sup> (f3)	% of cost borne by producers (g3) = $\frac{1/(e3)}{1/(e3) + 1/(f3)} \times -1 \times (h3)^{505}$ <sup>506</sup>	% of cost borne by consumers (i3) <sup>507</sup> = 1 - (g3)	% increase in retail price of meat product (j3) = (d3) x (i3)	% change in demand (k3) = (j3) x (f3)
Beef	0.27	-1.2	71.2% <sup>508</sup>	28.8%	1.00% to 1.02%	-1.20% to -1.22%
Lamb <sup>509</sup>	0.17	-1.4	69.7% <sup>510</sup>	30.3%	1.99% to 2.04%	-2.79% to -2.85%
Pork	1.5	-1.59 <sup>511</sup>	40% <sup>512</sup>	60.0%	-0.29%	+0.45%
Chicken	0.2 <sup>513</sup>	-0.3	57.3% <sup>514</sup>	42.7%	4.76%	-1.43%

<sup>503</sup> Griffith, G., et al, (January 2001), *Previous Supply Elasticity Estimates for Australian Broadacre Agriculture*, Economic Research Report No. 6, NSW Agriculture.

<sup>504</sup> Griffith, G., et al, (January 2001), *Previous Demand Elasticity Estimates for Australian Meat Products*, Economic Research Report No. 5, NSW Agriculture.

<sup>505</sup> Retail price divided by production price.

<sup>506</sup> Formula taken from Bureau of Transport Economics, (1982).

<sup>507</sup> Percentages have been rounded to one decimal place.

<sup>508</sup> For whole beast farm gate price (\$799) and retail price of cattle (\$1,438) see Coles Myer Ltd, (August, 2005), Submission to DAFF.

<sup>509</sup> Although this meat product is taken from sheep over 4 months of age, it is conventional in the retail market to classify it as lamb.

<sup>510</sup> Saley price of lamb \$3.40/kg and retail price of lamb is \$12.16/kg (see ABARE (March quarter 2007), *Australian Commodities*, Vol.14).

<sup>511</sup> ABARE (August, 2004), *Economic assessment of pig meat imports on the Australian industry*, ABARE report 04.15

<sup>512</sup> For production cost \$2.39 per kg and retail cost \$3.80 per kg of pork - see ABARE (March quarter 2007), *Australian Commodities* Vol.14.

<sup>513</sup> The price elasticity of supply for chicken meat is based on a UK study by Harling and Thompson (1985) (cited in Alston G.M and Scobie G. M) and it is assumed that chicken meat production systems in Australia and the UK are similar. Other elasticity coefficients reported are 0.35 for Turkey (see Dan F Halil (2005)) and 0.36 for Indonesia (see Fabiosa J.F et al (2004)). However, production systems in these two countries are likely to be dissimilar to Australian systems.

<sup>514</sup> Wholesale price of \$4.24/ kg is based on advice from Dr Vivien Kite from **Rural Industries Research and Development Corporation** (RIRDC) and retail price of chicken of \$4.80/kg is based on current observation of local retail outlets (shops and outlets).

## **Appendix 7 – Cost and cost saving estimate calculations for Options B1, D, E and E1**

### **A7.1 – Costing of Option B1**

The cost of Option B1 is simply the addition of the incremental cost impact of changing the minimum age for the transport of slaughter calves to 8 days to the cost of Option B. The incremental cost of changing the minimum age for slaughter calf transport is analysed in the next section.

#### ***A7.1.1 Costing of Impact of 8-day minimum age for transport of calves for slaughter on feed and labour costs***

Based on Table A5.5 in Appendix 5 it is estimated that there are around 860,000 slaughter calves transported for slaughter annually. The increase in the minimum age for transport means that each calf is required to be 3 days older than it otherwise would be. The result of raising the minimum age for transport from 5 to 8 days is that around 860,000 calves per year will require an additional 3 days of feed, labour and housing. The cost of feed (i.e. 4 litres of unprocessed milk per calf per day @ \$0.40/litre<sup>515</sup>) is estimated to be \$1.60 per calf per day. Furthermore, the cost of labour (i.e. 5 minutes of feeding per calf twice per day @ \$20/hr<sup>516</sup> including on-cost) is estimated to be \$3.33 per calf per day, making a total estimated cost of \$4.93 x 860,000 x 3 days = **\$12,719,400** per annum or **\$59,438,764** over 5 years in present value terms discounted at 3.5%. Note that \$4.93 represents 12.3% of the average carcass value of calves for slaughter of around \$40 dollars.<sup>517</sup>

The impact of additional feed and labour cost would be partially offset by the proportion of producers with large herds who are able to utilise a higher frequency of consignment thereby achieving scale economies. This would also mean, however, that smaller dairy farmers, who are less frequently able to arrange consignment due to lower numbers of calves for slaughter, would face a higher burden regarding the impact of this proposed standard on feed and labour costs.

#### ***A7.1.2 Impact of 8-day minimum age for transport on housing costs***

It is estimated that the typical calf shed costs around \$15,000. The impact of this proposed standard would be to increase the number of calves needing to be housed at a particular point in time. It is estimated that anywhere between 30 to 60% additional housing space will be required as a consequence.<sup>518</sup>

The extent of this one-off cost on housing would be mitigated by the number of producers who have typically have herds with 800 cows or less who have usually set aside spare capacity in their sheds to cope with peaks in calving. Also, a further mitigation of additional housing costs would be possible in the situation where larger producers utilise a higher frequency of consignments – thereby alleviating some of the bottlenecks of having additional calves at a

<sup>515</sup> Advice from Dr. Sue Hide, Senior Veterinary Officer, Department of Primary Industries, Victoria.

<sup>516</sup> Advice from Dr. Sue Hide.

<sup>517</sup> It is assumed that any increase in weight over 3 days for bobby calves is negligible and would provide insignificant value to a carcass as compared to the additional cost of feed and labour.

<sup>518</sup> Advice obtained from Department of Primary Industries, Victoria

particular point in time. However, it is expected that both these mitigations will not be able to completely offset any increased requirement for housing space which is likely to be substantial but not able to be calculated in dollar terms without data on the numbers and sizes of calving sheds in Australia, as well as the daily distribution of the numbers of calves born to a herd in a typical calving period.

#### *A7.1.3 The net cost of Option B1 including the impact of 8-day minimum age for transport*

The incremental cost of Option B1 is calculated by taking the costs under Option B as discussed in Appendix 6 and adding an incremental cost of \$12,719,400 per annum or \$59,438,764 over 5 years in present value terms discounted at 3.5%. This would make the annual net cost of Option B1 equal to between **\$44,133,092** and **\$46,603,615** or between **\$206,237,437** and **\$217,782,384** over 5 years in present value terms (2008 dollars).

#### *A7.1.4 Impact of Option B1 on meat prices*

It is noted that the change in meat prices and demand for lamb<sup>519</sup>, pork and chicken would be identical to Option B (see Table A6.43 of Appendix 6). In relation to the change in beef prices it is assumed that it would be, to some extent, similar to Option B. However, it is acknowledged that the impact of an increase in costs regarding the 8-day minimum age for calf transport would lead to an increase in the price of veal and a reduction in the demand for veal. Moreover, this is unquantifiable due to a lack of data on the price sensitivities of the supply and demand for veal.

### A7.2 Costing of Option D

Option D involves removing the most expensive standard under Option B (the proposed standards). The criteria used for eliminating standards, is to choose standards which involve an incremental cost of at least \$1m dollars and above on the livestock industry. These standards are summarised in table A7.1:

**Table A7.1 – Summary of most expensive standards under Option B to be removed under Option D**

Standard	Annual min	Annual max	Present value over 5 years min	Present value over 5 years max
SA1.2	\$1,466,294	\$1,691,068	\$6,852,109	\$7,902,494
SA4.2	\$1,353,865	\$1,353,865	\$6,326,717	\$6,326,717
SA5.11	\$14,932,389	\$16,186,213	\$69,780,237	\$75,639,453
SA5.14	\$10,349,088	\$11,128,645	\$48,362,110	\$52,005,041
SB4.1&SB4.2	\$2,818,324	\$3,222,692	\$13,170,250	\$15,059,894
SB4.3	\$1,280,906	\$1,280,906	\$5,985,775	\$5,985,775
<b>Total</b>	<b>\$32,200,866</b>	<b>\$34,863,389</b>	<b>\$150,477,198</b>	<b>\$162,919,374</b>

The net cost savings of Option D is calculated by taking the cost savings under Option B as discussed in Appendix 6 and removing the totals as discussed in Table A7.1. This would make the annual *incremental cost savings* of Option D equal to between **\$786,256** and **\$978,256** or between **\$3,674,239** and **\$4,571,467** over 5 years in present value terms (2008 dollars).

#### *A7.2.1 – Estimated change in retail meat prices under Option D*

<sup>519</sup> Lamb definition in this case is the retail definition and not the one used in the proposed standards.

Removing SA4.2, SA5.11, SA5.14, SB4.1&SB4.2 and SB4.3 from Table A6.27 would make the *incremental cost increase* for cattle (including calves) equal to between **\$353,796** and **\$378,501** per annum, (see Table A7.2). Removing SA1.2, SA4.2, SA5.11 and SA5.14 from Table A6.29 would provide an incremental *annual cost saving* for sheep equal to between **\$876,496.71** and **\$1,078,204.52** (see Table A7.2). Removing SA5.11 and SA5.14 from Table A6.31 for poultry - would make the cost of the standards to poultry equal to **\$0** per annum and Option D would have the same impact on pig costs and pork prices as Options B and B1 (see Table A7.2). Finally the change in beef and lamb<sup>520</sup> prices is summarised in Table A7.3.

**Table A7.2 – Increase in transport cost for major livestock species as a result of Option D**

Livestock Species <sup>521</sup>	Incremental annual cost <sup>522</sup>	Annual total cost of livestock transport <sup>523</sup>	Incremental annual cost as a % of annual total cost of livestock transport <sup>524</sup> (a)
Cattle (+ calves)	\$353,796 to \$378,501	\$319,402,450 to \$359,747,551	0.11% to 0.11%
Sheep	-\$876,497 to -\$1,078,205	\$139,195,492 to \$160,624,413	-0.63% to -0.67%
Pigs	-\$106,456 to -\$123,539	\$21,956,712 to \$25,480,225	-0.48%
Poultry for meat	\$0	\$91,255,147	0%

**Table A7.3 - Proportion of transport cost borne by livestock producers and consumers of meat products as a result of Option D**

Meat product	Price sensitivity of supply <sup>525</sup> (b)	Price sensitivity of demand <sup>526</sup> (c)	% of cost borne by producers (d) = $1/(b)/\{1/(b) + 1/(c)\} \times -1$ x (e) <sup>527</sup> <sup>528</sup>	% of cost borne by consumers (f) <sup>529</sup> = $1 - (d)$	% increase in retail price of meat product (g) = (a) x (f)	% change in demand (h) = (g) x (c)
Beef	0.27	-1.2	71.2% <sup>530</sup>	28.8%	0.03% to 0.032%	-0.04%
Lamb	0.17	-1.4	69.7%	30.3%	-0.19% to -0.2%	0.27% to 0.28%
Pork	1.5	-1.59	40%	60.0%	-0.29%	+0.46%
Chicken	0.2	-0.3	57.3%	42.7%	0%	0%

### A7.3 Costing of Option E

All general standards under Option E are assumed to impose identical incremental costs/cost savings as under Option B and are identified in Table A7.1 in this Appendix. The main difference of Option E lies in:

<sup>520</sup> Lamb definition in this case is the retail definition and not the one used in the proposed standards.

<sup>521</sup> Species does not include chicks, buffalo, horses, deer, camels, alpacas, goats, emus and ostriches.

<sup>522</sup> Cost estimates are rounded to the nearest dollar and taken from Tables A6.26 to A6.39 of Appendix 6 in this RIS.

<sup>523</sup> Cost estimates are rounded to the nearest dollar and taken from Table A6.3 of Appendix 6 in this RIS.

<sup>524</sup> If all costs are eventually passed on to consumers then it would be expected that the increase in price would roughly equate to the increase in annual cost as a percentage of total annual cost.

<sup>525</sup> Taken from Table A6.43 of Appendix 6 in this RIS.

<sup>526</sup> Taken from Table A6.43 of Appendix 6 in this RIS.

<sup>527</sup> Retail price divided by production price.

<sup>528</sup> Formula taken from Bureau of Transport Economics, (1982).

<sup>529</sup> Percentages have been rounded to one decimal place.

<sup>530</sup> All data in this column is taken from Table A6.43 of Appendix 6 in this RIS.

- the reduction in maximum water deprivation times for alpaca wethers; buffalo; cattle over 6 months; calves 5-30 days old travelling without their mothers; deer; goats; pregnant goats in third trimester of pregnancy; lactating mares; sheep; and sheep in their third trimester of pregnancy. These categories of livestock were chosen on the basis of a longer permitted time off water/ journey length and/or a variation that has occurred between the proposed standards and the MCOP. Where relevant, there is also an associated adjustment to spelling periods (what the standards would be in terms of spelling periods if these maximum times of water under Option E were to be adopted); and
- the increase in the minimum voluntary spelling period to 6 hours in order to earn a water deprivation time credit. Increasing the minimum voluntary spell time from 4 to 6 hours will add an additional 2 hours to the third calculation (refer to section A6.1 in Appendix 6 of this RIS).

The specific standards are summarised in the following sections.

*A7.3.1 Net incremental cost of alpaca standard SB1.1 in conjunction with SB1.3 with minimum voluntary spelling of 6 hours*

***For wethers over 12 months old (where water is not provided on the vehicle):***

*Time cost for 5% of journeys where there are no idle trucks*  $[5\% \times 5\% \times 20\% \times 20\% \times 650.4 \text{ journeys} \times 3.5 \text{ hours} \times \$250/\text{hour}] +$

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 5\% \times 20\% \times 20\% \times 650.4 \text{ journeys} \times 25.5 \text{ hours} \times \$250/\text{hour}] +$

*Time cost for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling*  $[50\% \times 95\% \times 5\% \times 20\% \times 20\% \times 650.4 \text{ journeys} \times 7.5 \text{ hours} \times \$250/\text{hour}] =$   
**\$5,154.42** per annum

***For non-pregnant females and males over 12 months old (where water is not provided on the vehicle):***

*Time cost for 5% of journeys where there are no idle trucks*  $[5\% \times 10\% \times 20\% \times 20\% \times 650.4 \text{ journeys} \times 3.5 \text{ hours} \times \$250/\text{hour}] +$

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 10\% \times 20\% \times 20\% \times 650.4 \text{ journeys} \times 13.5 \text{ hours} \times \$250/\text{hour}] +$

*Time cost for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling*  $[50\% \times 95\% \times 10\% \times 20\% \times 20\% \times 650.4 \text{ journeys} \times 7.5 \text{ hours} \times \$250/\text{hour}] =$   
**\$6,601.56** per annum

***For alpacas – 6 to 12 months old and pregnant females up to 7.5 months pregnant (1<sup>st</sup> and 2<sup>nd</sup> trimester) (where water is not provided on the vehicle):***

As with Option B = **\$298.10** per annum

***For pregnant alpacas more than 7.5 months pregnant (3<sup>rd</sup> trimester) (where water is not provided on the vehicle):***

As with Option B = **\$365.85** per annum

*For lactating alpacas with crias up to 6 months old (where water is not provided on the vehicle):*

As with Option B = **\$975.60** per annum

Standard SB1.1 in conjunction with SB1.3 under option E would impose an incremental cost of **\$13,287.13** per annum. Over 5 years and in present value terms (2008 dollars), this would be equal to **\$62,092.81**.

*A7.3.2 Incremental cost savings of alpaca standard SB1.2 for transporters with minimum voluntary spelling of 6 hours*

*For wethers over 12 months old:*

*Cost savings for 5% of journeys where there are no idle trucks [5% x 5% x 20% x 20% x 650.4 journeys x 3.5 hours x \$250/hour] +*

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling [50% x 95% x 5% x 20% x 20% x 650.4 journeys x 25.5 hrs x \$250/hour] +*

*Cost savings for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling [50% x 95% x 5% x 20% x 20% x 650.4 journeys x 7.5hours x \$250/hour] = **\$5,154.42** per annum*

*For non-pregnant females and males over 12 months old:*

*Cost savings for 5% of journeys where there are no idle trucks [5% x 10% x 20% x 20% x 650.4 journeys x 3.5hours x \$250/hour] +*

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling [50% x 95% x 10% x 20% x 20% x 650.4 journeys x 13.5hours x \$250/hour] +*

*Cost savings for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling [50% x 95% x 10% x 20% x 20% x 650.4 journeys x 7.5hours x \$250/hour] = **\$6,601.56** per annum*

*For alpacas – 6 to 12 months old:*

As with Option B = **\$216.80** per annum

The incremental cost saving of standard SB1.2 for all relevant classes of alpaca would therefore be equal to **\$11,972.78** per annum. Over 5 years, and in present value terms (2008 dollars), this would equal **\$55,949.75**.

*A7.3.3 Incremental cost of alpaca standard SB1.4 for livestock owners*

As with option B = **\$65,837.77** per annum

Over 5 years, and in present value terms (2008 dollars), this would equal **\$307,665.12**.

*A7.3.4 Incremental unquantifiable one-off cost of alpaca standard SB1.7 for livestock owners*

As with Option B

*A7.3.5 Incremental unquantifiable one-off cost of alpaca standard SB1.5 for livestock transporters*

As with Option B

*A7.3.6 Incremental cost of buffalo standard SB2.1 in conjunction with SB2.2 for livestock transporters with minimum voluntary spelling of 6 hours*

Under Option E the maximum time off water would be reduced to half the amount as compared to the base case (i.e. from 48 hours to 24 hours). The assumptions in relation to the estimation of the incremental annual cost would be equivalent to under Option B (see section A6.16), except that the relevant journeys affected would be those between 24 hours and 48 hours (i.e. 40%<sup>531</sup> of journeys). The associated spelling period would be 24 hours (under the proposed standards under SB2.2) and the voluntary spell required for a time-off-water credit would be 6 hours (plus 1.5 hours for loading and unloading)

**Between:**

*Time cost for 5% of journeys where there are no idle trucks* [5% x 40% x 80% x 68.8 journeys x 3.5 hours added x \$327.40/hour] +

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling* [50% x 95% x 40% x 80% x 68.8 journeys x 13.5 hours added x \$327.40/hour] +

*Time cost for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling* [50% x 95% x 40% x 80% x 68.8 journeys x 7.5 hours added x \$327.40/hour]  
= **\$73,161.59** per annum

**and**

*Time cost for 5% of journeys where there are no idle trucks* [5% x 40% x 80% x 68.8 journeys x 3.5 hours added x \$344.20/hour] +

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling* [50% x 95% x 40% x 80% x 68.8 journeys x 13.5 hours added x \$344.20/hour] +

*Time cost for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling* [50% x 95% x 40% x 80% x 68.8 journeys x 7.5 hours added x \$344.20/hour]  
= **\$76,915.76** per annum

Over 5 years, and in present value terms (2008 dollars), this would equal between **\$341,889.90** and **\$359,433.43**.

*A7.3.7 Incremental cost of buffalo standard SB2.3 for livestock owners*

As with Option B = **\$3,767.40** per annum

Over 5 years, and in present value terms (2008 dollars), this would equal **\$17,605.36**

*A7.3.8 Incremental unquantifiable cost of buffalo standard SB2.4 for transporters*

As with Option B

*A7.3.9 Incremental net cost of buffalo standard SB2.6 for transporters*

As with Option B = between **\$375.42** and **\$394.68** per annum

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<sup>531</sup> Proposed by AHA.

Over 5 years, and in present value terms (2008 dollars), this would equal between **\$1,754.36** and **\$1,844.38**.

*A7.3.10 Incremental cost of camel standard SB3.1 in conjunction with SB3.3 for livestock transporters with minimum voluntary spelling of 6 hours*

*Time cost for 5% of journeys where there are no idle trucks*  $[5\% \times 5\% \times 32.5 \text{ journeys} \times 3.5 \text{ hours added} \times 2 \times \$260.20/\text{hour}]^{532} + [5\% \times 30\% \times 32.5 \text{ journeys} \times 3.5 \text{ hours added} \times \$260.20/\text{hour}]^{533} +$

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*  $+ [50\% \times 95\% \times 5\% \times 32.5 \text{ journeys} \times 13.5 \text{ hours added} \times 2 \times \$260.20/\text{hour}] + [50\% \times 95\% \times 5\% \times 30\% \times 32.5 \text{ journeys} \times 13.5 \text{ hours added} \times \$260.20/\text{hour}] +$

*Time cost for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling*  $[50\% \times 95\% \times 5\% \times 32.5 \text{ journeys} \times 7.5 \text{ hours added} \times 2 \times \$260.20/\text{hour}] + [50\% \times 95\% \times 30\% \times 32.5 \text{ journeys} \times 7.5 \text{ hours added} \times \$260.20/\text{hour}] = \mathbf{\$34,333.39}$  per annum

Over 5 years, and in present value terms (2008 dollars), this would equal **\$160,442.65**.

*A7.3.11 Incremental cost of camel standard SB3.4 for livestock owners*

As with Option B = **\$1,031.28** per annum

Over 5 years, and in present value terms (2008 dollars), this would equal only **\$4,819.28**.

*A7.3.12 Incremental unquantifiable cost of camel standard SB3.6 for transporters*

As with Option B

*A7.3.13 Incremental unquantifiable cost of camel standard SB3.3 for transporters*

As with Option B

*A7.3.14 Incremental net cost of cattle standard SB4.1 in conjunction with SB4.2 for transporters - with minimum voluntary spelling of 6 hours*

Standard SB4.1 under Option E, increases water deprivation time as compared to the ‘base case’ for the following classes of cattle species:

- calves aged 5 to 30 days travelling without their mothers from 10 hours to 12 hours before a mandatory minimum spell of 12 hours is operational under standard SB4.2 and it is assumed that the proportion of calves travelling between 10 hours and 12 hours is 7% (as with Option B);
- cattle in their third trimester of pregnancy and more than 8 months pregnant from 8 hours to 24 hours before a mandatory minimum spell of 12 hours is operational under standard SB4.2.

<sup>532</sup> Proportion of camels transported up to 3 days who would have to be spelled twice.

<sup>533</sup> Proportion of camels transported up to 2 days who would have to be spelled once.



*For calves 5 to 30 days travelling without their mothers:*

**Between:**

*Cost savings for 5% of journeys where there are no idle trucks*  $[5\% \times 5\% \times 7\% \times 806.1 \text{ journeys} \times 3.5 \text{ hours saved} \times \$315.20/\text{hour}]^{534} + [5\% \times 7\% \times 4,083.6 \text{ journeys} \times 3.5 \text{ hours saved} \times \$315.20/\text{hour}]^{535} +$

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 5\% \times 7\% \times 806.1 \text{ journeys} \times 13.5 \text{ hours saved} \times \$315.20/\text{hour}] + [50\% \times 95\% \times 5\% \times 7\% \times 4,083.6 \text{ journeys} \times 13.5 \text{ hours saved} \times \$315.20/\text{hour}] +$

*Cost savings for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling*  $[50\% \times 95\% \times 5\% \times 7\% \times 806.1 \text{ journeys} \times 7.5 \text{ hours saved} \times \$315.20/\text{hour}] + [50\% \times 95\% \times 5\% \times 7\% \times 4,083.6 \text{ journeys} \times 7.5 \text{ hours saved} \times \$315.20/\text{hour}] = \$923,546.88 \text{ per annum.}$

**and**

*Cost savings for 5% of journeys where there are no idle trucks*  $[5\% \times 5\% \times 7\% \times 806.1 \text{ journeys} \times 3.5 \text{ hours saved} \times \$336.80/\text{hour}] + [5\% \times 7\% \times 4,083.6 \text{ journeys} \times 3.5 \text{ hours saved} \times \$336.80/\text{hour}] +$

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 5\% \times 7\% \times 806.1 \text{ journeys} \times 13.5 \text{ hours saved} \times \$336.80/\text{hour}] + [50\% \times 95\% \times 5\% \times 7\% \times 4,083.6 \text{ journeys} \times 13.5 \text{ hours saved} \times \$336.80/\text{hour}] +$

*Cost savings for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling*  $[50\% \times 95\% \times 5\% \times 7\% \times 806.1 \text{ journeys} \times 7.5 \text{ hours saved} \times \$336.80/\text{hour}] + [50\% \times 95\% \times 5\% \times 2\% \times 4,083.6 \text{ journeys} \times 7.5 \text{ hours saved} \times \$336.80/\text{hour}] = \$986,835.62 \text{ per annum.}$

*For cattle in third trimester of pregnancy and more than 8 months pregnant:*

**Between:**

*Cost savings for 5% of journeys where there are no idle trucks*  $[5\% \times 36.84\% \times 2\% \times 50\% \times 423,274.95 \text{ journeys} \times 3.5 \text{ hours saved} \times \$356.65/\text{hour}] +$

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 36.84\% \times 2\% \times 50\% \times 423,274.95 \text{ journeys} \times 13.5 \text{ hours saved} \times \$356.65/\text{hour}] +$

*Cost savings for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling*  $[50\% \times 95\% \times 36.84\% \times 2\% \times 50\% \times 423,274.95 \text{ journeys} \times 7.5 \text{ hours saved} \times \$356.65/\text{hour}] = \$5,644,824.70 \text{ per annum}$

**and**

*Cost savings for 5% of journeys where there are no idle trucks*  $[5\% \times 36.84\% \times 2\% \times 50\% \times 423,274.95 \text{ journeys} \times 3.5 \text{ hours saved} \times \$401.70/\text{hour}] +$

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 36.84\% \times 2\% \times 50\% \times 423,274.95 \text{ journeys} \times 13.5 \text{ hours saved} \times \$401.70/\text{hour}] +$

<sup>534</sup> Representing cost savings to non-bobby calf transport.

<sup>535</sup> Representing cost savings to bobby calf transport.

*Cost savings for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling*  $[50\% \times 95\% \times 36.84\% \times 2\% \times 50\% \times 423,274.95 \text{ journeys} \times 7.5 \text{ hours saved} \times \$401.70/\text{hour}] = \$6,357,846.85$  per annum

Standard SB4.1 under Option E reduces the maximum water deprivation time as compared to the ‘base case’ for the following classes of cattle species:

- for cattle in their third trimester of pregnancy and less than 8 months pregnant from 48 hours to 24 hours where a mandatory spell of 12 hours becomes mandatory under SB4.2, but with a minimum voluntary spell of 6 hours; and
- for cattle over 6 months from 48 hours to 36 hours, where a mandatory spell of 24<sup>536</sup> hours becomes mandatory, and a minimum voluntary spell of 6 hours.

*For cattle in third trimester of pregnancy and less than 8 months pregnant:*

#### Between:

*Time cost for 5% of journeys where there are no idle trucks*  $[5\% \times 63.16\% \times 2\% \times 50\% \times 423,274.95 \text{ journeys} \times 3.5 \text{ hours added} \times \$356.65/\text{hour}] +$

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 63.16\% \times 2\% \times 50\% \times 423,274.95 \text{ journeys} \times 13.5 \text{ hours added} \times \$356.65/\text{hour}] +$

*Time cost for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling*  $[50\% \times 95\% \times 63.16\% \times 2\% \times 50\% \times 423,274.95 \text{ journeys} \times 7.5 \text{ hours added} \times \$356.65/\text{hour}] = \$9,677,717.91$  per annum

**and**

*Time cost for 5% of journeys where there are no idle trucks*  $[5\% \times 63.16\% \times 2\% \times 50\% \times 423,274.95 \text{ journeys} \times 3.5 \text{ hours added} \times \$401.70/\text{hour}] +$

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 63.16\% \times 2\% \times 50\% \times 423,274.95 \text{ journeys} \times 13.5 \text{ hours added} \times \$401.70/\text{hour}] +$

*Time cost for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling*  $[50\% \times 95\% \times 63.16\% \times 2\% \times 50\% \times 423,274.95 \text{ journeys} \times 7.5 \text{ hours added} \times \$401.70/\text{hour}] = \$10,900,152.21$  per annum

*For cattle over 6 months old:*

The following assumptions are made in order to estimate the incremental cost for this category of cattle:

- the proportion of cattle over 6 months old (i.e. 95%<sup>537</sup>);
- the number of journeys involving cattle per annum (i.e. 423,274.95<sup>538</sup>);
- the proportion of journeys greater than 36 hours (i.e. 2%<sup>539</sup>);

<sup>536</sup> SB4.2 requires 36 hours spelling after 48 hours of time of water, however the ‘intent’ for this species is that 24 hours of spelling be conducted for 36 hours of time off water.

<sup>537</sup> Proposed by AHA.

<sup>538</sup> See Table A6.17 of Appendix 6 in this RIS for estimate.

- 3.5 hours of loading/unloading and change over time will be incurred for the relevant proportion of journeys (i.e. 5%);
- 25.5 hours of loading/unloading and idle vehicle time will be incurred for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 95% of journeys) for journeys between 36 hours and 48 hours;
- 7.5 hours minimum voluntary spelling time (including 1.5 hours loading/unloading) will be incurred for 50% of the time where journeys do not have the ability for changeover; and
- the cost of cattle transport is between \$356.65/hour and \$401.70/hour.<sup>540</sup>

Therefore, the incremental annual cost would be calculated in the following way:

**Between:**

*Time cost for 5% of journeys between where there are no idle trucks* [5% x 2% x 95% x 423,274.95 journeys x 3.5 hours added x \$356.65/hour] +

*Time cost for 95% of journeys between where there are idle trucks and no voluntary spelling* [50% x 95% x 2% x 95% x 423,274.95 journeys x 25.5 hours added x \$356.65/hour] +

*Time cost for 95% of journeys between where there are idle trucks with minimum of 6 hours voluntary spelling* [50% x 95% x 2% x 95% x 423,274.95 journeys x 7.5 hours added x \$356.65/hour] = **\$45,461,908.44** per annum.

**and**

*Time cost for 5% of journeys between where there are no idle trucks* [5% x 2% x 95% x 423,274.95 journeys x 3.5 hours added x \$401.70/hour] +

*Time cost for 95% of journeys between where there are idle trucks and no voluntary spelling* [50% x 95% x 2% x 95% x 423,274.95 journeys x 25.5 hours added x \$401.70/hour] +

*Time cost for 95% of journeys between where there are idle trucks with minimum of 6 hours voluntary spelling* [50% x 95% x 2% x 95% x 423,274.95 journeys x 7.5 hours added x \$401.70/hour] = **\$51,204,398.20** per annum.

The total annual net cost of standard SB4.1 in conjunction with SB4.2 would be between **\$48,571,254.78** and **\$54,759,867.94**. Over 5 years, and in present value terms (2008 dollars), this would equal between **\$226,977,321** and **\$255,897,200**.

*A7.3.15 Incremental cost of cattle standard SB4.3 for livestock owners*

As with Option B = **\$1,280,905.91** per annum

Over 5 years, and in present value terms (2008 dollars), this would equal **\$5,985,774.76**.

*A7.3.16 Incremental unquantifiable cost of cattle standard SB4.4 for transporters*

As with Option B

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<sup>539</sup> Proposed by AHA.

<sup>540</sup> See Table A6.15 of Appendix 6 in this RIS for this estimate.

*A7.3.17 Incremental unquantifiable net cost savings of cattle standard SB4.5(iv) for owners/transporters*

As with Option B

*A7.3.18 Incremental unquantifiable net cost of cattle standard SB4.5(v) for transporters*

As with Option B

*A7.3.19 Incremental cost of cattle standard SB4.8(b) for transporters*

*General Incremental cost as with Option B* = Between **\$507,472** and **\$542,238** per annum

*Incremental cost in terms of SA1.1 as with Option B* = Between **\$561.60** and **\$1,663.20** per annum

*Incremental cost in terms of SA5.11(ii) as with Option B* = Between **\$16,232.80** and **\$17,345.20** per annum

*Incremental cost in terms of SA5.11(iii) as with Option B* = Between **\$63.04** and **\$67.36** per annum

*Incremental cost in terms of SB4.1 in conjunction with SB4.2*

**Between:**

*Cost saving increase for 5% of journeys where there are no idle trucks*  $[5\% \times 5\% \times 7\% \times 312 \text{ journeys} \times 3.5 \text{ hours saved} \times \$315.20/\text{hr}]^{541} + [5\% \times 7\% \times 924 \text{ journeys} \times 3.5 \text{ hours saved} \times \$315.20/\text{hr}]^{542} +$

*Cost saving increase for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 5\% \times 7\% \times 312 \text{ journeys} \times 13.5 \text{ hours saved} \times \$315.20/\text{hr}] + [50\% \times 95\% \times 5\% \times 7\% \times 924 \text{ journeys} \times 13.5 \text{ hours saved} \times \$315.20/\text{hr}] +$

*Cost saving increase for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling*  $[50\% \times 95\% \times 5\% \times 7\% \times 312 \text{ journeys} \times 7.5 \text{ hours saved} \times \$315.20/\text{hr}] + [50\% \times 95\% \times 5\% \times 7\% \times 924 \text{ journeys} \times 7.5 \text{ hours saved} \times \$315.20/\text{hr}] = \textbf{\$210,423.04 per annum.}$

**and**

*Cost saving increase for 5% of journeys where there are no idle trucks*  $[5\% \times 5\% \times 7\% \times 312 \text{ journeys} \times 3.5 \text{ hours saved} \times \$336.80/\text{hr}] + [5\% \times 7\% \times 924 \text{ journeys} \times 3.5 \text{ hours saved} \times \$336.80/\text{hr}] +$

*Cost saving increase 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 5\% \times 7\% \times 312 \text{ journeys} \times 13.5 \text{ hours saved} \times \$336.80/\text{hr}] + [50\% \times 95\% \times 5\% \times 7\% \times 924 \text{ journeys} \times 13.5 \text{ hours saved} \times \$336.80/\text{hr}] +$

*Cost saving increase 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling*  $[50\% \times 95\% \times 5\% \times 7\% \times 312 \text{ journeys} \times 7.5 \text{ hours saved} \times \$336.80/\text{hr}] + [50\% \times 95\% \times 5\% \times 7\% \times 924 \text{ journeys} \times 7.5 \text{ hours saved} \times \$336.80/\text{hr}] = \textbf{\$224,842.90 per annum.}$

Finally, in combining all the costs/cost savings in the aforementioned subsections, the incremental net cost of standard SB4.8(b) would be expected to be between **\$325,299.90** and **\$348,655.13** per annum. Over 5 years, and in present value terms (2008 dollars), this would equal between **\$1,520,152.18** and **\$1,629,293.05**.

<sup>541</sup> Representing cost savings to non-bobby calf transport

<sup>542</sup> Representing cost savings to bobby calf transport

### A7.3.20 Incremental unquantifiable cost of cattle standard SB4.7 for transporters

As with Option B

*A7.3.21 Incremental net cost of deer standard SB5.1 in conjunction with SB5.2 for transporters involving an increase in maximum time off water for fawns/calves less than 6 months and a reduction of maximum time off water for deer from 48 hours to 36 hours with minimum voluntary spelling of 6 hours*

Under Option E, standard SB5.1 increases the maximum time of water for fawns/calves under 6 months old from 24 hours under the ‘base case’ to 28 hours.

*For fawns/calves less than 6 months:*

#### **Between:**

*Cost savings for 5% of journeys where there are no idle trucks*  $[5\% \times 5\% \times 10\% \times 424.4 \text{ journeys} \times 3.5 \text{ hours saved} \times \$302/\text{hour}] +$

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 5\% \times 10\% \times 424.4 \text{ journeys} \times 13.5 \text{ hours saved} \times \$302/\text{hour}] +$

*Cost savings for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling*  $[50\% \times 95\% \times 5\% \times 10\% \times 424.4 \text{ journeys} \times 7.5 \text{ hours saved} \times \$302/\text{hour}] = \mathbf{\$6,504.57}$  per annum

**and**

*Cost savings for 5% of journeys where there are no idle trucks*  $[5\% \times 5\% \times 10\% \times 424.4 \text{ journeys} \times 3.5 \text{ hours saved} \times \$307.40/\text{hour}] +$

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 5\% \times 10\% \times 424.4 \text{ journeys} \times 13.5 \text{ hours saved} \times \$307.40/\text{hour}] +$

*Cost savings for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling*  $[50\% \times 95\% \times 5\% \times 10\% \times 424.4 \text{ journeys} \times 7.5 \text{ hours saved} \times \$307.40/\text{hour}] = \mathbf{\$6,620.87}$  per annum

Under Option E, standard SB5.1 reduces the maximum time of water for deer over 6 months old from 48 hours under the ‘base case’ to 36 hours where a mandatory spell of 24 hours<sup>543</sup> is required. The incremental time cost estimate would rely on the following set of assumptions:

- 3.5 hours of loading/unloading and changeover time will be incurred for 5% of the relevant proportion of journeys;
- 25.5 hours of loading/unloading and idle vehicle time will be incurred for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 95% of journeys) for deer over 6 months;

<sup>543</sup> SB5.2 requires 36 hours spelling after 48 hours of time of water, however the ‘intent’ for this species is that 24 hours of spelling be conducted for 36 hours of time off water.

- 7.5 hours minimum voluntary spelling time (including 1.5 hours loading/unloading) will be incurred for 20% of the time where journeys do not have the ability for changeover;
- the proportion of deer older than 6 months (i.e. 90%<sup>544</sup>);
- the proportion of deer journeys greater than 36 hours (i.e. 2%<sup>545</sup>);
- the number of journeys per annum involving deer transport is estimated to be 424.4<sup>546</sup>; and
- the cost of deer transport is between \$302/hour and \$307.40/hour<sup>547</sup>.

Therefore, the additional annual cost would be calculated in the following way:

*For deer over 6 months:*

**Between:**

*Time cost for 5% of journeys where there are no idle trucks* [5% x 2% x 90% x 424.4 journeys x 3.5 hours added x \$302/hr] +

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling* [50% x 95% x 2% x 90% x 424.4 journeys x 25.5 hours added x \$302/hour] +

*Time cost for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling* [50% x 95% x 2% x 90% x 424.4 journeys x 7.5 hours added x \$302/hour] =  
**\$36,566.56** per annum

**and**

*Time cost for 5% of journeys where there are no idle trucks* [5% x 2% x 90% x 424.4 journeys x 3.5 hours added x \$307.40/hour] +

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling* [50% x 95% x 2% x 90% x 424.4 journeys x 25.5 hours added x \$307.40/hour] +

*Time cost for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling* [50% x 95% x 2% x 90% x 424.4 journeys x 7.5 hours added x \$307.40/hour] =  
**\$37,220.40** per annum

Therefore the incremental net cost of standard SB5.1 in conjunction with standard SB5.2 across both classes of deer would equal between **\$30,061.99** and **\$30,599.52** per annum. Over 5 years, and in present value terms (2008 dollars), this would equal between **\$140,482.07** and **\$142,994.00**.

#### *A7.3.22 Incremental cost of deer standard SB5.3 for livestock owners*

As with Option B = **\$50,280.19** per annum

Over 5 years, and in present value terms (2008 dollars), this would equal **\$234,963.33**.

<sup>544</sup> Proposed by AHA.

<sup>545</sup> Proposed by AHA.

<sup>546</sup> See Table A6.16 of Appendix 6 in this RIS for this estimate.

<sup>547</sup> See Table A6.15 of Appendix 6 in this RIS for this estimate.

*A7.3.23 Incremental unquantifiable cost of deer standard SB5.4 for transporters*

As with Option B

*A7.3.25 Incremental cost of ratite standard SB6.1 in conjunction with SB6.5 for transporters with minimum voluntary spelling of 6 hours**For adult emus:*

*Time cost for 5% of journeys where there are no idle trucks*  $[5\% \times 5\% \times 95\% \times 111.1 \text{ journeys} \times 3.5 \text{ hours added} \times \$250/\text{hour}] +$

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 5\% \times 95\% \times 111.1 \text{ journeys} \times 13.5 \text{ hours added} \times \$250/\text{hour}] +$

*Time cost for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling*  $[50\% \times 95\% \times 5\% \times 95\% \times 111.1 \text{ journeys} \times 7.5 \text{ hours added} \times \$250/\text{hour}] =$   
**\$13,391.02** per annum

*For adult ostriches:*

*Time cost for 5% of journeys where there are no idle trucks*  $[5\% \times 5\% \times 95\% \times 207.3 \text{ journeys} \times 3.5 \text{ hours added} \times \$250/\text{hour}] +$

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 5\% \times 95\% \times 207.3 \text{ journeys} \times 13.5 \text{ hours added} \times \$250/\text{hour}] +$

*Time cost for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling*  $[50\% \times 95\% \times 5\% \times 95\% \times 207.3 \text{ journeys} \times 7.5 \text{ hours added} \times \$250/\text{hour}] =$   
**\$24,986.13** per annum

*For emu chicks:*

As with Option B = **\$69.44** per annum

*For ostrich chicks:*

As with Option B = **\$129.56** per annum

The total combined annual cost for adults and chicks, of standard SB6.1 in conjunction with SB6.5, would be **\$13,460.46** per annum for emu transporters and **\$25,115.69** per annum for ostrich transporters. Over 5 years, and in present value terms (2008 dollars), this would equal **\$62,901.79** for emu transporters and **\$117,367.61** for ostrich transporters.

*A7.3.26 Incremental unquantifiable cost of ratite standards SB6.2; SB6.3; SB6.5; SB6.6<sup>548</sup> and SB6.7<sup>549</sup>*

As with Option B

<sup>548</sup> Affects both livestock transporters and owners.

<sup>549</sup> Affects livestock owners only.

*A7.3.27 Incremental net cost of goat standard SB7.1 in conjunction with SB7.2 for transporters with minimum voluntary spelling of 6 hours*

Standard SB7.1 increases the maximum time off water of from 8 hours to 12 hours for goats over 6 months in their third trimester and over 4 months pregnant (under which a minimum mandatory spell of 12 hours comes under operation under standard SB7.2) and from 24 hours to 28 hours for kids less than 6 months of age (under which a minimum mandatory spell of 12 hours comes under operation under standard SB7.2). The incremental cost savings would rely on the following assumptions:

- 3.5 hours of loading/unloading and changeover time will be saved for 5% of the relevant proportion of journeys;
- 13.5 hours of loading/unloading and idle vehicle time will be saved for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 95% of journeys);
- 7.5 hours minimum voluntary spelling time (including 1.5 hours loading/unloading) will be saved for 50% of the time where journeys do not have the ability for changeover;
- the proportion of pregnant goats known to be in their third trimester (i.e. 2%<sup>550</sup>);
- the proportion of the 2% of goats in their third trimester and over 4 months pregnant (i.e. 60%<sup>551</sup>);
- the proportion of kids less than 6 months (i.e. 10%<sup>552</sup>);
- the proportion of journeys between 8 and 12 hours (i.e. 20%<sup>553</sup>);
- the proportion of journeys between 24 and 28 hours (i.e. 35%<sup>554</sup>);
- the number of journeys per annum involving goat transport is estimated to be 4,181.08<sup>555</sup>; and
- the cost of goat transport is between \$357.43 and \$412.45/hour.<sup>556</sup>

Therefore, the additional annual time cost saving for goat transporters would be calculated in the following way:

*For goats in their third trimester and more than 4 months pregnant:*

**Between:**

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<sup>550</sup> Proposed by AHA.

<sup>551</sup> Estimated as 30 days divided by the total trimester of 50 days.

<sup>552</sup> Proposed by AHA.

<sup>553</sup> Proposed by AHA.

<sup>554</sup> Proposed by AHA.

<sup>555</sup> See Table A6.16 of Appendix 6 in this RIS for this estimate.

<sup>556</sup> See Table A6.15 of Appendix 6 in this RIS for this estimate.



*Cost savings for 5% of journeys where there are no idle trucks*  $[5\% \times 20\% \times 2\% \times 60\% \times 4,181.08 \text{ journeys} \times 3.5 \text{ hours saved} \times \$357.43/\text{hour} +$

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 20\% \times 2\% \times 60\% \times 4,181.08 \text{ journeys} \times 13.5 \text{ hours saved} \times \$357.43/\text{hour} +$

*Cost savings for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling*  $[50\% \times 95\% \times 20\% \times 2\% \times 60\% \times 4,181.08 \text{ journeys} \times 7.5 \text{ hours saved} \times \$357.43/\text{hour}] = \mathbf{\$36,404.64}$  per annum

**and**

*Cost savings for 5% of journeys where there are no idle trucks*  $[5\% \times 20\% \times 2\% \times 60\% \times 4,181.08 \text{ journeys} \times 3.5 \text{ hours saved} \times \$412.45/\text{hour}] +$

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 20\% \times 2\% \times 60\% \times 4,181.08 \text{ journeys} \times 13.5 \text{ hours saved} \times \$412.45/\text{hour} +$

*Cost savings for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling*  $[50\% \times 95\% \times 20\% \times 2\% \times 60\% \times 4,181.08 \text{ journeys} \times 7.5 \text{ hours saved} \times \$412.45/\text{hour}] = \mathbf{\$42,008.49}$  per annum

***For kids under 6 months:***

**Between:**

*Cost savings for 5% of journeys where there are no idle trucks*  $[5\% \times 35\% \times 10\% \times 4,181.08 \text{ journeys} \times 3.5 \text{ hours saved} \times \$357.43/\text{hour}] +$

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 35\% \times 10\% \times 4,181.08 \text{ journeys} \times 13.5 \text{ hours saved} \times \$357.43/\text{hour}] +$

*Cost savings for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling*  $[50\% \times 95\% \times 35\% \times 10\% \times 4,181.08 \text{ journeys} \times 7.5 \text{ hours saved} \times \$357.43/\text{hour}] = \mathbf{\$530,901.03}$  per annum

**and**

*Cost savings for 5% of journeys where there are no idle trucks*  $[5\% \times 35\% \times 10\% \times 4,181.08 \text{ journeys} \times 3.5 \text{ hours saved} \times \$412.45/\text{hour}] +$

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 35\% \times 10\% \times 4,181.08 \text{ journeys} \times 13.5 \text{ hours saved} \times \$412.45/\text{hour}] +$

*Cost savings for 95% of journeys where there are idle trucks with minimum of 4 hours voluntary spelling*  $[50\% \times 95\% \times 35\% \times 10\% \times 4,181.08 \text{ journeys} \times 7.5 \text{ hours saved} \times \$412.45/\text{hour}] = \mathbf{\$612,623.81}$  per annum

Standard SB7.1 reduces the maximum time off water of from 48 hours to 12 hours for goats in their third trimester and less than 4 months pregnant (under which a minimum mandatory spell of 12 hours comes under operation under standard SB7.2). This standard also reduces the maximum time off water for goats over 6 months old from 48 hours in the ‘base case’ to 36

hours under Option E for which 24 hours<sup>557</sup> of spelling applies. The incremental cost would rely on the following assumptions:

- 3.5 hours of loading/unloading and changeover time will be incurred for 5% of the relevant proportion of journeys;
- 25.5 hours of loading/unloading and idle vehicle time will be saved for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 95% of journeys) for goats over 6 months;
- 13.5 hours of loading/unloading and idle vehicle time will be incurred for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 95% of journeys) for goats in their third trimester;
- 7.5 hours minimum voluntary spelling time (including 1.5 hours loading/unloading) will be incurred for 50% of the time where journeys do not have the ability for changeover;
- the proportion of goats older than 6 months (i.e. 90%<sup>558</sup>);
- the proportion of journeys between 36 and 48 hours (i.e. 20%<sup>559</sup>);
- the proportion of pregnant goats known to be in their third trimester (i.e. 2%<sup>560</sup>);
- the proportion of the 2% of goats in their third trimester and less than 4 months pregnant (i.e. 40%<sup>561</sup>);
- the proportion of journeys between 12 and 48 hours (i.e. 60%<sup>562</sup>);
- the number of journeys per annum involving goat transport is estimated to be 4,181.08<sup>563</sup>; and
- the cost of goat transport is between \$357.43 and \$412.45/hour.<sup>564</sup>

Therefore, the additional annual time cost saving for goat transporters would be calculated in the following way:

*For goats in their third trimester and less than 4 months pregnant:*

**Between:**

*Time cost for 5% of journeys where there are no idle trucks [5% x 40% x 2% x 60% x 4,181.08 journeys x 3.5 hours added x \$357.43/hour] +*

<sup>557</sup> SB7.2 requires 36 hours spelling after 48 hours of time of water, however the 'intent' for this species is that 24 hours of spelling be conducted for 36 hours of time off water.

<sup>558</sup> Proposed by AHA.

<sup>559</sup> Proposed by AHA.

<sup>560</sup> Proposed by AHA.

<sup>561</sup> Estimated as 20 days divided by the total trimester of 50 days.

<sup>562</sup> Proposed by AHA.

<sup>563</sup> See Table A6.16 of Appendix 6 in this RIS for this estimate.

<sup>564</sup> See Table A6.15 of Appendix 6 in this RIS for this estimate.

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 40\% \times 2\% \times 60\% \times 4,181.08 \text{ journeys} \times 13.5 \text{ hours added} \times \$357.43/\text{hour}] +$

*Time cost for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling*  $[50\% \times 95\% \times 40\% \times 2\% \times 60\% \times 4,181.08 \text{ journeys} \times 7.5 \text{ hours added} \times \$357.43/\text{hour}] = \text{\$72,809.28 per annum}$

**and**

*Time cost for 5% of journeys where there are no idle trucks*  $[5\% \times 40\% \times 2\% \times 60\% \times 4,181.08 \text{ journeys} \times 3.5 \text{ hours added} \times \$412.45/\text{hour}] +$

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 40\% \times 2\% \times 60\% \times 4,181.08 \text{ journeys} \times 13.5 \text{ hours added} \times \$412.45/\text{hour}] +$

*Time cost for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling*  $[50\% \times 95\% \times 40\% \times 2\% \times 60\% \times 4,181.08 \text{ journeys} \times 7.5 \text{ hours added} \times \$412.45/\text{hour}] = \text{\$84,016.98 per annum}$

***For goats over 6 months:***

**Between:**

*Time cost for 5% of journeys where there are no idle trucks*  $[5\% \times 20\% \times 90\% \times 4,181.08 \text{ journeys} \times 3.5 \text{ hours added} \times \$357.43/\text{hour}] +$

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 20\% \times 90\% \times 4,181.08 \text{ journeys} \times 25.5 \text{ hours added} \times \$357.43/\text{hour}] +$

*Time cost for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling*  $[50\% \times 95\% \times 20\% \times 90\% \times 4,181.08 \text{ journeys} \times 7.5 \text{ hours added} \times \$357.43/\text{hour}] = \text{\$4,263,647.09 per annum}$

**and**

*Time cost for 5% of journeys where there are no idle trucks*  $[5\% \times 20\% \times 90\% \times 4,181.08 \text{ journeys} \times 3.5 \text{ hours added} \times \$412.45/\text{hour}] +$

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 20\% \times 90\% \times 4,181.08 \text{ journeys} \times 25.5 \text{ hours added} \times \$412.45/\text{hour}] +$

*Time cost for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling*  $[50\% \times 95\% \times 20\% \times 90\% \times 4,181.08 \text{ journeys} \times 7.5 \text{ hours added} \times \$412.45/\text{hour}] = \text{\$4,919,959.83 per annum}$

Subsequently, the total incremental net cost of standard SB7.1 in conjunction with SB7.2, for goats (summing across the cost savings and costs of all the aforementioned classes) would be between **\$3,769,150.71** and **\$4,349,344.51** per annum. Over 5 years, and in present value terms (2008 dollars), this would equal between **\$17,613,539.79** and **\$20,324,831.40**.

*A7.3.28 Incremental net cost of horse standard SB8.1 in conjunction with SB8.3 for transporters with minimum voluntary spelling of 6 hours*

***Foals under 6 months old:***

*Cost savings for 5% of journeys where there are no idle trucks*  $[5\% \times 1\% \times 10\% \times 116,298 \text{ journeys} \times 3.5 \text{ hours saved} \times \$250/\text{hour}] +$

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 1\% \times 10\% \times 116,298 \text{ journeys} \times 13.5 \text{ hours saved} \times \$250/\text{hour}] +$

*Cost savings for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling*  $[50\% \times 95\% \times 1\% \times 10\% \times 116,298 \text{ journeys} \times 7.5 \text{ hours saved} \times \$250/\text{hour}] =$   
**\$295,106.18** per annum

***Mares in third trimester of pregnancy:***

*Time cost for 5% of journeys where there are no idle trucks*  $[5\% \times 10\% \times 1\% \times 116,298 \text{ journeys} \times 3.5 \text{ hours added} \times \$250/\text{hour}] +$

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 10\% \times 1\% \times 116,298 \text{ journeys} \times 13.5 \text{ hours added} \times \$250/\text{hour}] +$

*Time cost for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling*  $[50\% \times 95\% \times 10\% \times 1\% \times 116,298 \text{ journeys} \times 7.5 \text{ hours added} \times \$250/\text{hour}] =$   
**\$295,106.18** per annum

***Horses over 6 months old:***

*Time cost for 5% of journeys where there are no idle trucks*  $[5\% \times 0.01\% \times 99\% \times 116,298 \text{ journeys} \times 3.5 \text{ hours added} \times \$250/\text{hour}] +$

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 0.01\% \times 99\% \times 116,298 \text{ journeys} \times 25.5 \text{ hours added} \times \$250/\text{hour}] +$

*Time cost for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling*  $[50\% \times 95\% \times 0.01\% \times 99\% \times 116,298 \text{ journeys} \times 7.5 \text{ hours added} \times \$250/\text{hour}] =$   
**\$44,690.05** per annum

The total incremental net cost of standard SB8.1 in conjunction with SB8.3 across all three classes of species, would be **\$44,690.05** per annum. Over 5 years, and in present value terms (2008 dollars), this would equal **\$208,840.15**.

*A7.3.29 Incremental cost of horse standard SB8.2 for transporters*

*Time cost for 0.01% of journeys where there are no idle trucks*  $[0.01\% \times 99.99\% \times 0.005\% \times 116,298 \text{ journeys} \times 3.5 \text{ hours added} \times \$250/\text{hour}] +$

*Time cost for 99.99% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 99.99\% \times 99.99\% \times 0.005\% \times 116,298 \text{ journeys} \times 25.5 \text{ hours added} \times \$250/\text{hour}] +$

*Time cost for 99.99% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling*  $[50\% \times 99.99\% \times 99.99\% \times 0.005\% \times 116,298 \text{ journeys} \times 7.5 \text{ hours added} \times \$250/\text{hour}] =$   
**\$23,982.17** per annum

Over 5 years, and in present value terms (2008 dollars), this would equal **\$112,070.60**.

*A7.3.30 Incremental cost of horse standard SB8.4 for livestock owners*

As with Option B = **\$846.91** per annum

Over 5 years, and in present value terms (2008 dollars), this would equal **\$3,957.68**.

*A7.3.31 Incremental cost of horse standard SB8.8 for transporters – reducing stocking density by 3 horses/30m<sup>2</sup>*

As with Option B = **\$8,397.50** per annum

This would equal **\$39,242.18** over 5 years in present value terms (2008 dollars).

*A7.3.32 Incremental net cost of horse standard SB8.10 for livestock owners*

As with Option B = **\$6,042** per annum

In present value terms (2008 dollars) and over 5 years this would be equal to **\$28,233.67**.

*A7.3.33 Incremental cost of horse standard SB8.11 for transporters*

As with Option B = **\$84,875** per annum

Over 5 years, and in present value terms (2008 dollars), this would equal **\$396,627.60**.

*A7.3.34 Incremental unquantifiable cost of horse standard SB8.12 for transporters*

As with Option B

*A7.3.35 Incremental unquantifiable cost of horse standard SB8.14 for transporters*

As with Option B

*A7.3.36 Incremental cost of pig standard SB9.1 in conjunction with SB9.3 for transporters and minimum voluntary spelling of 6 hours*

**Between:**

*Time cost for 50% of journeys where there are idle trucks and no voluntary spelling* [50% x 0.01% x 10% x 39,944.63 journeys x 12 hours added x \$336.50/hour] +

*Time cost for 50% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling* [50% 0.01% x 10% x 39,944.63 journeys x 6 hours added x \$336.50/hour] = **\$1,209.72** per annum

**and**

*Time cost for 50% of journeys where there are idle trucks and no voluntary spelling* [50% x 0.01% x 10% x 39,944.63 journeys x 12 hours added x \$390.50/hour] +

*Time cost for 50% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling* [50% 0.01% x 10% x 39,944.63 journeys x 6 hours added x \$390.50/hour] = **\$1,403.85** per annum

Over 5 years, and in present value terms (2008 dollars), this would equal between **\$5,653.13** and **\$6,560.32**.

*A7.3.37 Incremental cost savings of pig standard SB9.2 for transporters and minimum voluntary spelling of 6 hours*

**Between:**

*Cost savings for 50% of journeys where there are idle trucks and no voluntary spelling* [50% x 0.1% x 39,944.63 journeys x 12 hours saved x \$336.50/hour] +

*Cost savings for 50% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling* [50% x 0.1% x 39,944.63 journeys x 6 hours saved x \$336.50/hour] = **\$120,972.31** per annum

**and**

*Cost savings for 50% of journeys where there are idle trucks and no voluntary spelling* [50% x 0.1% x 39,944.63 journeys x 12 hours saved x \$390.50/hour] +

*Cost savings for 50% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling* [50% x 0.1% x 39,944.63 journeys x 6 hours saved x \$390.50/hour] = **\$140,385.40** per annum

Over 5 years, and in present value terms (2008 dollars), the cost savings of SB9.2 would equal between **\$565,313.20** and **\$656,032.10**.

*A7.3.38 Incremental unquantifiable cost of pig standard SB9.4 for transporters*

As with Option B

*A7.3.39 Incremental unquantifiable cost of poultry standard SB10.2 for transporters*

As with Option B

*A7.3.40 Incremental net cost of Sheep standard SB11.1 in conjunction with SB11.2 for transporters and minimum voluntary spelling of 6 hours*

Standard SB11.1 increases the maximum time off water from 8 hours to 12 hours for sheep over 4 months pregnant and in their third trimester with an associated minimum spelling time of 12 hours under standard SB11.2 and increases the maximum time off water from 24 hours to 28 hours for lambs under 4 months with an associated minimum spelling time of 12 hours under standards SB11.2. This would reduce the time cost of transport. The incremental cost savings will rely on the following assumptions being made:

- 3.5 hours of loading/unloading and changeover time will be saved for 5% of the relevant proportion of journeys;
- 13.5 hours of loading/unloading and idle vehicle time will be saved for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 95% of journeys);

- 7.5 hours minimum voluntary spelling time (including 1.5 hours loading/unloading) will be saved for 50% of the time where journeys do not have the ability for changeover;
- the proportion of sheep journeys between 8 hours and 12 hours (i.e. 15%<sup>565</sup>);
- the proportion of sheep that are pregnant and known to be in their third trimester (i.e. 1%<sup>566</sup>);
- the proportion of the 1% of ewes that are in the third trimester and more than 4 months pregnant (i.e. 60%<sup>567</sup>);
- the proportion of lamb journeys between 24 hours and 28 hours (i.e. 5%<sup>568</sup>);
- the number of journeys per annum involving sheep transport is estimated to be 191,580.35<sup>569</sup>;
- the number of journeys per annum involving lamb transport is estimated to be 252.8<sup>570</sup>; and
- the cost of sheep and lamb transport is between \$357.43/hr and \$412.45/hr.<sup>571</sup>

Consequently, the annual cost savings for transporters is calculated in the following way:

*For lambs under 4 months old:*

**Between:**

*Time cost savings for 5% of journeys where there are no idle trucks [5% x 5% x 252.8 journeys x 3.5 hours saved x \$357.43/hour] +*

*Time cost savings for 95% of journeys where there are idle trucks and no voluntary spelling [50% x 95% x 5% x 252.8 journeys x 13.5 hours saved x \$357.43/hour] +*

*Time cost savings for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling [50% x 95% x 5% x 252.8 journeys x 7.5 hours saved x \$357.43/hour] +*

*Food cost savings [5% x 107,162 lambs x 12 hours saved x \$0.20/12hour/lamb] = **\$58,716.28** per annum*

**and**

*Time cost savings for 5% of journeys where there are no idle trucks [5% x 5% x 252.8 journeys x 3.5 hours saved x \$412.45/hour] +*

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<sup>565</sup> Proposed by AHA.

<sup>566</sup> Proposed by AHA.

<sup>567</sup> Estimated as 30 days divided by the total days of the third trimester of 50 days.

<sup>568</sup> Proposed by AHA.

<sup>569</sup> See Table A6.16 of Appendix 6 in this RIS for this estimate.

<sup>570</sup> See Table A6.16 of Appendix 6 in this RIS for this estimate.

<sup>571</sup> See Table A6.15 of Appendix 6 in this RIS for this estimate.

*Time cost savings for 95% of journeys where there are idle trucks and no voluntary spelling*  
 $[50\% \times 95\% \times 5\% \times 252.8 \text{ journeys} \times 13.5 \text{ hours saved} \times \$412.45/\text{hour}] +$

*Time cost savings for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling*  $[50\% \times 95\% \times 5\% \times 252.8 \text{ journeys} \times 7.5 \text{ hours saved} \times \$412.45/\text{hour}] +$

*Food cost savings*  $[5\% \times 107,162 \text{ lambs} \times 12 \text{ hours saved} \times \$0.20/12\text{hour}/\text{lamb}] = \mathbf{\$65,775.13}$   
 per annum

***For Sheep in third trimester and more than 4 months pregnant:***

### **Between:**

*Time cost savings for 5% of journeys where there are no idle trucks*  $[5\% \times 15\% \times 1\% \times 60\% \times 191,580.35 \text{ journeys} \times 3.5 \text{ hours saved} \times \$357.43/\text{hour}] +$

*Time cost savings for 95% of journeys where there are idle trucks and no voluntary spelling*  
 $[50\% \times 95\% \times 15\% \times 1\% \times 60\% \times 191,580.35 \text{ journeys} \times 13.5 \text{ hours saved} \times \$357.43/\text{hour}] +$

*Time cost savings for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling*  $[50\% \times 95\% \times 15\% \times 1\% \times 60\% \times 191,580.35 \text{ journeys} \times 7.5 \text{ hours saved} \times \$357.43/\text{hour}] +$

*Food cost savings*  $[5\% \times 1\% \times 60\% \times 66,210,170 \text{ sheep} \times 12 \text{ hours saved} \times \$0.20/12\text{hour}/\text{sheep}]$   
 $= \mathbf{\$768,547.38}$  per annum

**and**

*Time cost savings for 5% of journeys where there are no idle trucks*  $[5\% \times 15\% \times 1\% \times 60\% \times 191,580.35 \text{ journeys} \times 3.5 \text{ hours saved} \times \$412.45/\text{hour}] +$

*Time cost savings for 95% of journeys where there are idle trucks and no voluntary spelling*  
 $[50\% \times 95\% \times 15\% \times 1\% \times 60\% \times 191,580.35 \text{ journeys} \times 13.5 \text{ hours saved} \times \$412.45/\text{hour}] +$

*Time cost savings for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling*  $[50\% \times 95\% \times 15\% \times 1\% \times 60\% \times 191,580.35 \text{ journeys} \times 7.5 \text{ hours saved} \times \$412.45/\text{hour}] +$

*Food cost savings*  $[5\% \times 1\% \times 60\% \times 66,210,170 \text{ sheep} \times 12 \text{ hours saved} \times \$0.20/12\text{hour}/\text{sheep}]$   
 $= \mathbf{\$864,837.14}$  per annum

Standard SB11.1 reduces the maximum time off water from 48 hours to 12 hours for ewes in their third trimester and less than 4 months pregnant, with an associated minimum spelling time of 12 hours under standard SB11.2. Standard SB11.1 also reduces the maximum time off water from 48 hours to 36 hours for sheep over 4 months old for which 24 hours<sup>572</sup> of spelling applies. This would increase the time cost of transport. The incremental time cost will rely on the following assumptions being made:

- 3.5 hours of loading/unloading and changeover time will be incurred for 5% of the relevant proportion of journeys;

<sup>572</sup> SB11.2 requires 36 hours spelling after 48 hours of time of water, however the 'intent' for this species is that 24 hours of spelling be conducted for 36 hours of time off water.



- 25.5 hours of loading/unloading and idle vehicle time will be incurred for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 95% of journeys) for sheep over 4 months old;
- 13.5 hours of loading/unloading and idle vehicle time will be incurred for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 95% of journeys);
- 7.5 hours minimum voluntary spelling time (including 1.5 hours loading/unloading) will be incurred for 50% of the time where journeys do not have the ability for changeover;
- the proportion of sheep journeys between 12 hours and 48 hours (i.e. 30%<sup>573</sup>);
- the proportion of sheep journeys between 36 hours and 48 hours (i.e. 3%<sup>574</sup>);
- the proportion of sheep in their 3<sup>rd</sup> trimester of pregnancy (i.e. 1%<sup>575</sup>);
- the proportion of sheep in the third trimester that are less than 4 months pregnant (i.e. 40%<sup>576</sup>);
- the number of journeys per annum involving sheep transport is estimated to be 191,580.35<sup>577</sup>; and
- the cost of sheep and lamb transport is between \$357.43/hour and \$412.45/hour<sup>578</sup>.

Subsequently, the annual incremental cost for transporters is calculated in the following way:

*For Sheep in third trimester and less than 4 months pregnant:*

**Between:**

*Time cost for 5% of journeys where there are no idle trucks* [5% x 30% x 1% x 40% x 191,580.35 journeys x 3.5 hours added x \$357.43/hour] +

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling* [50% x 95% x 30% x 1% x 40% x 191,580.35 journeys x 13.5 hours added x \$357.43/hour] +

*Time cost for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling* [50% x 95% x 30% x 1% x 40% x 191,580.35 journeys x 7.5 hours added x \$357.43/hour] +

*Food cost* [30% x 1% x 40% x 66,210,170 sheep x 12 hours x \$0.20/12hour/sheep] =  
**\$1,024,729.85** per annum

**and**

<sup>573</sup> Proposed by AHA.

<sup>574</sup> Proposed by AHA.

<sup>575</sup> Proposed by AHA.

<sup>576</sup> Estimated as 20 days divided by the total days of the third trimester of 50 days.

<sup>577</sup> See Table A6.16 of Appendix 6 in this RIS for this estimate.

<sup>578</sup> See Table A6.15 of Appendix 6 in this RIS for this estimate.

*Time cost for 5% of journeys where there are no idle trucks* [5% x 30% x 1% x 40% x 191,580.35 journeys x 3.5 hours added x \$412.45/hour] +

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling* [50% x 95% x 30% x 1% x 40% x 191,580.35 journeys x 13.5 hours added x \$412.45/hour] +

*Time cost for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling* [50% x 95% x 30% x 1% x 40% x 191,580.35 journeys x 7.5 hours added x \$412.45/hour] +

*Food cost* [30% x 1% x 40% x 66,210,170 sheep x 12 hours x \$0.20/12hour/sheep] = **\$1,153,116.19** per annum

***For Sheep over 4 months old:***

#### **Between:**

*Time cost for 5% of journeys where there are no idle trucks* [5% x 3% x 191,580.35 journeys x 3.5 hours added x \$357.43/hour] +

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling* [50% x 95% x 3% x 191,580.35 journeys x 25.5 hours added x \$357.43/hour] +

*Time cost for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling* [50% x 95% x 3% x 191,580.35 journeys x 7.5 hours added x \$357.43/hour] +

*Food cost* [3% x 66,210,170 sheep x 24 hours x \$0.40/24hour/sheep] = **\$34,467,459.32** per annum

**and**

*Time cost for 5% of journeys where there are no idle trucks* [5% x 3% x 191,580.35 journeys x 3.5 hours added x \$412.45/hour] +

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling* [50% x 95% x 3% x 191,580.35 journeys x 25.5 hours added x \$412.45/hour] +

*Time cost for 95% of journeys where there are idle trucks with minimum of 6 hours voluntary spelling* [50% x 95% x 3% x 191,580.35 journeys x 7.5 hours added x \$412.45/hour] +

*Food cost* [3% x 66,210,170 sheep x 24 hours x \$0.40/24hr/sheep] = **\$39,479,586.35** per annum

***Loss of income from contaminated fleece and reduced price at sale yards due to poorly presented sheep***<sup>579</sup>

As with Option B = **\$419,547.36** per annum

The total incremental net cost of standard SB11.1 in conjunction with SB11.2 (including the loss of income from contaminated fleece and reduced price at sale yards due to poorly presented sheep) would be between **\$35,084,472.86** and **\$40,121,637.63** per annum. Over 5 years, and in present value terms (2008 dollars), this would equal between **\$163,952,520.66** and **\$187,491,590.63**.

<sup>579</sup> Advice provided by Wool Producers Australia.

*A7.3.41 Summary of annual and 5 year costs/cost savings under Option E by standard*

Table A7.4 summarises the annual and 5 year costs/cost savings under Option E. The annual incremental cost under this more expensive option (than Options B, B1, or D) will equal between **\$117,844,848** and **\$131,917,421** per annum or between **\$550,698,309** and **\$616,460,556** in present value terms (in 2008 dollars) over 5 years.

**Table A7.4 - Summary of annual and 5 year cost/cost savings of standards under Option E**

<b>Standard</b>	<b>Annual min</b>	<b>Annual max</b>	<b>Present value over 5 years min</b>	<b>Present value over 5 years max</b>
SA1.1	\$364,317	\$364,317	\$1,702,482	\$1,702,482
SA1.2	\$1,466,294	\$1,691,068	\$6,852,109	\$7,902,494
SA4.2	\$1,353,865	\$1,353,865	\$6,326,717	\$6,326,717
SA5.11	\$14,932,389	\$16,186,213	\$69,780,237	\$75,639,453
SA5.14	\$10,349,088	\$11,128,645	\$48,362,110	\$52,005,041
SB1.1&SB1.3	\$13,287	\$13,287	\$62,092	\$62,092
SB1.2	-\$11,972.78	-\$11,972.78	-\$55,949.75	-\$55,949.75
SB1.4	\$65,838	\$65,838	\$307,665	\$307,665
SB2.1&SB2.2	\$73,162	\$76,916	\$341,889.90	\$359,433.43
SB2.3	\$3,767	\$3,767	\$17,605.36	\$17,605
SB2.5	\$375	\$395	\$1,754.36	\$1,844.38
SB3.1&SB3.3	\$34,333.39	\$34,333.39	\$160,442.65	\$160,443
SB3.4	\$1,031	\$1,031	\$4,819	\$4,819
SB4.1&SB4.2	\$48,571,255	\$54,759,868	\$226,977,321	\$255,897,200
SB4.3	\$1,280,906	\$1,280,906	\$5,985,775	\$5,985,775
SB4.8(b)	\$325,300	\$348,655	\$1,520,152	\$1,629,293
SB5.1&SB5.2	\$30,062	\$30,600	\$140,482	\$142,994
SB5.3	\$50,280	\$50,280	\$234,963	\$234,963
SB6.1&SB6.5	\$38,576	\$38,576	\$180,269	\$180,269
SB7.1&SB7.2	\$3,769,151	\$4,349,345	\$17,613,540	\$20,324,831
SB8.1&SB8.3	\$44,690	\$44,690	\$208,840	\$208,840
SB8.2	\$23,982	\$23,982	\$112,071	\$112,071
SB8.4	\$847	\$847	\$3,958	\$3,958
SB8.8	\$8,398	\$8,398	\$39,242	\$39,242
SB8.10	\$6,042	\$6,042	\$28,234	\$28,234
SB8.11	\$84,875	\$84,875	\$396,628	\$396,628
SB9.1&SB9.3	\$1,210	\$1,404	\$5,653	\$6,560
SB9.2	-\$120,972	-\$140,385	-\$565,313	-\$656,032
SB11.1&SB11.2	\$35,084,473	\$40,121,638	\$163,952,521	\$187,491,591
<b>Total</b>	<b>\$117,844,848</b>	<b>\$131,917,421</b>	<b>\$550,698,309</b>	<b>\$616,460,556</b>

*A7.3.42 – Estimated change in retail meat prices under Option E*

Substituting the values for cattle standards SB4.1&4.2 in section A7.3.14 into Table A6.27, would make the incremental cost of Option E in relation to cattle equal to between \$56,980,243.51 and \$63,997,781.21 per annum (see Table A7.5). Substituting the values for sheep under section A7.3.42 for standards SB11.1&SB11.2 into Table A6.29, would make the incremental cost of Option E in relation to sheep equal to between \$45,718,629.55 and \$52,189,427 per annum (see Table A7.5). Substituting the value under section A7.3.38 for

standards SB9.1&9.3 and the value under section A7.3.39 for SB9.2 into Table A6.30 - would make the incremental cost savings of Option E in relation to pigs equal to between \$117,522 and \$136,382 per annum (see Table A7.5). The incremental cost of Option E in relation to poultry would remain identical to Option B (i.e. \$10,175,383). Finally, the increases in meat prices under Option E are summarised in Table A7.6.

**Table A7.5 – Increase in transport cost for major livestock species as a result of Option E**

Livestock Species <sup>580</sup>	Incremental annual cost <sup>581</sup>	Annual total cost of livestock transport <sup>582</sup>	Incremental annual cost as a % of annual total cost of livestock transport <sup>583</sup> (a1)
Cattle (+calves)	\$56,980,244 to \$63,997,781	\$319,402,450 to \$359,747,551	17.79% to 17.84%
Sheep	\$45,718,630 to \$52,189,427	\$139,195,492 to \$160,624,413	32.49% to 32.84%
Pigs	-\$117,522 to -\$136,382	\$21,956,712 to \$25,480,225	-0.54%
Poultry for meat	\$10,175,383	\$91,255,147	11.15%

**Table A7.6 - Proportion of transport cost borne by livestock producers and consumers of meat products as a result of Option E**

Meat product	Price sensitivity of supply <sup>584</sup> (b)	Price sensitivity of demand <sup>585</sup> (c)	% of cost borne by producers (d) = $1/(b)/\{1/(b) + 1/(c)\} \times -1$ x (e) <sup>586, 587</sup>	% of cost borne by consumers (f) <sup>588</sup> = $1 - (d)$	% increase in retail price of meat product (g1) = (f) x (a1)	% change in demand (h1) = (g1) x (c)
Beef	0.27	-1.2	71.2% <sup>589</sup>	28.8%	5.13% to 5.14%	-6.15% to -6.17%
Lamb	0.17	-1.4	69.7% <sup>590</sup>	30.3%	9.84% to 9.95%	-13.77% to -13.92%
Pork	1.5	-1.59 <sup>591</sup>	40% <sup>592</sup>	60.0%	-0.32%	0.51%

<sup>580</sup> Species does not include chicks, buffalo, horses, deer, camels, alpacas, goats, emus and ostriches.

<sup>581</sup> Cost estimates are rounded to the nearest dollar and taken from Tables A6.26 to A6.39 of Appendix 6 in this RIS and adjusted by the relevant specific costs under Option E.

<sup>582</sup> Cost estimates are rounded to the nearest dollar and taken from Table A6.3 of Appendix 6 in this RIS.

<sup>583</sup> If all costs are eventually passed on to consumers then it would be expected that the increase in price would roughly equate to the increase in annual cost as a percentage of total annual cost.

<sup>584</sup> Griffith, G., et al, (January 2001), *Previous Supply Elasticity Estimates for Australian Broadacre Agriculture*, Economic Research Report No. 6, NSW Agriculture.

<sup>585</sup> Griffith, G., et al, (January 2001), *Previous Demand Elasticity Estimates for Australian Meat Products*, Economic Research Report No. 5, NSW Agriculture.

<sup>586</sup> Retail price divided by production price.

<sup>587</sup> Formula taken from Bureau of Transport Economics, (1982).

<sup>588</sup> Percentages have been rounded to one decimal place.

<sup>589</sup> For whole beast farm gate price (\$799) and retail price of cattle (\$1,438) see Coles Myer Ltd, (August, 2005), Submission to DAFF.

<sup>590</sup> Saley price of lamb \$3.40/kg and retail price of lamb is \$12.16/kg (see ABARE (March quarter 2007), *Australian Commodities*, Vol.14).

<sup>591</sup> ABARE (August, 2004), *Economic assessment of pig meat imports on the Australian industry*, ABARE report 04.15

<sup>592</sup> For production cost \$2.39 per kg and retail cost \$3.80 per kg of pork - see ABARE (March quarter 2007), *Australian Commodities* Vol.14.

Meat product	Price sensitivity of supply <sup>584</sup> (b)	Price sensitivity of demand <sup>585</sup> (c)	% of cost borne by producers (d) = $1/(b)/\{1/(b) + 1/(c)\} \times -1$ $\times (e)^{586}\}^{587}$	% of cost borne by consumers (f) <sup>588</sup> = 1 - (d)	% increase in retail price of meat product (g1) = (f) x (a1)	% change in demand (h1) = (g1) x (c)
Chicken	0.2 <sup>593</sup>	-0.3	57.3% <sup>594</sup>	42.7%	4.76%	-1.43%

#### A7.4 Costing of Option E1

The costs of general standards imposed under Option E are identical to those under Option B, B1 and E. However, unlike Option E, Option E1 increases the minimum voluntary spelling period to 12 hours before a water deprivation time credit may be earned. Increasing the minimum voluntary spell time from 4 to 12 hours under Option E1 will add an additional 8 hours to the third calculation (refer to section A6.1 in Appendix 6 of this RIS) This would have an impact on specific standards and is discussed in the next sections.

##### A7.4.1 Net incremental cost of alpaca standard SB1.1 in conjunction with SB1.3 with minimum voluntary spelling of 12 hours

***For wethers over 12 months old (where water is not provided on the vehicle):***

*Time cost for 5% of journeys where there are no idle trucks* [5% x 5% x 20% x 20% x 650.4 journeys x 3.5hrs x \$250/hour] +

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling* [50% x 95% x 5% x 20% x 20% x 650.4 journeys x 25.5hrs x \$250/hour] +

*Time cost for 95% of journeys where there are idle trucks with minimum of 12 hours voluntary spelling* [50% x 95% x 5% x 20% x 20% x 650.4 journeys x 13.5hrs x \$250/hour] = **\$6,081.24** per annum

***For non-pregnant females and males over 12 months old (where water is not provided on the vehicle):***

*Time cost for 5% of journeys where there are no idle trucks* [5% x 10% x 20% x 20% x 650.4 journeys x 3.5hrs x \$250/hour] +

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling<sup>595</sup>* [95% x 10% x 20% x 20% x 650.4 journeys x 13.5hrs x \$250/hour] = **\$8,455.20** per annum

***For alpacas – 6 to 12 months old and pregnant females up to 7.5 months pregnant (1<sup>st</sup> and 2<sup>nd</sup> trimester) (where water is not provided on the vehicle):***

As with Option B = **\$298.10** per annum

***For pregnant alpacas more than 7.5 months pregnant (3<sup>rd</sup> trimester) (where water is not provided on the vehicle):***

<sup>593</sup> The price elasticity of supply for chicken meat is based on a UK study by Harling and Thompson (1985) (cited in Alston G.M and Scobie G. M) and it is assumed that chicken meat production systems in Australia and the UK are similar.

<sup>594</sup> Wholesale price of \$4.24/ kg is based on advice from Dr Vivien Kite from RIRDC and retail price of chicken of \$4.80/kg is based on current observation of local retail outlets (shops and outlets).

<sup>595</sup> In this case there is no time difference between voluntary spelling and the time involved if trucks are idle, hence it is assumed that voluntary spelling would be redundant.

As with Option B = **\$365.85** per annum

*For lactating alpacas with crias up to 6 months old (where water is not provided on the vehicle):*

As with Option B = **\$975.60** per annum

Therefore standard SB1.1 in conjunction with SB1.3 would impose an incremental cost of **\$16,067.59** per annum across the aforementioned classes of alpacas. Over 5 years and in present value terms (2008 dollars), this would be equal to **\$75,085.12**.

#### *A7.4.2 Incremental cost savings of alpaca standard SB1.2 for transporters with minimum voluntary spelling of 12 hours*

*For wethers over 12 months old:*

*Cost savings for 5% of journeys where there are no idle trucks*  $[5\% \times 5\% \times 20\% \times 20\% \times 650.4 \text{ journeys} \times 3.5\text{hrs} \times \$250/\text{hour}] +$

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 5\% \times 20\% \times 20\% \times 650.4 \text{ journeys} \times 25.5\text{hrs} \times \$250/\text{hour}] +$

*Cost savings for 95% of journeys where there are idle trucks with minimum of 12 hours voluntary spelling*  $[50\% \times 95\% \times 5\% \times 20\% \times 20\% \times 650.4 \text{ journeys} \times 13.5\text{hours} \times \$250/\text{hour}] =$   
**\$6,081.24** per annum

*For non-pregnant females and males over 12 months old:*

*Cost savings for 5% of journeys where there are no idle trucks*  $[5\% \times 10\% \times 20\% \times 20\% \times 650.4 \text{ journeys} \times 3.5\text{hours} \times \$250/\text{hour}] +$

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling*<sup>596</sup>  $[95\% \times 10\% \times 20\% \times 20\% \times 650.4 \text{ journeys} \times 13.5\text{hours} \times \$250/\text{hour}] =$   
**\$8,455.20** per annum

*For alpacas – 6 to 12 months old:*

As with Option B = **\$216.80** per annum

The incremental cost saving of standard SB1.2 for all relevant classes of alpaca would therefore be equal to **\$14,753.24** per annum. Over 5 years, and in present value terms (2008 dollars), this would equal **\$68,943.06**.

#### *A7.4.3 Incremental cost of alpaca standard SB1.4 for livestock owners*

As with option B = **\$65,837.77** per annum

Over 5 years, and in present value terms (2008 dollars), this would equal **\$307,665.12**.

#### *A7.4.4 Incremental unquantifiable one-off cost of alpaca standard SB1.7 for livestock owners*

As with Option B

<sup>596</sup> In this case there is no time difference between voluntary spelling and the time involved if trucks are idle, hence it is assumed that voluntary spelling would be redundant.

*A7.4.5 Incremental unquantifiable one-off cost of alpaca standard SB1.5 for livestock transporters*

As with Option B

*A7.4.6 Incremental cost of buffalo standard SB2.1 in conjunction with SB2.2 for livestock transporters with minimum voluntary spelling of 12 hours*

Under Option E1 the maximum time off water would be reduced to half the amount as compared to the base case (i.e. from 48 hours to 24 hours). The assumptions in relation to the estimation of the incremental annual cost would be equivalent to under Option B (see section A6.16), except that the relevant journeys affected would be those between 24 hours and 48 hours (i.e. 40%<sup>597</sup> of journeys). The associated spelling period would be 24 hours (under the proposed standards under SB2.2) and the voluntary spell required for a time-off-water credit would be 6 hours (plus 1.5 hours for loading and unloading).

**Between:**

*Time cost for 5% of journeys where there are no idle trucks* [5% x 40% x 80% x 68.8 journeys x 3.5 hours added x \$327.40/hour] +

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*<sup>598</sup> [95% x 40% x 80% x 68.8 journeys x 13.5 hours added x \$327.40/hour] = **\$93,704.50** per annum

**and**

*Time cost for 5% of journeys where there are no idle trucks* [5% x 40% x 80% x 68.8 journeys x 3.5 hours added x \$344.20/hour] +

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling* [95% x 40% x 80% x 68.8 journeys x 13.5 hours added x \$344.20/hour] = **\$98,512.79** per annum

Over 5 years, and in present value terms (2008 dollars), this would equal between **\$437,888.55** and **\$460,358.09**.

*A7.4.7 Incremental cost of buffalo standard SB2.3 for livestock owners*

As with Option B = **\$3,767.40** per annum

Over 5 years, and in present value terms (2008 dollars), this would equal **\$17,605.36**.

*A7.4.8 Incremental unquantifiable cost of buffalo standard SB2.4 for transporters*

As with Option B

*A7.4.9 Incremental net cost of buffalo standard SB2.6 for transporters*

As with Option B = between **\$375.42** and **\$394.68** per annum

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<sup>597</sup> Proposed by AHA.

<sup>598</sup> In this case there is no time difference between voluntary spelling and the time involved if trucks are idle, hence it is assumed that voluntary spelling would be redundant.

Over 5 years, and in present value terms (2008 dollars), this would equal between **\$1,754.36** and **\$1,844.38**.

*A7.4.10 Incremental cost of camel standard SB3.1 in conjunction with SB3.3 for livestock transporters with minimum voluntary spelling of 12 hours*

*Time cost for 5% of journeys where there are no idle trucks*  $[5\% \times 5\% \times 32.5 \text{ journeys} \times 3.5 \text{ hours added} \times 2 \times \$260.20/\text{hour}]^{599} + [5\% \times 30\% \times 32.5 \text{ journeys} \times 3.5 \text{ hours added} \times \$260.20/\text{hour}]^{600} +$

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*<sup>601</sup>  $+ [95\% \times 5\% \times 32.5 \text{ journeys} \times 13.5 \text{ hours added} \times 2 \times \$260.20/\text{hour}] + [95\% \times 5\% \times 30\% \times 32.5 \text{ journeys} \times 13.5 \text{ hours added} \times \$260.20/\text{hour}] = \mathbf{\$43,973.80}$  per annum

Over 5 years, and in present value terms (2008 dollars), this would equal **\$205,493.05**.

*A7.4.11 Incremental cost of camel standard SB3.4 for livestock owners*

As with Option B = **\$1,031.28** per annum

Over 5 years, and in present value terms (2008 dollars), this would equal only **\$4,819.28**.

*A7.4.12 Incremental unquantifiable cost of camel standard SB3.6 for transporters*

As with Option B

*A7.4.13 Incremental unquantifiable cost of camel standard SB3.3 for transporters*

As with Option B

*A7.4.14 Incremental net cost of cattle standard SB4.1 in conjunction with SB4.2 for transporters - with minimum voluntary spelling of 12 hours*

Standard SB4.1 under Option E1, increases water deprivation time as compared to the 'base case' for the following classes of cattle species:

- calves aged 5 to 30 days travelling without their mothers from 10 hours to 12 hours before a mandatory minimum spell of 12 hours is operational under standard SB4.2 and it is assumed that the proportion of calves travelling between 10 hours and 12 hours is 7% (as with option B);
- cattle in their third trimester of pregnancy and more than 8 months pregnant from 8 hours to 24 hours before a mandatory minimum spell of 12 hours is operational under standard SB4.2.

*For calves 5 to 30 days travelling without their mothers:*

<sup>599</sup> Proportion of camels transported up to 3 days who would have to be spelled twice.

<sup>600</sup> Proportion of camels transported up to 2 days who would have to be spelled once.

<sup>601</sup> In this case there is no time difference between voluntary spelling and the time involved if trucks are idle, hence it is assumed that voluntary spelling would be redundant.



**Between:**

*Cost savings for 5% of journeys where there are no idle trucks*  $[5\% \times 5\% \times 7\% \times 806.1 \text{ journeys} \times 3.5 \text{ hours saved} \times \$315.20/\text{hour}]^{602} + [5\% \times 7\% \times 4,083.6 \text{ journeys} \times 3.5 \text{ hours saved} \times \$315.20/\text{hour}]^{603} +$

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling*<sup>604</sup>  $[95\% \times 5\% \times 7\% \times 806.1 \text{ journeys} \times 13.5 \text{ hours saved} \times \$315.20/\text{hour}] + [95\% \times 5\% \times 7\% \times 4,083.6 \text{ journeys} \times 13.5 \text{ hours saved} \times \$315.20/\text{hour}] = \text{\$1,182,867.92 per annum.}$

**and**

*Cost savings for 5% of journeys where there are no idle trucks*  $[5\% \times 5\% \times 7\% \times 806.1 \text{ journeys} \times 3.5 \text{ hours saved} \times \$336.80/\text{hour}] + [5\% \times 7\% \times 4,083.6 \text{ journeys} \times 3.5 \text{ hours saved} \times \$336.80/\text{hour}] +$

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling*  $[95\% \times 5\% \times 7\% \times 806.1 \text{ journeys} \times 13.5 \text{ hours saved} \times \$336.80/\text{hour}] + [95\% \times 5\% \times 7\% \times 4,083.6 \text{ journeys} \times 13.5 \text{ hours saved} \times \$336.80/\text{hour}] = \text{\$1,263,927.40 per annum.}$

***For cattle in third trimester of pregnancy and more than 8 months pregnant:***

**Between:**

*Cost savings for 5% of journeys where there are no idle trucks*  $[5\% \times 36.84\% \times 2\% \times 50\% \times 423,274.95 \text{ journeys} \times 3.5 \text{ hours saved} \times \$356.65/\text{hour}] +$

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling*<sup>605</sup>  $[95\% \times 36.84\% \times 2\% \times 50\% \times 423,274.95 \text{ journeys} \times 13.5 \text{ hours saved} \times \$356.65/\text{hour}] = \text{\$7,229,824.73 per annum}$

**and**

*Cost savings for 5% of journeys where there are no idle trucks*  $[5\% \times 36.84\% \times 2\% \times 50\% \times 423,274.95 \text{ journeys} \times 3.5 \text{ hours saved} \times \$401.70/\text{hour}] +$

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling*  $[95\% \times 36.84\% \times 2\% \times 50\% \times 423,274.95 \text{ journeys} \times 13.5 \text{ hours saved} \times \$401.70/\text{hour}] = \text{\$8,143,055.08 per annum}$

Standard SB4.1 under Option E1 reduces the maximum water deprivation time as compared to the 'base case' for the following classes of cattle species:

- for cattle in their third trimester of pregnancy and less than 8 months pregnant from 48 hours to 24 hours where a mandatory spell of 12 hours becomes mandatory under SB4.2, but with a minimum voluntary spell of 12 hours; and

<sup>602</sup> Representing cost savings to non-bobby calf transport.

<sup>603</sup> Representing cost savings to bobby calf transport.

<sup>604</sup> In this case there is no time difference between voluntary spelling and the time involved if trucks are idle, therefore it is assumed that voluntary spelling would be redundant.

<sup>605</sup> In this case there is no time difference between voluntary spelling and the time involved if trucks are idle, hence it is assumed that voluntary spelling would be redundant.

- for cattle over 6 months from 48 hours to 36 hours, where a mandatory spell of 24<sup>606</sup> hours becomes mandatory, and a minimum voluntary spell of 12 hours.

*For cattle in third trimester of pregnancy and less than 8 months pregnant:*

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<sup>606</sup> SB4.2 requires 36 hours spelling after 48 hours of time of water, however the ‘intent’ for this species is that 24 hours of spelling be conducted for 36 hours of time off water.

**Between:**

*Time cost for 5% of journeys where there are no idle trucks* [5% x 63.16% x 2% x 50% x 423,274.95 journeys x 3.5 hours added x \$356.65/hour] +

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*<sup>607</sup> [95% x 63.16% x 2% x 50% x 423,274.95 journeys x 13.5 hours added x \$356.65/hour] =  
**\$12,395,106.68** per annum

**and**

*Time cost for 5% of journeys where there are no idle trucks* [5% x 63.16% x 2% x 50% x 423,274.95 journeys x 3.5 hours added x \$401.70/hour] +

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling* [95% x 63.16% x 2% x 50% x 423,274.95 journeys x 13.5 hours added x \$401.70/hour] =  
**\$13,960,786.08** per annum

***For cattle over 6 months old:***

The following assumptions are made in order to estimate the incremental cost for this category of cattle:

- the proportion of cattle over 6 months old (i.e. 95%<sup>608</sup>);
- the number of journeys involving cattle per annum (i.e. 423,274.95<sup>609</sup>);
- the proportion of journeys greater than 36 hours (i.e. 2%<sup>610</sup>);
- 3.5 hours of loading/unloading and changeover time will be incurred for the relevant proportion of journeys (i.e. 5%);
- 25.5 hours of loading/unloading and idle vehicle time will be incurred for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 95% of journeys) for journeys between 36 hours and 48 hours;
- 13.5 hours minimum voluntary spelling time (including 1.5 hours loading/unloading) will be incurred for 50% of the time where journeys do not have the ability for changeover; and
- the cost of cattle transport is between \$356.45/hr and \$401.70/hr.<sup>611</sup>

Therefore, the incremental annual cost would be calculated in the following way:

<sup>607</sup> In this case there is no time difference between voluntary spelling and the time involved if trucks are idle, hence it is assumed that voluntary spelling would be redundant.

<sup>608</sup> Proposed by AHA.

<sup>609</sup> See Table A6.16 of Appendix 6 in this RIS for estimate.

<sup>610</sup> Proposed by AHA.

<sup>611</sup> See Table A6.15 of Appendix 6 in this RIS for this estimate.

**Between:**

*Time cost for 5% of journeys between where there are no idle trucks [5% x 2% x 95% x 423,274.95 journeys x 3.5 hours added x \$356.65/hour] +*

*Time cost for 95% of journeys between where there are idle trucks and no voluntary spelling [50% x 95% x 2% x 95% x 423,274.95 journeys x 25.5 hours added x \$356.65/hour] +*

*Time cost for 95% of journeys between where there are idle trucks with minimum of 12 hours voluntary spelling [50% x 95% x 2% x 95% x 423,274.95 journeys x 13.5 hours added x \$356.65/hour] = **\$53,636,447.18** per annum.*

**and**

*Time cost for 5% of journeys between where there are no idle trucks [5% x 2% x 95% x 423,274.95 journeys x 3.5 hours added x \$401.70/hour] +*

*Time cost for 95% of journeys between where there are idle trucks and no voluntary spelling [50% x 95% x 2% x 95% x 423,274.95 journeys x 25.5 hours added x \$401.70/hour] +*

*Time cost for 95% of journeys between where there are idle trucks with minimum of 12 hours voluntary spelling [50% x 95% x 2% x 95% x 423,274.95 journeys x 13.5 hours added x \$401.70/hour] = **\$60,411,498.20** per annum.*

The total annual net cost of standard SB4.1 in conjunction with SB4.2 would be between **\$57,618,861.21** and **\$64,965,301.80**. Over 5 years, and in present value terms (2008 dollars), this would equal between **\$269,257,502.34** and **\$303,588,001.10**.

*A7.4.15 Incremental cost of cattle standard SB4.3 for livestock owners*

As with Option B = **\$1,280,905.91** per annum

Over 5 years, and in present value terms (2008 dollars), this would equal **\$5,985,774.76**.

*A7.4.16 Incremental unquantifiable cost of cattle standard SB4.4 for transporters*

As with Option B

*A7.4.17 Incremental unquantifiable cost savings of cattle standard SB4.5(iv) for owners/transporters*

As with Option B

*A7.4.18 Incremental unquantifiable cost of cattle standard SB4.5(v) for transporters*

As with Option B

*A7.4.19 Incremental cost of cattle standard SB4.8(b) for transporters*

*General Incremental cost as with Option B = Between **\$507,472** and **\$542,238** per annum*

*Incremental cost in terms of SA1.1 as with Option B = Between **\$561.60** and **\$1,663.20** per annum*

*Incremental cost in terms of SA5.11(ii) as with Option B = Between **\$16,232.80** and **\$17,345.20** per annum*

*Incremental cost in terms of SA5.11(iii) as with Option B = Between **\$63.04** and **\$67.36** per annum*

*Incremental cost in terms of SB4.1 in conjunction with SB4.2*

**Between:**

*Cost saving increase for 5% of journeys where there are no idle trucks*  $[5\% \times 5\% \times 7\% \times 312 \text{ journeys} \times 3.5 \text{ hours saved} \times \$315.20/\text{hr}]^{612} + [5\% \times 7\% \times 924 \text{ journeys} \times 3.5 \text{ hours saved} \times \$315.20/\text{hr}]^{613} +$

*Cost saving increase for 95% of journeys where there are idle trucks and no voluntary spelling*  $[95\% \times 5\% \times 7\% \times 312 \text{ journeys} \times 13.5 \text{ hours saved} \times \$315.20/\text{hr}] + [95\% \times 5\% \times 7\% \times 924 \text{ journeys} \times 13.5 \text{ hours saved} \times \$315.20/\text{hr}] = \text{\$269,507.35 per annum.}$

**and**

*Cost saving increase for 5% of journeys where there are no idle trucks*  $[5\% \times 5\% \times 7\% \times 312 \text{ journeys} \times 3.5 \text{ hours saved} \times \$336.80/\text{hr}] + [5\% \times 7\% \times 924 \text{ journeys} \times 3.5 \text{ hours saved} \times \$336.80/\text{hr}] +$

*Cost saving increase 95% of journeys where there are idle trucks and no voluntary spelling*  $[95\% \times 5\% \times 7\% \times 312 \text{ journeys} \times 13.5 \text{ hours saved} \times \$336.80/\text{hr}] + [95\% \times 5\% \times 7\% \times 924 \text{ journeys} \times 13.5 \text{ hours saved} \times \$336.80/\text{hr}] = \text{\$287,976.12 per annum.}$

Finally, in combining all the costs/cost savings in the aforementioned subsections, the incremental net cost of standard SB4.8(b) would be expected to be between **\\$266,215.59** and **\\$285,521.91** per annum. Over 5 years, and in present value terms (2008 dollars), this would equal between **\\$1,244,046.55** and **\\$1,334,266.48**.

#### *A7.4.20 Incremental unquantifiable cost of cattle standard SB4.7 for transporters*

As with Option B

*A7.4.21 Incremental net cost of deer standard SB5.1 in conjunction with SB5.2 for transporters involving an increase in maximum time off water for fawns/calves less than 6 months and a reduction of maximum time off water for deer from 48 hours to 36 hours with minimum voluntary spelling of 12 hours*

Under Option E1, standard SB5.1 increases the maximum time of water for fawns/calves under 6 months old from 24 hours under the ‘base case’ to 28 hours.

*For fawns/calves less than 6 months:*

**Between:**

*Cost savings for 5% of journeys where there are no idle trucks*  $[5\% \times 5\% \times 10\% \times 424.4 \text{ journeys} \times 3.5 \text{ hours saved} \times \$302/\text{hour}] +$

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling*<sup>614</sup>  $[95\% \times 5\% \times 10\% \times 424.4 \text{ journeys} \times 13.5 \text{ hours saved} \times \$302/\text{hour}] = \text{\$8,330.97 per annum}$

**and**

<sup>612</sup> Representing cost savings to non-bobby calf transport

<sup>613</sup> Representing cost savings to bobby calf transport

<sup>614</sup> In this case there is no time difference between voluntary spelling and the time involved if trucks are idle, therefore it is assumed that voluntary spelling would be redundant.

*Cost savings for 5% of journeys where there are no idle trucks*  $[5\% \times 5\% \times 10\% \times 424.4 \text{ journeys} \times 3.5 \text{ hours saved} \times \$307.40/\text{hour}] +$

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling*  $[95\% \times 5\% \times 10\% \times 424.4 \text{ journeys} \times 13.5 \text{ hours saved} \times \$307.40/\text{hour}] = \text{\$8,479.94 per annum}$

Under Option E1, standard SB5.1 reduces the maximum time of water for deer over 6 months old from 48 hours under the ‘base case’ to 36 hours where a mandatory spell of 24 hours<sup>615</sup> is required. The incremental time cost estimate would rely on the following set of assumptions:

- 3.5 hours of loading/unloading and changeover time will be incurred for 5% of the relevant proportion of journeys;
- 25.5 hours of loading/unloading and idle vehicle time will be incurred for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 95% of journeys) for deer over 6 months;
- 13.5 hours minimum voluntary spelling time in total (including 1.5 hours loading/unloading) will be incurred for 20% of the time where journeys do not have the ability for changeover;
- the proportion of deer older than 6 months (i.e. 90%<sup>616</sup>);
- the proportion of deer journeys greater than 36 hours (i.e. 2%<sup>617</sup>);
- the number of journeys per annum involving deer transport is estimated to be 424.4<sup>618</sup>; and
- the cost of deer transport is between \$302/hr and \$307.40/hour.<sup>619</sup>

Therefore, the additional annual cost would be calculated in the following way:

*For deer over 6 months:*

#### **Between:**

*Time cost for 5% of journeys where there are no idle trucks*  $[5\% \times 2\% \times 90\% \times 424.4 \text{ journeys} \times 3.5 \text{ hours added} \times \$302/\text{hour}] +$

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 2\% \times 90\% \times 424.4 \text{ journeys} \times 25.5 \text{ hours added} \times \$302/\text{hour}] +$

*Time cost for 95% of journeys where there are idle trucks with minimum of 12 hours voluntary spelling*  $[50\% \times 95\% \times 2\% \times 90\% \times 424.4 \text{ journeys} \times 13.5 \text{ hours added} \times \$302/\text{hour}] = \text{\$43,141.62 per annum}$

<sup>615</sup> SB5.2 requires 36 hours spelling after 48 hours of time of water, however the ‘intent’ for this species is that 24 hours of spelling be conducted for 36 hours of time off water.

<sup>616</sup> Proposed by AHA.

<sup>617</sup> Proposed by AHA.

<sup>618</sup> See Table A6.16 of Appendix 6 in this RIS for this estimate.

<sup>619</sup> See Table A6.15 of Appendix 6 in this RIS for this estimate.

**and**

*Time cost for 5% of journeys where there are no idle trucks* [5% x 2% x 90% x 424.4 journeys x 3.5 hours added x \$307.40/hour] +

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling* [50% x 95% x 2% x 90% x 424.4 journeys x 25.5 hours added x \$307.40/hour] +

*Time cost for 95% of journeys where there are idle trucks with minimum of 12 hours voluntary spelling* [50% x 95% x 2% x 90% x 424.4 journeys x 13.5 hours added x \$307.40/hour] =  
**\$43,905.81** per annum

Therefore the incremental net cost of standard SB5.1 in conjunction with standard SB5.2 across both classes of deer would equal between **\$34,810.65** and **\$35,425.87** per annum. Over 5 years, and in present value terms (2008 dollars), this would equal between **\$162,672.91** and **\$165,547.89**.

#### *A7.4.22 Incremental cost of deer standard SB5.3 for livestock owners*

As with Option B = **\$50,280.19** per annum

Over 5 years, and in present value terms (2008 dollars), this would equal **\$234,963.33**.

#### *A7.4.23 Incremental unquantifiable cost of deer standard SB5.4 for transporters*

As with Option B

#### *A7.4.25 Incremental cost of ratite standard SB6.1 in conjunction with SB6.5 for transporters with minimum voluntary spelling of 12 hours*

##### ***For adult emus:***

*Time cost for 5% of journeys where there are no idle trucks* [5% x 5% x 95% x 111.1 journeys x 3.5 hours added x \$250/hour] +

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling<sup>620</sup>* [95% x 5% x 95% x 111.1 journeys x 13.5 hours added x \$250/hour] = **\$17,151.06** per annum

##### ***For adult ostriches:***

*Time cost for 5% of journeys where there are no idle trucks* [5% x 5% x 95% x 207.3 journeys x 3.5 hours added x \$250/hour] +

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling* [95% x 5% x 95% x 207.3 journeys x 13.5 hours added x \$250/hour] = **\$32,001.94** per annum

##### ***For emu chicks:***

As with Option B = **\$69.44** per annum

##### ***For ostrich chicks:***

As with Option B = **\$129.56** per annum

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<sup>620</sup> In this case there is no time difference between voluntary spelling and the time involved if trucks are idle, therefore it is assumed that voluntary spelling would be redundant.

The total combined annual cost for adults and chicks, of standard SB6.1 in conjunction with SB6.5, would be **\$17,220.50** per annum for emu transporters and **\$32,131.50** per annum for ostrich transporters. Over 5 years, and in present value terms (2008 dollars), this would equal **\$80,472.76** for emu transporters and **\$150,153.04** for ostrich transporters.

*A7.4.26 Incremental unquantifiable cost of ratite standards SB6.2; SB6.3; SB6.5; SB6.6<sup>621</sup> and SB6.7<sup>622</sup>*

As with Option B

*A7.4.27 Incremental net cost of goat standard SB7.1 in conjunction with SB7.2 for transporters with minimum voluntary spelling of 12 hours*

Standard SB7.1 increases the maximum time off water of from 8 hours to 12 hours for goats over 6 months in their third trimester and over 4 months pregnant (under which a minimum mandatory spell of 12 hours comes under operation under standard SB7.2) and from 24 hours to 28 hours for kids less than 6 months of age (under which a minimum mandatory spell of 12 hours comes under operation under standard SB7.2). The incremental cost savings would rely on the following assumptions:

- 3.5 hours of loading/unloading and changeover time will be saved for 5% of the relevant proportion of journeys;
- 13.5 hours of loading/unloading and idle vehicle time will be saved for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 95% of journeys);
- there is no time difference between voluntary spelling and the time involved if trucks are idle, therefore it is assumed that voluntary spelling would be redundant;
- the proportion of pregnant goats known to be in their third trimester (i.e. 2%<sup>623</sup>);
- the proportion of the 2% of goats in their third trimester and over 4 months pregnant (i.e. 60%<sup>624</sup>);
- the proportion of kids less than 6 months (i.e. 10%<sup>625</sup>);
- the proportion of journeys between 8 and 12 hours (i.e. 20%<sup>626</sup>);
- the proportion of journeys between 24 and 28 hours (i.e. 35%<sup>627</sup>);
- the number of journeys per annum involving goat transport is estimated to be 4,181.08<sup>628</sup>; and

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<sup>621</sup> Affects both livestock transporters and owners.

<sup>622</sup> Affects livestock owners only.

<sup>623</sup> Proposed by AHA.

<sup>624</sup> Estimated as 30 days divided by the total trimester of 50 days.

<sup>625</sup> Proposed by AHA.

<sup>626</sup> Proposed by AHA.

<sup>627</sup> Proposed by AHA.

<sup>628</sup> See Table A6.16 of Appendix 6 in this RIS for this estimate.



- the cost of goat transport is between \$357.43 and \$412.45/hour.<sup>629</sup>

Therefore, the additional annual time cost saving for goat transporters would be calculated in the following way:

*For goats in their third trimester and more than 4 months pregnant:*

**Between:**

*Cost savings for 5% of journeys where there are no idle trucks* [5% x 20% x 2% x 60% x 4,181.08 journeys x 3.5 hours saved x \$357.43/hour] +

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling* [95% x 20% x 2% x 60% x 4,181.08 journeys x 13.5 hours saved x \$357.43/hour] = **\$46,626.63** per annum

**and**

*Cost savings for 5% of journeys where there are no idle trucks* [5% x 20% x 2% x 60% x 4,181.08 journeys x 3.5 hours saved x \$412.45/hour] +

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling* [95% x 20% x 2% x 60% x 4,181.08 journeys x 13.5 hours saved x \$412.45/hour] = **\$53,803.98** per annum

*For kids under 6 months:*

**Between:**

*Cost savings for 5% of journeys where there are no idle trucks* [5% x 35% x 10% x 4,181.08 journeys x 3.5 hours saved x \$357.43/hour] +

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling* [95% x 35% x 10% x 4,181.08 journeys x 13.5 hours saved x \$357.43/hour] = **\$679,971.76** per annum

**and**

*Cost savings for 5% of journeys where there are no idle trucks* [5% x 35% x 10% x 4,181.08 journeys x 3.5 hours saved x \$412.45/hour] +

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling* [95% x 35% x 10% x 4,181.08 journeys x 13.5 hours saved x \$412.45/hour] = **\$784,641.33** per annum

Standard SB7.1 reduces the maximum time off water of from 48 hours to 12 hours for goats in their third trimester and less than 4 months pregnant (under which a minimum mandatory spell of 12 hours comes under operation under standard SB7.2). This standard also reduces the maximum time off water for goats over 6 months old from 48 hours in the 'base case' to 36

<sup>629</sup> See Table A6.15 of Appendix 6 in this RIS for this estimate.

hours under Option E for which 24 hours<sup>630</sup> of spelling applies. The incremental cost would rely on the following assumptions:

- 3.5 hours of loading/unloading and changeover time will be incurred for 5% of the relevant proportion of journeys;
- 25.5 hours of loading/unloading and idle vehicle time will be saved for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 95% of journeys) for goats over 6 months;
- 13.5 hours of loading/unloading and idle vehicle time will be incurred for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 95% of journeys) for goats in their third trimester;
- there is no time difference between voluntary spelling and the time involved if trucks are idle for 12 hours, therefore it is assumed that voluntary spelling would be redundant in this instance;
- the proportion of goats older than 6 months (i.e. 90%<sup>631</sup>);
- the proportion of journeys between 36 and 48 hours (i.e. 20%<sup>632</sup>);
- the proportion of pregnant goats known to be in their third trimester (i.e. 2%<sup>633</sup>);
- the proportion of the 2% of goats in their third trimester and less than 4 months pregnant (i.e. 40%<sup>634</sup>);
- the proportion of journeys between 12 and 48 hours (i.e. 60%<sup>635</sup>);
- the number of journeys per annum involving goat transport is estimated to be 4,181.08<sup>636</sup>; and
- the cost of goat transport is between \$357.43 and \$412.45/hour.<sup>637</sup>

Therefore, the additional annual time cost saving for goat transporters would be calculated in the following way:

*For goats in their third trimester and less than 4 months pregnant:*

**Between:**

*Time cost for 5% of journeys where there are no idle trucks [5% x 40% x 2% x 60% x 4,181.08 journeys x 3.5 hours added x \$357.43/hour] +*

<sup>630</sup> SB7.2 requires 36 hours spelling after 48 hours of time of water, however the 'intent' for this species is that 24 hours of spelling be conducted for 36 hours of time off water.

<sup>631</sup> Proposed by AHA.

<sup>632</sup> Proposed by AHA.

<sup>633</sup> Proposed by AHA.

<sup>634</sup> Estimated as 20 days divided by the total trimester of 50 days.

<sup>635</sup> Proposed by AHA.

<sup>636</sup> See Table A6.16 of Appendix 6 in this RIS for this estimate.

<sup>637</sup> See Table A6.15 of Appendix 6 in this RIS for this estimate.

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling* [95% x 40% x 2% x 60% x 4,181.08 journeys x 13.5 hours added x \$357.43/hour] = **\$93,253.27** per annum

**and**

*Time cost for 5% of journeys where there are no idle trucks* [5% x 40% x 2% x 60% x 4,181.08 journeys x 3.5 hours added x \$412.45/hour] +

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling* [95% x 40% x 2% x 60% x 4,181.08 journeys x 13.5 hours added x \$412.45/hour] = **\$107,607.95** per annum

***For goats over 6 months:***

**Between:**

*Time cost for 5% of journeys where there are no idle trucks* [5% x 20% x 90% x 4,181.08 journeys x 3.5 hours added x \$357.43/hour] +

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling* [50% x 95% x 20% x 90% x 4,181.08 journeys x 25.5 hours added x \$357.43/hour] +

*Time cost for 95% of journeys where there are idle trucks with minimum of 12 hours voluntary spelling* [50% x 95% x 20% x 90% x 4,181.08 journeys x 13.5 hours added x \$357.43/hour] = **\$5,030,296.57** per annum

**and**

*Time cost for 5% of journeys where there are no idle trucks* [5% x 20% x 90% x 4,181.08 journeys x 3.5 hours added x \$412.45/hour] +

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling* [50% x 95% x 20% x 90% x 4,181.08 journeys x 25.5 hours added x \$412.45/hour] +

*Time cost for 95% of journeys where there are idle trucks with minimum of 12 hours voluntary spelling* [50% x 95% x 20% x 90% x 4,181.08 journeys x 13.5 hours added x \$412.45/hour] = **\$5,804,621.38** per annum

Subsequently, the total incremental net cost of standard SB7.1 in conjunction with SB7.2, for goats (summing across the cost savings and costs of all the aforementioned classes) would be between **\$4,396,951.44** and **\$5,073,784.02** per annum. Over 5 years, and in present value terms (2008 dollars), this would equal between **\$20,547,302.37** and **\$23,710,194.62**.

***A7.4.28 Incremental net cost of horse standard SB8.1 in conjunction with SB8.3 for transporters with minimum voluntary spelling of 12 hours***

***Foals under 6 months old:***

*Cost savings for 5% of journeys where there are no idle trucks* [5% x 1% x 10% x 116,298 journeys x 3.5 hours saved x \$250/hour] +

*Cost savings for 95% of journeys where there are idle trucks and no voluntary spelling* [95% x 1% x 10% x 116,298 journeys x 13.5 hours saved x \$250/hour] = **\$377,968.50** per annum

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***Mares in third trimester of pregnancy:***

*Time cost for 5% of journeys where there are no idle trucks*  $[5\% \times 10\% \times 1\% \times 116,298 \text{ journeys} \times 3.5 \text{ hours added} \times \$250/\text{hour}] +$

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*  $[95\% \times 10\% \times 1\% \times 116,298 \text{ journeys} \times 13.5 \text{ hours added} \times \$250/\text{hour}] = \text{\$377,968.50 per annum}$

***Horses over 6 months old:***

*Time cost for 5% of journeys where there are no idle trucks*  $[5\% \times 0.01\% \times 99\% \times 116,298 \text{ journeys} \times 3.5 \text{ hours added} \times \$250/\text{hour}] +$

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 0.01\% \times 99\% \times 116,298 \text{ journeys} \times 25.5 \text{ hours added} \times \$250/\text{hour}] +$

*Time cost for 95% of journeys where there are idle trucks with minimum of 12 hours voluntary spelling*  $[50\% \times 95\% \times 0.01\% \times 99\% \times 116,298 \text{ journeys} \times 13.5 \text{ hours added} \times \$250/\text{hour}] = \text{\$52,147.66 per annum}$

The total incremental net cost of standard SB8.1 in conjunction with SB8.3 across all three classes of species, would be **\\$52,147.66** per annum. Over 5 years, and in present value terms (2008 dollars), this would equal **\\$243,690.14**.

***A7.4.29 Incremental cost of horse standard SB8.2 for transporters***

*Time cost for 0.01% of journeys where there are no idle trucks*  $[0.01\% \times 99.99\% \times 0.005\% \times 116,298 \text{ journeys} \times 3.5 \text{ hours added} \times \$250/\text{hour}] +$

*Time cost for 99.99% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 99.99\% \times 99.99\% \times 0.005\% \times 116,298 \text{ journeys} \times 25.5 \text{ hours added} \times \$250/\text{hour}] +$

*Time cost for 99.99% of journeys where there are idle trucks with minimum of 12 hours voluntary spelling*  $[50\% \times 99.99\% \times 99.99\% \times 0.005\% \times 116,298 \text{ journeys} \times 13.5 \text{ hours added} \times \$250/\text{hour}] = \text{\$28,342.48 per annum}$

Over 5 years, and in present value terms (2008 dollars), this would equal **\\$132,446.64**.

***A7.4.30 Incremental cost of horse standard SB8.4 for livestock owners***

As with Option B = **\\$846.91** per annum

Over 5 years, and in present value terms (2008 dollars), this would equal **\\$3,957.68**.

***A7.4.31 Incremental cost of horse standard SB8.8 for transporters – reducing stocking density by 3 horses/30m<sup>2</sup>***

As with Option B = **\\$8,397.50** per annum

This would equal **\\$39,242.18** over 5 years in present value terms (2008 dollars).

***A7.4.32 Incremental net cost of horse standard SB8.10 for livestock owners***

As with Option B = **\$6,042** per annum

In present value terms (2008 dollars) and over 5 years this would be equal to **\$28,233.67**.

*A7.4.33 Incremental cost of horse standard SB8.11 for transporters*

As with Option B = **\$84,875** per annum

Over 5 years, and in present value terms (2008 dollars), this would equal **\$396,627.60**.

*A7.4.34 Incremental unquantifiable cost of horse standard SB8.12 for transporters*

As with Option B

*A7.4.35 Incremental unquantifiable cost of horse standard SB8.14 for transporters*

As with Option B

*A7.4.36 Incremental cost of pig standard SB9.1 in conjunction with SB9.3 for transporters and minimum voluntary spelling of 12 hours*

**Between:**

*Time cost for 100% of journeys where there are idle trucks and no voluntary spelling*<sup>638</sup> [0.01% x 10% x 39,944.63 journeys x 12 hours added x \$336.50/hour] = **\$1,612.96** per annum

**and**

*Time cost for 100% of journeys where there are idle trucks and no voluntary spelling* [0.01% x 10% x 39,944.63 journeys x 12 hours added x \$390.50/hour] = **\$1,871.81** per annum

Over 5 years, and in present value terms (2008 dollars), this would equal between **\$7,537.51** and **\$8,747.09**.

*A7.4.37 Incremental cost savings of pig standard SB9.2 for transporters and minimum voluntary spelling of 12 hours*

**Between:**

*Cost savings for 100% of journeys where there are idle trucks and no voluntary spelling* [0.1% x 39,944.63 journeys x 12 hours saved x \$336.50/hour] = **\$161,296.42** per annum

**and**

*Cost savings for 100% of journeys where there are idle trucks and no voluntary spelling* [0.1% x 39,944.63 journeys x 12 hours saved x \$390.50/hour] = **\$187,180.54** per annum

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<sup>638</sup> In this case there is no time difference between voluntary spelling and the time involved if trucks are idle, therefore it is assumed that voluntary spelling would be redundant.

Over 5 years, and in present value terms (2008 dollars), the cost savings of SB9.2 would equal between **\$753,750.93** and **\$874,709.47**.

*A7.4.38 Incremental unquantifiable cost of pig standard SB9.4 for transporters*

As with Option B

*A7.4.39 Incremental unquantifiable cost of poultry standard SB10.2 for transporters*

As with Option B

*A7.4.40 Incremental net cost of Sheep standard SB11.1 in conjunction with SB11.2 for transporters and minimum voluntary spelling of 12 hours*

Standard SB11.1 increases the maximum time off water from 8 hours to 12 hours for sheep over 4 months pregnant and in their third trimester with an associated minimum spelling time of 12 hours under standard SB11.2, and increases the maximum time off water from 24 hours to 28 hours for lambs under 4 months with an associated minimum spelling time of 12 hours under standards SB11.2. This would reduce the time cost of transport. The incremental cost savings will rely on the following assumptions being made:

- 3.5 hours of loading/unloading and changeover time will be saved for 5% of the relevant proportion of journeys;
- 13.5 hours of loading/unloading and idle vehicle time will be saved for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 95% of journeys);
- there is no time difference between voluntary spelling and the time involved if trucks are idle, therefore it is assumed that voluntary spelling would be redundant;
- the proportion of sheep journeys between 8 hours and 12 hours (i.e. 15%<sup>639</sup>);
- the proportion of sheep that are pregnant and known to be in their third trimester (i.e. 1%<sup>640</sup>);
- the proportion of the 1% of ewes that are in the third trimester and more than 4 months pregnant (i.e. 60%<sup>641</sup>);
- the proportion of lamb journeys between 24 hours and 28 hours (i.e. 5%<sup>642</sup>);
- the number of journeys per annum involving sheep transport is estimated to be 191,580.35<sup>643</sup>;

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<sup>639</sup> Proposed by AHA.

<sup>640</sup> Proposed by AHA.

<sup>641</sup> Estimated as 30 days divided by the total days of the third trimester of 50 days.

<sup>642</sup> Proposed by AHA.

<sup>643</sup> See Table A6.16 of Appendix 6 in this RIS for this estimate.

- the number of journeys per annum involving lamb transport is estimated to be 252.8<sup>644</sup>; and
- the cost of sheep and lamb transport is between \$357.43/hr and \$412.45/hour.<sup>645</sup>

Consequently, the annual cost savings for transporters is calculated in the following way:

***For lambs under 4 months old:***

**Between:**

*Time cost savings for 5% of journeys where there are no idle trucks* [5% x 5% x 252.8 journeys x 3.5 hours saved x \$357.43/hour] +

*Time cost savings for 95% of journeys where there are idle trucks and no voluntary spelling* [95% x 5% x 252.8 journeys x 13.5 hours saved x \$357.43/hour] +

*Food cost savings* [5% x 107,162 lambs x 12 hours saved x \$0.20/12hour/lamb] = **\$71,592.34** per annum

**and**

*Time cost savings for 5% of journeys where there are no idle trucks* [5% x 5% x 252.8 journeys x 3.5 hours saved x \$412.45/hour] +

*Time cost savings for 95% of journeys where there are idle trucks and no voluntary spelling* [95% x 5% x 252.8 journeys x 13.5 hours saved x \$412.45/hour] +

*Food cost savings* [5% x 107,162 lambs x 12 hours saved x \$0.20/12hour/lamb] = **\$80,633.22** per annum

***For Sheep in third trimester and more than 4 months pregnant:***

**Between:**

*Time cost savings for 5% of journeys where there are no idle trucks* [5% x 15% x 1% x 60% x 191,580.35 journeys x 3.5 hours saved x \$357.43/hour] +

*Time cost savings for 95% of journeys where there are idle trucks and no voluntary spelling* [95% x 15% x 1% x 60% x 191,580.35 journeys x 13.5 hours saved x \$357.43/hour] +

*Food cost savings* [5% x 1% x 60% x 66,210,170 sheep x 12 hours saved x \$0.20/12hour/sheep] = **\$944,189.77** per annum

**and**

*Time cost savings for 5% of journeys where there are no idle trucks* [5% x 15% x 1% x 60% x 191,580.35 journeys x 3.5 hours saved x \$412.45/hour] +

*Time cost savings for 95% of journeys where there are idle trucks and no voluntary spelling* [95% x 15% x 1% x 60% x 191,580.35 journeys x 13.5 hours saved x \$412.45/hour] +

<sup>644</sup> See Table A6.16 of Appendix 6 in this RIS for this estimate.

<sup>645</sup> See Table A6.15 of Appendix 6 in this RIS for this estimate.

*Food cost savings* [5% x 1% x 60% x 66,210,170 sheep x 12 hours saved x \$0.20/12hour/sheep]  
= **\$1,067,516.56** per annum

Standard SB11.1 reduces the maximum time off water from 48 hours to 12 hours for ewes in their third trimester and less than 4 months pregnant, with an associated minimum spelling time of 12 hours under standard SB11.2. Standard SB11.1 also reduces the maximum time off water from 48 hours to 36 hours for sheep over 4 months old for which 24 hours<sup>646</sup> of spelling applies. This would increase the time cost of transport. The incremental time cost will rely on the following assumptions being made:

- 3.5 hours of loading/unloading and changeover time will be incurred for 5% of the relevant proportion of journeys;
- 25.5 hours of loading/unloading and idle vehicle time will be incurred for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 95% of journeys) for sheep over 4 months old;
- 13.5 hours of loading/unloading and idle vehicle time will be incurred for the relevant proportion of journeys where vehicles do not have the ability for changeover (i.e. 95% of journeys);
- there is no time difference between voluntary spelling and the time involved where trucks are idle for 12 hours, therefore it is assumed that voluntary spelling would be redundant in this case;
- the proportion of sheep journeys between 12 hours and 48 hours (i.e. 30%<sup>647</sup>);
- the proportion of sheep journeys between 36 hours and 48 hours (i.e. 3%<sup>648</sup>);
- the proportion of sheep in their 3<sup>rd</sup> trimester of pregnancy (i.e. 1%<sup>649</sup>);
- the proportion of sheep in the third trimester that are less than 4 months pregnant (i.e. 40%<sup>650</sup>);
- the number of journeys per annum involving sheep transport is estimated to be 191,580.35<sup>651</sup>; and
- the cost of sheep and lamb transport is between \$357.43/hr and \$412.45/hour.<sup>652</sup>

Subsequently, the annual incremental cost for transporters is calculated in the following way:

***For Sheep in third trimester and less than 4 months pregnant:***

<sup>646</sup> SB11.2 requires 36 hours spelling after 48 hours of time off water, however the 'intent' for this species is that 24 hours of spelling be conducted for 36 hours of time off water.

<sup>647</sup> Proposed by AHA.

<sup>648</sup> Proposed by AHA.

<sup>649</sup> Proposed by AHA.

<sup>650</sup> Estimated as 20 days divided by the total days of the third trimester of 50 days.

<sup>651</sup> See Table A6.16 of Appendix 6 in this RIS for this estimate.

<sup>652</sup> See Table A6.15 of Appendix 6 in this RIS for this estimate.



**Between:**

*Time cost for 5% of journeys where there are no idle trucks*  $[5\% \times 30\% \times 1\% \times 40\% \times 191,580.35 \text{ journeys} \times 3.5 \text{ hours added} \times \$357.43/\text{hour}] +$

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*  $[95\% \times 30\% \times 1\% \times 40\% \times 191,580.35 \text{ journeys} \times 13.5 \text{ hours added} \times \$357.43/\text{hour}] +$

*Food cost*  $[30\% \times 1\% \times 40\% \times 66,210,170 \text{ sheep} \times 12 \text{ hours} \times \$0.20/12\text{hour/sheep}] =$   
**\$1,258,919.70** per annum

**and**

*Time cost for 5% of journeys where there are no idle trucks*  $[5\% \times 30\% \times 1\% \times 40\% \times 191,580.35 \text{ journeys} \times 3.5 \text{ hours added} \times \$412.45/\text{hour}] +$

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*  $[95\% \times 30\% \times 1\% \times 40\% \times 191,580.35 \text{ journeys} \times 13.5 \text{ hours added} \times \$412.45/\text{hour}] +$

*Food cost*  $[30\% \times 1\% \times 40\% \times 66,210,170 \text{ sheep} \times 12 \text{ hours} \times \$0.20/12\text{hour/sheep}] =$   
**\$1,423,355.41** per annum

***For Sheep over 4 months old:***

**Between:**

*Time cost for 5% of journeys where there are no idle trucks*  $[5\% \times 3\% \times 191,580.35 \text{ journeys} \times 3.5 \text{ hours added} \times \$357.43/\text{hour}] +$

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 3\% \times 191,580.35 \text{ journeys} \times 25.5 \text{ hours added} \times \$357.43/\text{hour}] +$

*Time cost for 95% of journeys where there are idle trucks with minimum of 12 hours voluntary spelling*  $[50\% \times 95\% \times 3\% \times 191,580.35 \text{ journeys} \times 13.5 \text{ hours added} \times \$357.43/\text{hour}] +$

*Food cost*  $[3\% \times 66,210,170 \text{ sheep} \times 24 \text{ hours} \times \$0.40/24\text{hour/sheep}] =$  **\$40,322,205.58** per annum

**and**

*Time cost for 5% of journeys where there are no idle trucks*  $[5\% \times 3\% \times 191,580.35 \text{ journeys} \times 3.5 \text{ hours added} \times \$412.45/\text{hour}] +$

*Time cost for 95% of journeys where there are idle trucks and no voluntary spelling*  $[50\% \times 95\% \times 3\% \times 191,580.35 \text{ journeys} \times 25.5 \text{ hours added} \times \$412.45/\text{hour}] +$

*Time cost for 95% of journeys where there are idle trucks with minimum of 12 hours voluntary spelling*  $[50\% \times 95\% \times 3\% \times 191,580.35 \text{ journeys} \times 13.5 \text{ hours added} \times \$412.45/\text{hour}] +$

*Food cost*  $[3\% \times 66,210,170 \text{ sheep} \times 24 \text{ hours} \times \$0.40/24\text{hour/sheep}] =$  **\$46,235,566.81** per annum

*Loss of income from contaminated fleece and reduced price at sale yards due to poorly presented sheep<sup>653</sup>*

As with Option B = **\$419,547.36** per annum

The total incremental net cost of standard SB11.1 in conjunction with SB11.2 (including the loss of income from contaminated fleece and reduced price at sale yards due to poorly presented sheep) would be between **\$40,984,890.53** and **\$46,930,319.80** per annum. Over 5 years, and in present value terms (2008 dollars), this would equal between **\$191,525,639.79** and **\$219,309,101.71**.

*A7.4.41 Summary of annual and 5 year costs/cost savings under Option E1 by standard*

Table A7.7 summarises the annual and 5 year costs/cost savings under Option E1. The annual incremental cost under this more expensive option (i.e. more expensive than Options B, B1, D or E) will equal between **\$133,379,193** and **\$149,605,173** per annum or between **\$623,291,535** and **\$699,116,826** in present value terms (in 2008 dollars) over 5 years.

**Table A7.7 - Summary of annual and 5 year cost/cost savings of standards under Option E1**

Standard	Annual min	Annual max	Present value over 5 years min	Present value over 5 years max
SA1.1	\$364,317	\$364,317	\$1,702,482	\$1,702,482
SA1.2	\$1,466,294	\$1,691,068	\$6,852,109	\$7,902,494
SA4.2	\$1,353,865	\$1,353,865	\$6,326,717	\$6,326,717
SA5.11	\$14,932,389	\$16,186,213	\$69,780,237	\$75,639,453
SA5.14	\$10,349,088	\$11,128,645	\$48,362,110	\$52,005,041
SB1.1&SB1.3	\$16,068	\$16,068	\$75,085	\$75,085
SB1.2	-\$14,753	-\$14,753	-\$68,943	-\$68,943
SB1.4	\$65,838	\$65,838	\$307,665	\$307,665
SB2.1&SB2.2	\$93,704	\$98,513	\$437,888.55	\$460,358.09
SB2.3	\$3,767	\$3,767	\$17,605.36	\$17,605
SB2.5	\$375	\$395	\$1,754.36	\$1,844.38
SB3.1&SB3.3	\$43,973.80	\$43,973.80	\$205,493.05	\$205,493
SB3.4	\$1,031	\$1,031	\$4,819	\$4,819
SB4.1&SB4.2	\$57,618,861	\$64,965,302	\$269,257,502	\$303,588,001
SB4.3	\$1,280,906	\$1,280,906	\$5,985,775	\$5,985,775
SB4.8(b)	\$266,216	\$285,522	\$1,244,047	\$1,334,266
SB5.1&SB5.2	\$34,811	\$35,426	\$162,673	\$165,548
SB5.3	\$50,280	\$50,280	\$234,963	\$234,963
SB6.1&SB6.5	\$49,352	\$49,352	\$230,626	\$230,626
SB7.1&SB7.2	\$4,396,951	\$5,073,784	\$20,547,302	\$23,710,195
SB8.1&SB8.3	\$52,148	\$52,148	\$243,690	\$243,690
SB8.2	\$28,342	\$28,342	\$132,447	\$132,447
SB8.4	\$847	\$847	\$3,958	\$3,958
SB8.8	\$8,398	\$8,398	\$39,242	\$39,242
SB8.10	\$6,042	\$6,042	\$28,234	\$28,234
SB8.11	\$84,875	\$84,875	\$396,628	\$396,628
SB9.1&SB9.3	\$1,613	\$1,872	\$7,538	\$8,747

<sup>653</sup> Advice provided by Wool Producers Australia.

Standard	Annual min	Annual max	Present value over 5 years min	Present value over 5 years max
SB9.2	-\$161,296	-\$187,181	-\$753,751	-\$874,709
SB11.1&SB11.2	\$40,984,891	\$46,930,320	\$191,525,640	\$219,309,102
<b>Total</b>	<b>\$133,379,193</b>	<b>\$149,605,173</b>	<b>\$623,291,535</b>	<b>\$699,116,826</b>

#### *A7.4.42 – Estimated change in retail meat prices under Option E1*

Substituting the values under section A7.4.14 for standards SB4.1&SB4.2, into Table A6.27, would make the incremental cost of Option E1 in relation to cattle equal to between \$65,968,766 and \$74,140,082 per annum (see Table A7.8). Substituting the values for sheep under section A7.4.40 for standards SB11.1&SB11.2 into Table A6.29, would make the incremental cost of Option E1 in relation to sheep transport equal to between \$51,631,923 and \$59,012,968 per annum (see Table A7.8). Substituting the value under section A7.4.32 for standards SB9.1&9.3 and the value under section A7.4.39 for SB9.2 into Table A6.30 would make the incremental cost savings of Option E1 in relation to pigs equal to between \$157,443 and \$182,709 per annum (see Table A7.8). The incremental cost of Option E1 in relation to poultry would remain identical to Option B and E (i.e. \$10,175,383). Finally, the increases in meat prices under Option E1 are summarised in Table A7.9.

**Table A7.8 – Increase in transport cost for major livestock species as a result of Option E1**

Livestock Species <sup>654</sup>	Incremental annual cost <sup>655</sup>	Annual total cost of livestock transport <sup>656</sup>	Incremental annual cost as a % of annual total cost of livestock transport <sup>657</sup> (a2)
Cattle (+calves)	\$65,968,766 to \$74,140,082	\$319,402,450 to \$359,747,551	20.61% to 20.65%
Sheep	\$51,631,923 to \$59,012,968	\$139,195,492 to \$160,624,413	36.74% to 37.09%
Pigs	-\$157,443 to -\$182,709	\$21,956,712 to \$25,480,225	-0.717%
Poultry for meat	\$10,175,383	\$91,255,147	11.15%

<sup>654</sup> Species does not include chicks, buffalo, horses, deer, camels, alpacas, goats, emus and ostriches.

<sup>655</sup> Cost estimates are rounded to the nearest dollar and taken from Tables A6.30 to A6.43 of Appendix 6 in this RIS.

<sup>656</sup> Cost estimates are rounded to the nearest dollar and taken from Table A6.3 of Appendix 6 in this RIS.

<sup>657</sup> If all costs are eventually passed on to consumers then it would be anticipated that the increase in price would roughly equate to the increase in annual cost as a percentage of total annual cost.

**Table A7.9 - Proportion of transport cost borne by livestock producers and consumers of meat products as a result of Option E1**

Meat product	Price sensitivity of supply <sup>658</sup> (b)	Price sensitivity of demand <sup>659</sup> (c)	% of cost borne by producers (d) = $\frac{1/(b)}{1/(b) + 1/(c)} \times 100$ <sup>660, 661</sup>	% of cost borne by consumers (f) <sup>662</sup> = $100 - (d)$	% increase in retail price of meat product (g2) = (a2) x (f)	% change in demand (h2) = (g2) x (c)
Beef	0.27	-1.2	71.2% <sup>663</sup>	28.8%	5.94% to 5.95%	-7.13% to -7.14%
Lamb	0.17	-1.4	69.7% <sup>664</sup>	30.3%	11.12% to 11.23%	-15.57% to -15.72%
Pork	1.5	-1.59 <sup>665</sup>	40% <sup>666</sup>	60.0%	-0.43%	0.68%
Chicken	0.2 <sup>667</sup>	-0.3	57.3% <sup>668</sup>	42.7%	4.764%	-1.43%

**A7.5 Comparison of annual and 5 year incremental cost between Options B, B1, D, E and E1**

Finally, Table A7.10 below compares the annual and 5 year incremental costs between Options B, B1, D, E and E1 as discussed in Appendices 6 and 7.

**Table A7.10 – A comparison of annual and 5 year incremental cost (cost savings) for Options B, B1, D, E and E1**

Option	Annual value min	Annual value max	Present value over 5 years min	Present value over 5 years max
<b>B</b>	\$31,413,692	\$33,884,215	\$146,798,673	\$158,343,620
<b>B1</b>	\$44,133,092	\$46,603,615	\$206,237,437	\$217,782,384
<b>D</b>	-\$786,256	-\$978,256	-\$3,674,239	-\$4,571,467
<b>E</b>	\$117,844,848	\$131,917,421	\$550,698,309	\$616,460,556
<b>E1</b>	\$133,379,193	\$149,605,173	\$623,291,535	\$699,116,826

<sup>658</sup> Griffith, G., et al, (January 2001), *Previous Supply Elasticity Estimates for Australian Broadacre Agriculture*, Economic Research Report No. 6, NSW Agriculture

<sup>659</sup> Griffith, G., et al, (January 2001), *Previous Demand Elasticity Estimates for Australian Meat Products*, Economic Research Report No. 5, NSW Agriculture

<sup>660</sup> Retail price divided by production price

<sup>661</sup> Formula taken from Bureau of Transport Economics, (1982)

<sup>662</sup> Percentages have been rounded to one decimal place

<sup>663</sup> For whole beast farm gate price (\$799) and retail price of cattle (\$1,438) see Coles Myer Ltd, (August, 2005), Submission to DAFF.

<sup>664</sup> Saley price of lamb \$3.40/kg and retail price of lamb is \$12.16/kg (see ABARE (March quarter 2007), *Australian Commodities*, Vol.14).

<sup>665</sup> ABARE (August, 2004), *Economic assessment of pig meat imports on the Australian industry*, ABARE report 04.15

<sup>666</sup> For production cost \$2.39 per kg and retail cost \$3.80 per kg of pork - see ABARE (March quarter 2007), *Australian Commodities* Vol.14.

<sup>667</sup> The price elasticity of supply for chicken meat is based on a UK study by Harling and Thompson (1985) (cited in Alston G.M and Scobie G. M) and it is assumed that chicken meat production systems in Australia and the UK are similar.

<sup>668</sup> Wholesale price of \$4.24/ kg is based on advice from Dr Vivien Kite from RIRDC and retail price of chicken of \$4.80/kg is based on current observation of local retail outlets (shops and outlets).

### A7.6 Comparison of beef, lamb, pork and chicken prices + demand between Options B, D, E and E1

Finally, Table A7.11 below compares the expected impact of Options B, D, E and E1 as discussed in Appendices 6 and 7 on beef, lamb, pork and chicken prices, as well as, demand for these meat products by consumers.

**Table A7.11 Comparison of the % Change in meat prices and demand for Options B, B1, D, E and E1**

Option	%Change in Beef		%Change in lamb		%Change in Pork		%Change in Chicken	
	<i>Price</i>	<i>Demand</i>	<i>Price</i>	<i>Demand</i>	<i>Price</i>	<i>Demand</i>	<i>Price</i>	<i>Demand</i>
<b>B</b>	1% to 1.02%	-1.2% to -1.22%	1.99% to 2.04%	-2.79% to -2.85%	-0.29%	0.45%	4.76%	-1.43%
<b>B1</b>	As with B + unknown increase in veal prices	As with B + unknown reduction in veal demand	1,99% to 2.04%	-2.79% to -2.85%	-0.29%	0.45%	4.76%	-1.43%
<b>D</b>	0.03% to 0.032%	-0.04%	-0.19% to -0.2%	0.27% to 0.28%	-0.29%	0.46%	0%	0%
<b>E</b>	5.13% to 5.14%	-6.15% to -6.17%	9.84% to 9.95%	-13.77% to -13.92%	-0.32%	0.51%	4.76%	-1.43%
<b>E1</b>	5.94% to 5.95%	-7.13% to -7.14%	11.12% to 11.23%	-15.57% to -15.72%	-0.43%	0.68%	4.764%	-1.43%

## Appendix 8 – changes in proposed standards in response to public comments

[based on Public Consultation Response Action Plan (PC RAP) following SRG8]

Proposed Std. No.	Subject matter	Nature of change
	<b>Responsibilities and planning</b>	
SA1.1	Responsibilities for livestock welfare at each stage of journey to be exercised	Further clarifications of responsibilities – mainly for rail transport.
	<b>Transport vehicles and facilities</b>	
SA3.1	Vehicles and facilities constructed, maintained and operated to minimise risks.	Minor clarification of wording, including replacing of ‘ventilation’ with ‘airflow’ in all standards.
	<b>Pre-transport preparation</b>	
SA4.1	Livestock to be assessed as fit for intended journey at every loading.	Addition of ‘not severely emaciated’ to standard and definition, and change to positive wording.
SA4.2	Unfit animals transported only on specific vet advice.	Substitute ‘assessed’ for ‘judged’.
definition	‘at the first opportunity’	Reasonable delays permitted
definition	heat stress	clarification
definition	selection	clarification
	<b>Loading, transport and unloading</b>	
SA5.1	Mandatory spell to be provided ‘before continuing the current journey’.	Minor clarification of wording, accepted meaning has not changed.
SA5.2	Time off water to be managed to minimise risks.	clarification - very minor changes in wording.
SA5.3	Livestock access to water at saleyard or spelling facility after 24 hours.	New standard
SA5.4	Loading density to be managed to minimise risks	Minor clarifications of wording
SA5.6	Segregation of livestock to minimise risks.	Minor wording changes
SA5.7	Handling appropriate to species. Changes in the areas of mechanical lifting, striking and dragging of downers	New standards for lifting and dragging, modification to striking.
SA5.8	Restrictions on use of electric prodders on sensitive animal parts, under 3 months old, unable to move, or excessively on an animal.	Minor wording changes
SA5.9	Dogs must be under control at all times and must not travel in same pen as livestock. Dogs that habitually bite to be muzzled.	Exception for bonded guardian dogs. Inclusion of muzzling of dogs that habitually bite horses
SA5.10	Alignment of ramp and vehicle	‘Minimising risk’ rather than ‘avoid causing’.
SA5.11	Inspection of facilities by driver: - prior to loading - of receival yard before unloading	Excludes rail transport Driver must take reasonable steps to notify his arrival at destination. Clarifies responsibilities.
SA5.12	Inspection of animals by driver: - before departing - within first hour and every 3 hours or rest stop - on unloading	Excludes rail transport and d transport by sea. Add ‘at every stop’
SA5.13	Driver to provide assistance to injured or distressed animals at first opportunity.	Include rail authority

Proposed Std. No.	Subject matter	Nature of change
SA5.14	Person receiving the livestock to arrange treatment or destruction of weak, ill or injured animals and disposal of dead stock.	Add 'at first opportunity' and 'or'.
SA5.15	Driver to take action during extreme hot or cold conditions to minimise the risk to the welfare of livestock.	Include rail authority
Was SA5.15	Actions to be taken following a livestock transport vehicle accident.	Made a guideline
Definition	journey time	Addition of 'loaded'
Definition	spell - mandatory	clarification
Definition	spell - voluntary	clarification
Definition	rest	clarification
Definition	time off water	Clarification
Definition	water deprivation time	Clarification
	<b>Humane destruction</b>	
SA6.2	Humane destruction by competent person using approved method at first opportunity	Include revised definition of 'moribund'
SA6.4	Reasonable action required to confirm death	Add 'or ensure death'.
SA6.6	Captive bolt stunning	Deleted 'to be followed by effective killing method', 'not temporal position'.
SA6.7	Blunt trauma to head to be used only on newborns <24 hours old or piglets <15kg	Rewording for clarity. "To be used on species such as alpacas, camels, cattle, deer, goats and sheep".
SA6.8	Bleeding out	New standard consistent with guidelines.
Was SA6.8	Pithing to be used only on unconscious animals	Deleted as unnecessary (pithing is not common practice).
Was SA6.9	Lethal injection	Deleted as unnecessary because the technique is not available to lay people.
<b>B1</b>	<b>Specific Standards -Alpacas<sup>669</sup></b>	
SB1.1.	Water deprivation times	24 hours instead of 36 for wethers >12 months. 4 hours instead of 2 hours for lactating alpacas and crias.
SB1.2	Extensions of water deprivation times (72 hours journey time) if conditions are met.	Inclusion of constant provision of water and feed on the vehicle, and assessments every 3 hours or every stop..
SB1.3	Mandatory spell	Word rearrangement -
Was SB1.7	Approved methods of humane destruction	Made a guideline. See SA6.2 to SA6.8
SB1.5	Newly shorn alpacas	New standard – protection for newly shorn in cold conditions
<b>B2</b>	<b>Specific Standards -Buffalo</b>	
SB2.2	Mandatory spell	Word rearrangement -
Was SB2.7	Approved methods of humane destruction	Made a guideline. See SA6.2 to SA6.8
<b>B3</b>	<b>Specific Standards -Camels</b>	
SB3.1	Time off water	Increase to same as ruminants
SB3.2	Extensions of water deprivation times if conditions are met.	Conditions include space to lie down on sternum. Addition of 'if camels over 6 months old have been off water for 48 hours, they are to be spelled for 36 hours etc (see p.

<sup>669</sup> Alpacas are mainly transported farm to farm or to shows.

Proposed Std. No.	Subject matter	Nature of change
		47 of PC RAP).
SB3.3	Spell periods	Inclusion of lactating cows with calves at foot, or calves 1-6 months old.
SB3.5	100mm clearance above hump	Add 'when standing at rest'.
Was SB3.8	Approved methods of humane destruction	Made a guideline. See SA6.2 to SA6.8
Note under standards	Voluntary spells.	Delete as unnecessary.
SB3.3	Camel bulls in rut to be segregated	New standard
<b>B4</b>	<b>Specific Standards –Cattle</b>	
SB4.2	Mandatory spell	Word rearrangement
SB4.4	Bobby calves less than 5 days old travelling without mothers can only be transported to a calf rearing facility and then only under specified conditions.	Delete colostrum provision. Add word 'bobby'
SB4.5	Calves 5-30 days old travelling without mothers must meet specified conditions.	Additional condition re: good health, alertness and ability to rise from lying position, delivery in less than 18 hours from last feed. Fed within 6 hours of transport. Add word 'bobby'
SB4.6	Bass Strait	Add word 'bobby' - clarification
SB4.7	Calves born earlier than normal must be at an equivalent stage of fitness as other calves.	New standard
SB4.8	Calves 5<30 days must have space to lie down on sternum	New standard
Was SB4.8	Approved methods of humane destruction	Made a guideline. See SA6.2 to SA6.8
<b>B5</b>	<b>Specific Standards - Deer</b>	
SB5.2	Mandatory spell	Word rearrangement -
Was SB5.5	Approved methods of humane destruction	Add 'or under direct supervision of a competent operator'
SB5.5	Deer with antlers in velvet >4cm not to be transported	New standard
SB5.6	Deer with hard antlers >4cm not transported unless segregated.	New standard
Was SB5.5	Approved methods of humane destruction	Made a guideline. See SA6.2 to SA6.8
<b>B6</b>	<b>Specific Standards – Ratites</b>	
SB6.1	Time off water	Increase adults to 36 hours
SB6.5	Mandatory spell	Change to 36/24 hours. Word rearrangement – consistent with other standards
Was SB6.8	Approved methods of humane destruction	Made a guideline. See SA6.2 to SA6.8
<b>B7</b>	<b>Specific Standards –Goats</b>	
SB7.2	Mandatory spell	Word rearrangement -
Was SB7.3	Approved methods of humane destruction	Change to guideline. GB 7.23. Add 'or under direct supervision of a competent operator'
<b>B8</b>	<b>Specific Standards - Horses</b>	
SB8.2	Extensions of journeys times to 36 hours if conditions are met.	Substitute 'to allow a comfortable standing position' for specified stall dimensions and flooring with drainage
SB8.3	Mandatory spell	Word rearrangement -
SB8.10	Minimum clearance 2m between decks.	Increase to 2.2m clearance
Was SB8.15	Approved methods of humane destruction	Made a guideline. See SA6.2 to SA6.8



<b>Proposed Std. No.</b>	<b>Subject matter</b>	<b>Nature of change</b>
<b>B9</b>	<b>Specific Standards - Pigs</b>	
SB9.2	Provisioned travel	Extend to 72 hours, include food
SB9.3	Mandatory spell	Word rearrangement -
Was SB9.5	Approved methods of humane destruction	Made a guideline. See SA6.2 to SA6.8
Note under standards	Voluntary spell periods	Delete note
<b>B10</b>	<b>Specific Standards - poultry</b>	
SB10.1	Water deprivation times	Substitute 'take-off' for 'hatching' (also throughout standards and RIS).
SB10.6	Approved methods of lifting poultry	Delete some words but not species exclusions. Clarification.
SB10.8	Transporter to minimise risk to the welfare of chicks from chilling and overheating	New standard consistent with Land Transport Poultry MCOP
Was SB10.9	Approved methods of humane destruction	Made a guideline. GB10.31 See SA6.2 to SA6.8
<b>B11</b>	<b>Specific Standards - Sheep</b>	
SB11.2	Mandatory spell	Word rearrangement -
Was SB11.3	Approved methods of humane destruction	Made a guideline. See SA6.2 to SA6.8

*Appendix 9 – the proposed standards and guidelines*

**Australian Standards and Guidelines  
for the Welfare of Animals**

**Land Transport of Livestock**

**Public Consultation Version**

**Version 22 September 2008**

Primary Industries Ministerial Council